

A Script Development Model for the Creation of Computer Games

Cecile van Zyl (Hons. BA)

11284765

**Dissertation Submitted for the Degree Master of Arts in Afrikaans and
Dutch at the Potchefstroom Campus of the North-West University**

**Supervisor: Prof GB van Huyssteen
2008**

DECLARATION

I hereby declare that all the material incorporated in this dissertation is my own original work except where specific reference is made by name or in the form of a numbered reference.

The work herein has not been submitted for a degree at another university.

Signed: _____

Cecile van Zyl

"Video games? ... Those horrible noisy things that children play on their televisions? Someone designs them? What a senseless thing to do with your life!"

"Did you design some silly game that will drive the delinquent kiddies into frenzies of video delight?"

Cruella de Ville, 101 Dalmatians (Herek, 1996)

FOREWORD

- In the first instance I would like to thank my husband, Pieter, for his undying love and support. I could not have done this without you.
- My supervisor, Gerhard. You are an inspiration and role model. Your insights and belief in me were the driving force behind this study.
- My family and friends. For standing behind me and putting up with my frustrations I will always be grateful.
- My friends and colleagues at CText. Your words of encouragement and support meant the world to me.
- To my late father. I hope you would have been proud of me.

OPSOMMING

Die konsep van rekenaarspeletjieontwikkeling het tradisioneel nie die vaardighede van professionele skrywers geïmplementeer om die teks van 'n rekenaarspeletjie te ontwikkel nie. Weens die groeiende kompleksiteit en grootte van die rekenaarspeletjieontwikkelingsproses, sowel as die groeiende spannemense betrokke in die ontwikkelingsproses, het dit egter nodig geword om van ervare skrywers in moderne rekenaarspeletjieontwikkeling gebruik te maak.

Dit het egter duidelik geword dat die rol van die skrywer binne die kollaboratiewe speletjieontwikkelingsproses swak gedefinieerd is. Daarom word die skrywer wat vir die rekenaarspeletjie-industrie wil skryf gekonfronteer met 'n groot hoeveelheid struikelblokke. Dit is daarom nodig geag om 'n rekenaarspeletjieteksentwikkelingsmodel vir die ontwikkeling van rekenaarspeletjies te ontwikkel, wat die skrywer van 'n rekenaarspeletjie kan lei deur middel van deeglike riglyne. Die doel van hierdie navorsingsprojek is dus om so 'n model te ontwikkel.

Die eerste stap tot die ontwikkeling van 'n teksentwikkelingsmodel, is om die posisie van die skrywer binne die kollaboratiewe speletjieontwikkelingsproses te bepaal. Om dit te bepaal, is 'n kommunikasiemodel ontwikkel vir die kommunikasieproses van die rekenaarspeletjieontwikkelingsproses, gebaseer op die kommunikasiemodel van Roman Jakobson.

Na die posisie van die skrywer binne die kommunikasieproses vasgestel is, is 'n speletjieontwikkelingsmodel ontwikkel om die posisie van die skrywer binne die algehele speletjieontwikkelingsproses te bepaal. Dit is gedoen sodat die funksies en verantwoordelikhede van die skrywer – binne 'n groter kollaboratiewe ontwikkelingsproses – vasgestel kon word. Hierdie model is ontwikkel

gebaseer op bestaande sagtewareontwikkelingsmodelle, sowel as twee verskillende modelle vanuit die rekenaarspeletjie-industrie wat fokus op verskillende aspekte binne die speletjieontwikkelingsproses.

Met die posisie, funksies en verantwoordelikhede van die skrywer vasgestel, was dit moontlik om 'n teksontwikkelingsmodel vir die ontwikkeling van rekenaarspeletjies te postuleer. Hierdie model is ontwikkel met 'n klem op die speletjiekonteks, kreatiewe strategieë en analitiese raamwerke wat die skrywer tot sy/haar beskikking het. Verder is riglyne verskaf ten opsigte van die skryf van die rekenaarspeletjieteks, gebaseer op elemente vanuit dramateorie.

Om die manuskriptontwikkelingsmodel te toets, is 'n nie-funksionele prototipe (thin-slice) rekenaarspeletjieteks ontwikkel gebaseer op die Fritz Deelmanreeks (Leon Rousseau). Die teksontwikkelingsmodel is gebruik as riglyn om te bepaal of die teksontwikkelingsmodel in die toekoms gebruik kan word om 'n volskaalse, implementeerbare rekenaarspeletjieteks te ontwikkel.

Kernbegrippe: Rekenaarspeletjies; Skrywer; Rekenaarspeletjieontwikkelingsmodel; Rekenaarspeletjieteksontwikkelingsmodel; Nie-funksionele prototipe

(thin slice)

ABSTRACT

The concept of game development has traditionally not implemented the skills of professional writers to develop the scripts for a computer game. However, due to the growth in complexity and size of the computer game development process, as well as the growing teams of people involved in the development of computer games, the need to employ skilled writers has emerged in modern computer game development.

It has, however, become clear that the role of the writer within the collaborative game development process is still ill-defined. And therefore, the writer who wishes to start writing for the games industry, is faced with a great deal of obstacles. It was therefore deemed necessary to develop a script development model for the creation of computer games that can assist the writer of a computer game by means of thorough guidance. The aim of this research project is therefore to develop such a model.

The first step towards the establishment of a script development model, would be to determine the position of the writer in the collaborative game production communication process. In order to establish this, a communication model was developed for the communication process of the computer game development process, based on Roman Jakobson's communication model.

After the position of the writer in the communication process was established, a game development model was developed to determine the position of the writer within the entire game development process. This was done so that the functions and responsibilities of the writer - within a greater collaborative development process - could be determined. This model was developed based on existing software development models, as well as two different

models from the games industry that focus on different aspects within the game development process.

With the position, functions and responsibilities of the writer determined, it was possible to postulate a script development model for the creation of computer games. This model was developed with an emphasis on the game context, creative strategies and analytical frameworks available to the writer. Furthermore guidelines were provided on the actual scripting of the computer game script, based on elements from drama theory.

To test the script development model, a non-functional prototype (thin-slice) computer game script was developed based on the Fritz Deelman-series (Leon Rousseau). The script development model was used as guideline to establish whether the script development model could in future be used to develop a full-scale, implementable computer game script.

Key Words: Computer games; Writer; Game development model; Script development model; Non-functional prototype (thin slice)

TABLE OF CONTENTS

FOREWORD	iii
OPSOMMING	iv
ABSTRACT	vi
TABLE OF CONTENTS	viii
LIST OF FIGURES AND TABLES	xi
1 Introduction	1
1.1 Contextualisation	1
1.2 Problem statement	1
1.3 Research questions	4
1.4 Aims	5
1.5 Central theoretical statement	5
1.6 Research methodology	7
1.6.1 Basic research	7
1.6.2 Applied research	8
1.6.3 Experimental design	8
1.7 Execution	9
2 A game development model for computer games	11
2.1 Introduction	11
2.2 A communication model for computer games	12
2.2.1 Communication	12
2.2.2 Jakobson's communication model	13
2.2.3 A communication model for novels	14
2.2.4 A communication model for films	17
2.2.5 A communication model for computer games	24
2.2.6 Concluding remarks: Communication model for computer games	30
2.3 A Game Development Model for Computer Games	31

2.3.1.	The workflows and phases of the game development process	33
2.3.2	The functions and responsibilities of the game development team	54
2.3.3	The writer in the game development process	71
2.4	Concluding remarks	76
3	A script development model for computer games	79
3.1	Introduction	79
3.2	Tasks of the computer game writer	80
3.3	Research	81
3.3.1	Game context	83
3.3.2	Creative strategies	88
3.3.3	Analytical framework	99
3.3.4	Concluding remarks	112
3.4	Scripting	113
3.4.1	Didascalia writing	114
3.4.2	Scene scripting	117
3.4.3	Dialogue writing	121
3.4.4	Creating additional content	123
3.4.5	Concluding remarks	124
3.5	Summary	124
4	Case Study	126
4.1	Introduction	126
4.2	Research phase	127
4.2.1	Defining the purpose	127
4.2.2	Defining the target audience	130
4.2.3	Genre	132
4.2.4	Delivery Platform	132
4.3	Creative strategy	133
4.4	Source selection	133
4.5	Scripting	139
4.6.1	Scene scripting	139
4.6	Concluding remarks	156
5	Conclusions	158

5.1	Introduction	158
5.2	Summary and main findings	159
5.3	Concluding remarks	161
6	Bibliography.....	163
	Literature cited.....	163
	Novels cited	170
	Films cited	171
	Computer games cited	172
	APPENDIX A – Example of a film screenplay	176
	APPENDIX B – Example of a film storyboard.....	179
	APPENDIX C – Example of a computer game script.....	180
	APPENDIX D - Example of a computer game storyboard.....	182
	APPENDIX E – Template for research outputs	184
	APPENDIX F – Template for script development	187
	APPENDIX G – Example of a mind map	190

LIST OF FIGURES AND TABLES

Figure 1: Jakobson's communication model.....	13
Figure 2: A communication model for novels.....	15
Figure 3: A communication model for films.....	18
Figure 4: A communication model for computer games.....	25
Figure 5: The core workflows and phases of the Unified Process.....	34
Figure 6: The core workflows and phases of the game development process based on the Unified Process.....	54
Figure 7: System stakeholders' (players) perspective of an information system.....	60
Figure 8: Graphic representation of the role players within the game development process.....	71
Figure 9: The workflows and phases associated with the writer of a computer game script.....	77
Figure 10: Different types of game platforms.....	88
Figure 11: Mind map of scenes and sequences of the thin slice.....	140
Table 1: The different sources of ideas for computer games.....	89

1 Introduction

1.1 Contextualisation

The Centre for Text Technology (CTexT) at the North-West University has, as its core business, the development of text technological applications. These technologies include the development of spell checkers, machine translation systems, language learning software, etc. Within the context of its language learning software, CTexT is currently exploring ways and means to use gaming as a strategy/technique in language learning and evaluation.

Kirriemuir and McFarlane (2004) state that funding to develop computer games for edutainment purposes is increasingly being supplied due to the fact that agencies show a desire to tap into the great rewards of the gaming industry, also with the emergence of a slowly increasing number of success stories within the edutainment industries. This study, however, does not focus *specifically* on the development of games for edutainment purposes, but rather on the on the *general* game production process. Given this potentially growing industry, it is important to get a comprehensive understanding of the development process of computer games. The context of this study is to gain a better understanding of the emerging position of the writer within the game creation process.

1.2 Problem statement

Game development was traditionally designed around "a combination of gameplay elements" (Bridgett, 2005). However, contemporary computer games have not only grown in size and complexity, they have also evolved to involve "creative and innovative ideas" (El Rhalibi *et al*, 2005), "integrating narrative elements and seeing the computer as a stage" (Spierling, 2005:1).

This can be seen in the increasing incidence of narrative elements in many present-day computer games such as narrator, characters, space and time, and events.

Traditionally, in the development of computer games, it was not uncommon for only a few people to develop computer games. However, the teams of people who collaborate to produce a computer game have increased to 30-40 people (Falstein & Fox, 1997). Even though some authors, according to Bridgett (2005), believe that writing a computer game is a function that could be performed by a designer with a penchant for script and dialogue writing, many authors (cf. Brewer, 2002; Bridgett, 2005; Falstein and Fox, 1997; Hyman, 2006; Tyson, 2006) are of the opinion that there is an increasing need for the employment of people within the game industry who will have the sole responsibility of 'writing' games. At the same time, from the literature, it is also clear that the position of these emerging game writers, within the context of the overall game development process, is not yet fully understood (Novak, 2005; Brewer, 2002); this can be considered the central problem to be investigated in this dissertation.

To understand the position of game writers, one could contextualise their role within a broad **communication model for computer games**¹. However, such a communication model for computer games does not exist, and will need to be developed, probably best based on Roman Jakobson's time-honoured communication model (Issacharoff, 1997). From this model it would be possible to illustrate the position and associated functions and responsibilities of various role players and more specifically of the writer. These functions and responsibilities can be broken down into 'workflows'², resulting

¹ It is important to note that the development of the communication model for computer games (as well as for novels and films), is not the focus of this study; it merely serves as illustrative background to the study.

² Workflows are the "decisions, steps and information paths taken in creating and outputting a digital document. In current graphic arts usage, "workflow" may be used loosely, sometimes including materials, processes and data as well as specific operator procedures" (Adobe Systems Incorporated, 2007) (see also Schach, 2005: 45).

in a **game development model**. The position of the writer within the collaborative game production process will therefore imply certain responsibilities, thereby defining the function of the writer working in a multi-skilled context in creating a computer game. Similarly, other role players within the game production process will have responsibilities particularly associated with their positions and functions within the production process. All of these will inevitably influence those of the writer.

Within the context of the game development model, it will be required of the writer to perform certain tasks with associated, concrete milestones. These tasks and milestones can be formalised in a **script development model**.

Depending on the creative strategy (such as simulation, adaptation, etc.) chosen by the writer, he/she has various approaches at his/her disposal to assist in creating the game script. The two theories that can be applied to computer game development in terms of these analytical approaches are narratology and ludology. Narratology is concerned with the narrative elements associated with creating a story and how this story is told, focussing on the narrated event (Dillon, 2006). Ludology, on the other hand, is a term used to focus on the game-specific dynamics of games (Dillon, 2006). It is important for the writer of the computer game script to maintain a balance between these two theories to develop a computer game that will have a strong emphasis on both the narrative and the gameplay.

Therefore, the central problem that this dissertation will address is the position, functions and responsibilities of the writer within the collaborative game-design process. This will be achieved by firstly creating a game development model (based on the computer game communication model) to eventually postulate a script development model for the computer game writer. These models will determine the position, functions, responsibilities and creative strategies of the writer, as well as provide a structured working process for the eventual successful creation of a computer game script in the form of a template the writer can use during the scripting process.

In keeping with the language learning approach of CText, for the purposes of this dissertation, some emphasis will be placed on the functions and responsibilities of the writer of an edutainment game making use of adaptation as strategy.

1.3 Research questions

Against the above background and problem statement, the following research questions can be deduced:

- (a) What would a game development model look like that would clarify the position, functions and responsibilities of the writer within the macro-contextual communication model?
- (b) What would a script development model look like that would clarify the associated workflows, creative strategies and analytical framework for the development of a computer game script?
- (c) Can such a model be successfully implemented in the development of a thin-slice³ script (addressing all associated milestones) for an Afrikaans computer game, making use of adaptation as strategy?

³ A thin slice is a non-functional prototype of a larger, eventual product. Sridharan *et al.* (2007: 112) state that: "a thin slice consists only of producer statements for the seed, i.e., those statements that help compute and copy a value to the seed. Statements that explain why producers affect the seed are excluded". Within the context of this research, a thin slice of a computer game script will be examples of all associated milestones, including a portion of a final script. The purpose will be to merely illustrate whether the script development model can be successfully implemented in developing a computer game script.

1.4 Aims

With regard to the above research questions, the following aims can be proposed:

- (a) To develop a game development model to understand the position, functions and responsibilities of the writer within the macro-contextual communication model.
- (b) To develop a script development model, with associated workflows, creative strategies and analytical framework, for the development of a computer game script. For these purposes a template will be developed that will serve as research report and guide to the writer during the writing process.
- (c) To successfully implement the script development model (and template) in the development of a thin-slice script of an Afrikaans computer game, making use of adaptation as strategy.

1.5 Central theoretical statement

Given the fact that the position, functions and responsibilities of the writer of a computer game are still rather ill-defined, it seems important that the development of a communication model for computer games precede this study. This model will serve to determine the position of the writer within the collaborative game development process. The communication model will be based on the basic communication model of Roman Jakobson (Issacharoff, 1997), and adapted for the computer game development process. This model will be developed by firstly developing a communication model for novels, and then for films (referring to the *Harry Potter* series by way of exemplar), in order to systematically implement the elements associated with the interactive, visual nature of computer games. From this model, it will be possible to develop a

game development model that will illustrate the functions and responsibilities of the writer.

It is also proposed that, with the position, functions and responsibilities of the writer defined, it is possible to postulate a script development model. This model will be based on the literature on the theory of game design, which will aid the writer with regard to the workflows, creative strategies (e.g. adaptation, simulation, original idea), analytical framework (e.g. narratology, ludology) and associated outputs required in the successful writing of a computer game script. The above-mentioned workflows refer to the different phases of development of the interactive computer game. These phases will be based on the Unified Process of software development as postulated by Schach (2005), as well as the game development process as described by Manninen *et al.* (2006). Each workflow will lead to a concrete milestone, or producing a specific product (e.g. proposal, copyright license, flow chart, mind map, script, etc.). Furthermore, the different role players within the game development will be discussed based on the role players within software development as described by Whitten *et al.* (2004) as well as the production team in computer game design as provided by Novak (2005).

A script development model will be developed based on the functions and responsibilities that were highlighted in the game development model to provide the writer with clear guidelines when writing the computer game script. The script development model will then be applied to the development of a thin-slice script of an Afrikaans edutainment computer game, based on the adaptation of existing material (the *Fritz Deelman*-series by Leon Rousseau).

1.6 Research methodology

Based on *A Good Practice Guide for Quality Management of Research* (CHE: 2005), this study will engage in the following modes of research:

- **Basic research** – “experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. The results of basic research are not generally sold but are usually published in scientific journals or circulated to interested colleagues” (CHE, 2005:9).
- **Applied research** – “Also known as oriented basic research, strategic research is research carried out with the expectation that it will produce a broad base of knowledge likely to form the background to the solution of recognised or expected current or future problems or offer possibilities for solving them” (CHE, 2005:9).
- **Experimental development** – “systematic work, drawing on existing knowledge gained from research and practical experience, that is directed to producing new materials, products and devices, installing new processes, systems and services, and substantially improving those already produced or installed” (CHE, 2005:9).

1.6.1 Basic research

The aim of the basic research is to understand the communication model of Roman Jakobson by thoroughly studying the literature. Jakobson's model will be used due to its simplicity yet specific applicability within this context by means of its six constituent elements: addresser, addressee, context, message, contact and code. From this research the communica-

tion model for computer games will be developed to conceptualise a game development model for computer games.

Method: Literature review and synthesis. Because of the very wide-ranging nature of the topic, key critical texts have been identified for purposes of the literature overview⁴.

Areas: Communication theory (Issacharoff, 1997 [Jakobson's communication model]; Sonesson, 1995); Film theory (Lothe, 2000); Software development theory (Schach, 2005); Game theory (Juul, 1999 and 2001; Jenkins, 2004; Novak, 2005; Manninen *et al.*, 2006).

1.6.2 Applied research

To understand and develop a script development model a thorough study of computer game development will be undertaken to be able to extract the workflows, creative strategies and analytical framework that have specific bearing on the computer game writer.

Method: Analysis and application

Areas: Games for entertainment (*Harry Potter*-series); Education and entertainment (Kirriemuir & McFarlane, 2004; Herring, 1984); Narratology (Bal, 1997; Chatman, 1978; Dillon, 2006); Ludology (Dillon, 2006; Jenkins, 2004); Adapted literature: books, films, computer games (*Harry Potter*-series).

1.6.3 Experimental design

The experimental design will be aimed at implementing the script development model in writing a thin slice for an Afrikaans edutainment game, based on adaptation as strategy.

Method: Thin-slicing

Areas: Scriptwriting (Hyman, 2006; Elkington, 2005); Adaptation (Elkington, 2005; Bridgett, 2005); *Fritz Deelman*-series (Rousseau)

⁴ It should be noted that the largest proportion of literature referenced comes from online resources. Although this might be considered as slightly problematic (i.e. that these sources are often not peer-reviewed publications, but rather opinions, white papers, technical reports, etc.), this clearly illustrates the niche that this dissertation will fill in scholarly research on this topic.

1.7 Execution

Chapter 1 provided an introduction to the proposed title, contextualisation, problem statement, research questions, aims, central theoretical statement, and research methodology of the research.

Chapter 2 will focus on the conceptualisation of a game development model for computer games. Based on Jakobson's communication model (Issacharoff, 1997), a communication model for computer games will be developed. This will be done by means of pursuing a communication model for novels (Issacharoff, 1997; Lothe, 2000), as well as for films (Issacharoff, 1997; Lothe, 2000) in order to gradually accumulate an understanding of the necessary features of the computer game communication model. Based on the position of the writer within the computer game communication model, a game development model will be developed that will illustrate the functions and responsibilities of the writer.

Chapter 3 will present a script development model for computer games. With the functions and responsibilities of the writer defined, a script development model for computer games will be developed, illustrating the various workflows, creative strategies (e.g. adaptation, simulation, original ideas) and analytical frameworks associated with writing a computer game script.

Chapter 4 will present a case study illustrating the script development model by means of a hypothetical project making use of the popular Afrikaans youth series, *Fritz Deelman* (Leon Rousseau). The workflows in the model will be followed in order to determine whether it can be successfully implemented in aiding writers to produce a full-scale script for an edutainment computer game based on adaptation as strategy. In this study, however, only a thin-slice script will be produced.

The study will be concluded by discussing the results in order to determine whether the central theoretical statements, research questions and aims can be confirmed. Suggestions with regard to future research in the development of computer games for edutainment purposes will also be proposed.

2 A game development model for computer games

2.1 Introduction

Due to the fact that the traditional approach towards the development of computer games have adapted in such a way, that up to 40 people collaborate in the game development process, an increasing need has developed for the employment of people with the sole responsibility of 'writing' computer games (cf. Brewer, 2002; Bridgett, 2005; Falstein & Fox, 1997; Hyman, 2006; Tyson, 2006). However, from the problem statement in Chapter 1 it is also clear that the position of these emerging game writers, within the context of the overall game development process, is not yet fully understood (cf. Novak, 2005; Brewer, 2002). It therefore seems necessary to find a way to determine the position of the writer within this process. Being able to contextualise the computer game, its creators and players as part of a coherent and structured communication process, can aid in establishing the position of the writer in the greater development process.

Therefore, based on Jakobson's communication model (Issacharoff, 1997), a communication model for computer games will be developed, in order to determine the position of the writer within the computer game 'communication process'. This will be done by means of pursuing a communication model for novels (Issacharoff, 1997; Lothe, 2000), as well as for films (Issacharoff, 1997; Lothe, 2000) to gradually accumulate the necessary features of the computer game communication model. Based on the position of the writer within the computer game communication model, a game development model will subsequently be developed that will illustrate the functions and responsibilities of the writer.

2.2 A communication model for computer games

Various models (Osgood & Schramm, Katz & Lazarsfeld, Shannon & Weaver – according to McGriff, 2001) have been presented to explain the communication process along with its elements. However, the communication model of Roman Jakobson (cf. Issacharoff, 1997; Sonesson, 1995; Lothe, 2000), for purposes of this dissertation, will be sufficient due to its (time-honoured) simplicity and specific applicability (the applicability will become clearer through the course of the discussion). The six constituent elements of Jakobson's communication model will be discussed to clarify the basic process of communication. These elements include: addresser, addressee, context, message, contact and code. These elements will be applied to the computer game and adapted to suit the medium. However, in order to understand how one can move from a basic communication model and eventually apply it to a computer game, it might be necessary to apply the communication model, for the purpose of illustration, to other media as well. Therefore, for purposes of this dissertation the communication model (each time adapted to suit the medium) will be applied to different media, viz. novels (written communication), films (audiovisual communication) and eventually the computer game (interactive communication).

2.2.1 Communication

Communication, according to Nida and Taber (1982:198), is suggested to be "the act of transmitting a message to a receptor; the closer the resemblance between the intent of the sender and the understanding of the receptor, the more effective the communication". Within the different modes of communication (e.g. oral, written, audiovisual and interactive), the basic constituent elements exist in all the modes; however, these elements are adapted to suit each communication process. Simplified, this means that, according to Jakobson's model (Issacharoff, 1997:1), the constituting elements of communi-

cation (i.e. addresser, addressee, context, message, contact and code) all exist within all the communication modes, but applied differently and possessing different functions. Therefore it is first necessary to examine the basic process of communication to establish what the different phases of communication constitute and how the process differs between oral, written, audiovisual and interactive communication (such as computer games).

2.2.2 Jakobson's communication model

Roman Jakobson has had an "outstanding impact on literary theory, especially in semiotics and discourse analysis" (Issacharoff, 1997:1). Apart from this significant contribution, Jakobson has also developed a model for the functions of language. In *Linguistics and Poetics: Closing Statement* (1960), he writes that all acts of communication, be they written or oral, are contingent on six constituent elements (quoted from Issacharoff, 1997:1), as represented in Figure 1.

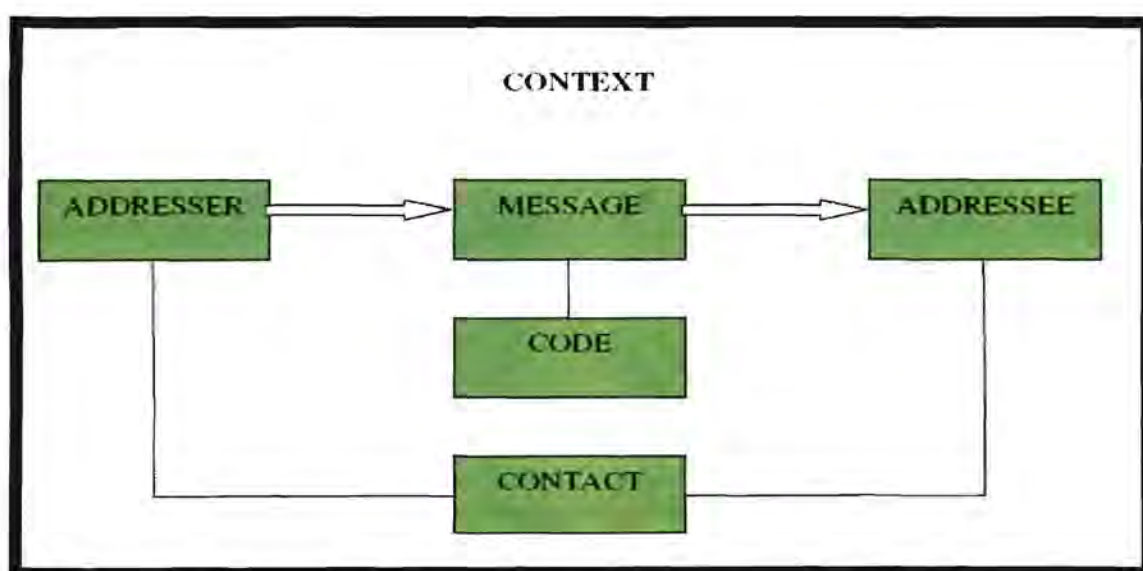


Figure 1. Jakobson's Communication Model (From Issacharoff: 1997: 1)

Simplified, this can be explained in the following manner with reference to oral communication. A *message* is sent by an *addresser* to an *addressee*. An example of this could be when two people are conversing. Person 1 communicates with Person 2. For this to occur, the *addresser* (Person 1) and *addressee* (Person 2) must use a common *code*, for example the English language, and the same *context* for the *message* to be conveyed. Finally, the *message* requires a *contact*: "a physical channel and psychological connection between the *addresser* and the *addressee*, enabling both of them to enter and stay in communication" (Roman Jakobson as quoted by Lothe, 2000: 15:).

Subsequently, Jakobson's model will be applied to novels, in order to add another level to the act of communication: the written word. The written word will in this case be the intermediary step towards applying the communication model to the audiovisual medium of film.

2.2.3 A communication model for novels

When one applies the communication model to the written word, i.e. the novel, the constituting elements (*addresser*, *addressee*, *code*, etc.) are adjusted to suit the elements of the written word. Some of the elements suggested by Lothe (2000:13) include the author, narrator, narrative text, *narratee* and reader. He suggests an adapted model that would fit better into the context of the novel as medium of communication (Lothe, 2000:16). This adapted model can then be 'merged' with Jakobson's model to form the model illustrated in Figure 2. According to Lothe (2000:16) the narrative text, like language, creates meaning indirectly. The narrative text within this context suggests the novel or short story that is read. Within the context of the narrative text, the *addresser* becomes the *historical author*. The *historical author* is the person (man or woman) who writes the *narrative text* (cf. Lothe, 2000; Keen, 2003),

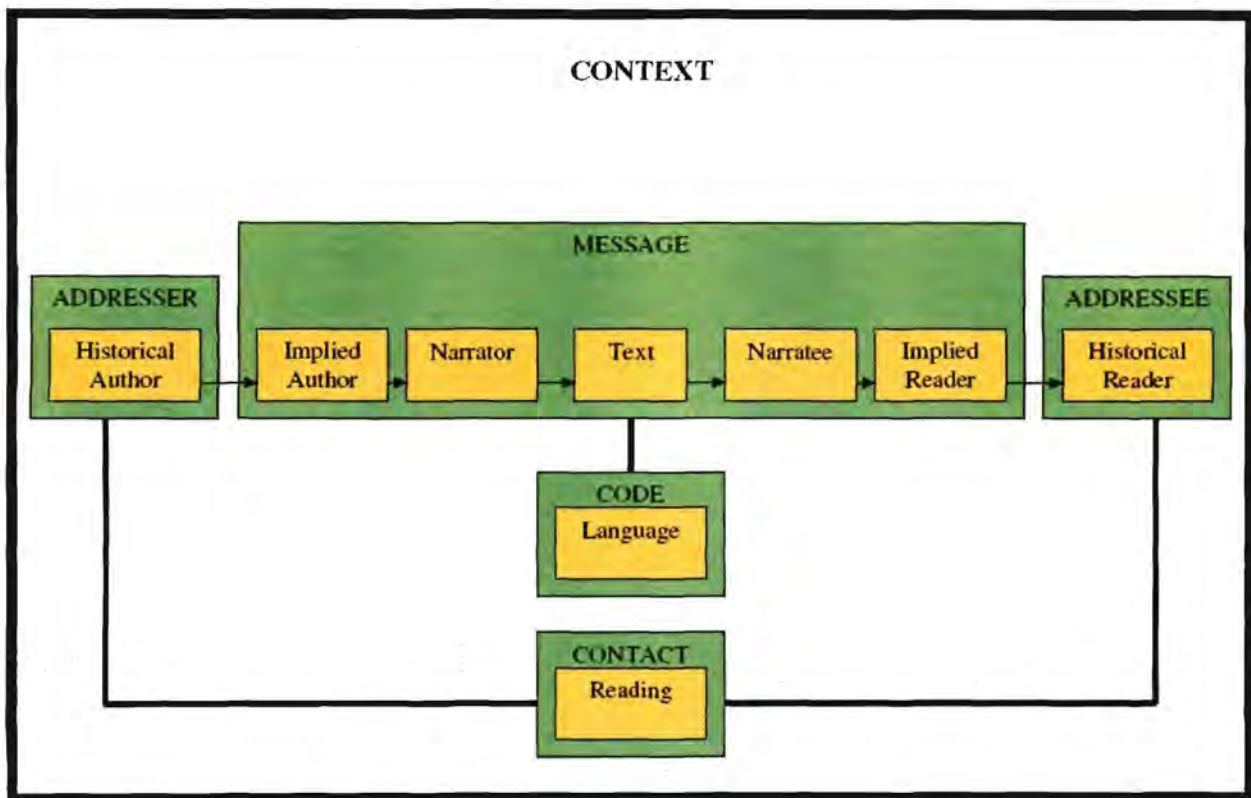


Figure 2. A Communication Model for Novels (adapted from
Lothe (2000: 16) and Issacharoff (1997: 1))

for example, J.K. Rowling who wrote *Harry Potter and the Prisoner of Azkaban* in 1999. The *historical reader*, at the other end of the spectrum, is the man or woman, in present time, or at the time it was published, who reads the novel.

The *implied author*, according to Chatman (1978:148),

unlike the narrator [] can *tell* us nothing. He, or better, *it* has no voice, no direct means of communicating. It instructs us silently, through the design of the whole, with all the voices, by all the means it has chosen to let us learn.

This means that the *implied author* must be seen as a construct, which the reader assembles on the basis of all the textual components (cf. Lothe, 2000). The *implied author* becomes a synonym for the “ideological value system that

the text, indirectly and by combining all its resources, presents and represents" (Lothe, 2000:17). The intent of the *historical author* is therefore suggested by means of the *implied author*.

The *implied reader*, the reader the implied author intended the text for, suggests the reader and his/her experience while reading the *narrative text*. Each reader brings with him/her an entire set of experiences and backgrounds. The concept of *implied reader* can therefore be explained as a construct allowing the *historical reader* to "assemble the meaning of the text" (Lothe, 2000:17) by means of interacting with it.

With regard to the *narrator* and *narratee*, Rimmon-Kenan (1983:88-89) states that the *narrator* is "the agent which at the very least narrates or engages in some activity serving the needs of narration...the *narratee* who is the agent which is at the very least implicitly addressed by the *narrator*".

It is important to distinguish the *narrator* from both the *historical* and *implied authors*. The *narrator* is a part of the *narrative text* as created by the author, to be implemented as an instrument within the text to relate the content of the narrative.

According to Bal (1997:19), the *narrator* "is the most central concept in the analysis of the *narrative text*" (my emphasis). This *narrator* again directs its discourse at the *narratee* (cf. Keen, 2003; Lothe, 2000), who is therefore the recipient of the narrative. The manner in which the *narratee* is addressed by the *narrator*, also tells us a great deal about the *narrator* as created by the author. Take for example the manner in which the *narratee* is addressed in a text such as *Catcher in the Rye* (Salinger, 1951). The *narratee* is explicitly addressed by the *narrator*, Holden Caulfield, who, right from the start, allows the *narratee* to ascertain the level of discourse in the novel:

If you really want to hear about it, the first thing you'll probably want to know is where I was born, and what my lousy childhood was like, and how my parents were occupied and all before they had me... (Salinger, 1951:1).

As illustrated in Figure 2, the *implied author*, *narrator*, *text*, *narratee* and *implied reader* within the context of written communication form part of the *message* of the communication process. They are all contained within the narrative text and communicated by means of a common *code* (the written language). *Contact* is established when the *historical reader* reads and comprehends the text establishing a connection between the *historical author* and *historical reader*.

From the above discussion, it can be seen that the communication of the *narrative text* can be explained by means of an adaptation of Jakobson's communication model. The final step towards a communication model for computer games, would be the application of the model to an audiovisual medium, like film. Although a film does not possess the interactive qualities of a computer game, it does initiate the visual and audio elements absent from the novel.

2.2.4 A communication model for films

To construct a communication model for films, Lothe (2000: 31) suggests a rather complex model. In this model he refers to the author of the script, the producer, the actors and photographers as the 'co-creative' links of the creation process. In the subsequent sections, each of these co-creative links will be discussed with regard to their position in the communication model for films. The model proposed in Figure 3 does not contain all of the elements proposed by Lothe (2000: 31); only the elements having specific bearing on the current research were used to develop a communication model for films. The reason for the omission of some elements as proposed by Lothe, is that the purpose of the current research is not to specifically develop a communication model for films, but rather to use this model to eventually develop a

communication model for computer games. Therefore, only the elements relevant to the eventual communication model for computer games were utilised.

2.2.4.1 *The historical author*

Within the context of films, the *historical author* (i.e. the *addresser*) can be seen as the producer/production company who is responsible for ensuring that all aspects of the production are executed according to budget and time constraints. Even though the director has 'overall responsibility' (Lothe, 2000:31), the producer oversees the production over and above the director and other role-players such as the photographers, editors and actors. The producer/production company therefore is the creator of the film that the *historical viewer* will view.

2.2.4.2 *The implied author*

The *implied author*, according to Lothe (2000:19) "becomes practically a synonym for the ideological value system that the text, indirectly and by combining all its resources, presents and represents". The *implied author* within the context of the film can be separated into two role-players: the director and the screen writer. The director and screen writer work with those parties contained within the concept of *narrator* (Figure 3), i.e. the "resources", as stated by Lothe (2000:19). From this follows that, as with the novel, the *implied author* becomes the person(s) who communicate(s) a certain message, at a certain place and time, to his/her audience. This setup, however, can vary considerably from film to film. In some films (e.g. in Quentin Tarantino's *Pulp Fiction* (1994)), one person is both director and co-screen writer, while in other films, these roles are fulfilled by different people (e.g. in the *Harry Potter* series, Steve Kloves was screen writer of all the films to date, but working with different directors).

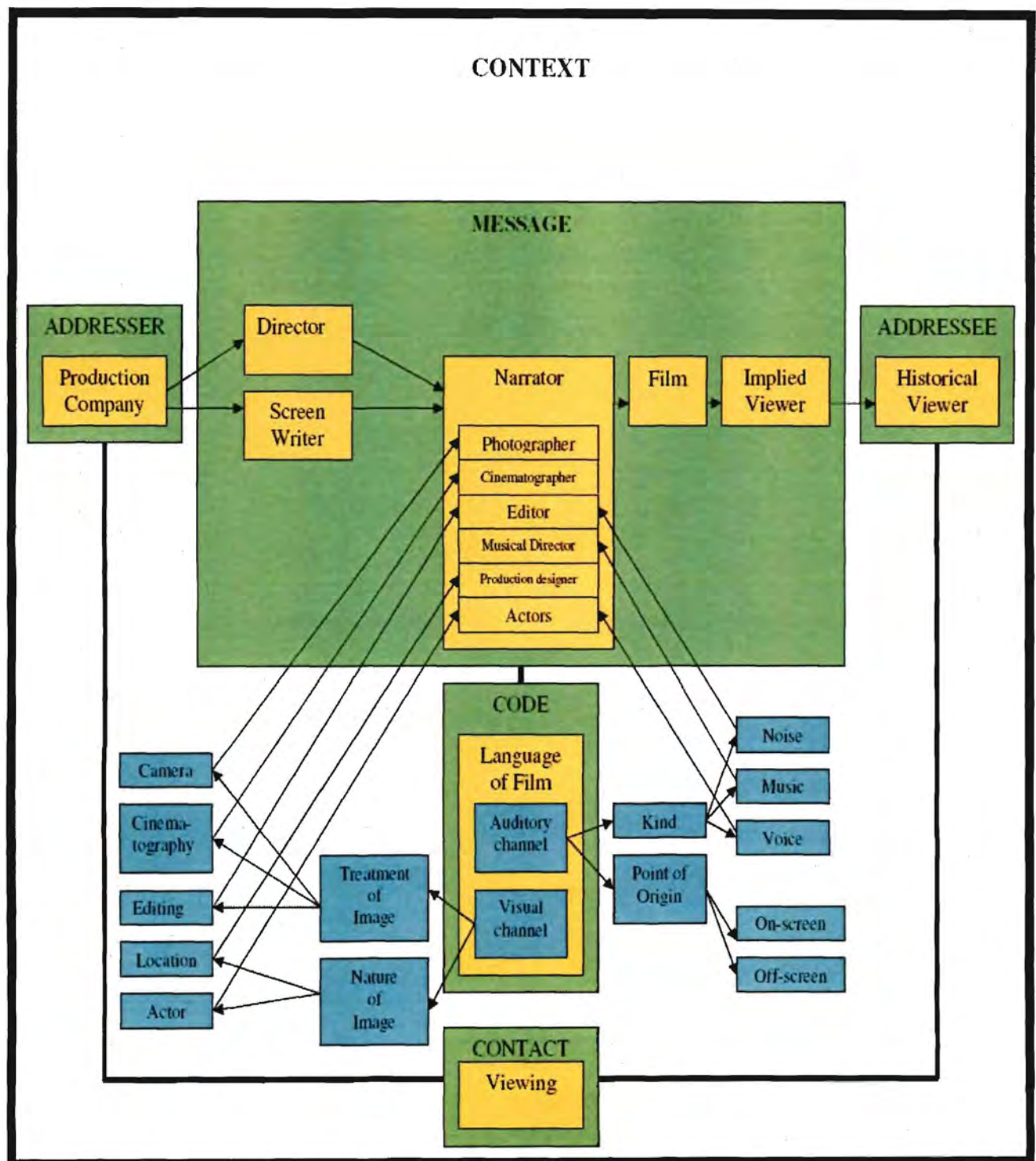


Figure 3. A Communication Model for Films (Adapted from
Issacharoff (1997: 1) and Lothe (2000: 31))

As authors of novels have unique and recognisable styles, so too do the different styles of film directors have visibly unique and observable elements (cf. *Harry Potter and the Philosopher's Stone* (2001) and *Harry Potter and the Chamber of Secrets* (2002), directed by Chris Columbus versus *Harry Potter and the Prisoner of Azkaban* (2004), directed by Alfonso Cuarón, *Harry Potter and the Goblet of Fire* (2005), directed by Mike Newell, and *Harry Potter and the Order of the Phoenix* (2007), directed by David Yates)⁵.

The director and screen writer also have implicit products they incorporate in the process of conveying their message. The screen writer produces a script or screenplay, which is the structural document that contains the following key elements: the description of the characters; the exposition of events, including the conflicts experienced by the characters; the climax of the story; the resolution; and the dialogue (Garrand, 2001). The screenplay consists of scenes and sequences, point of view and the determination of the pace of the film (Garrand, 2001). An example of a film script is provided in Appendix A.

The director, in turn, can make use of storyboards to help with the visualisation of the film prior to filming. Samsel and Wimberley (1998) describe a storyboard as “an outline of a story, scene, event, or program told in a series of sketches, with support documentation that describes all related audio, video, graphics, animation, ... elements”. An example of a film storyboard is provided in Appendix B.

⁵ In a review of *Harry Potter and the Goblet of Fire* (2005), Berardinelli (2005) illustrates the unique and different styles (and according to him the different levels of success) of directing the *Harry Potter* films, when he states:

The best thing to happen to the *Harry Potter* movie franchise was for journeyman director Chris Columbus to step down. After turning out adequate adaptations of J.K. Rowling's *Harry Potter and the Sorcerer's Stone* and *Harry Potter and the Chamber of Secrets*, Columbus was replaced by Alfonso Cuarón for *Harry Potter and the Prisoner of Azkaban*. With the third movie, the *Harry Potter* saga began to take on a legitimate cinematic life of its own. No longer was it content to regurgitate the content of the source novels. Now, with Mike Newell at the helm, *Harry Potter and the Goblet of Fire* proves to be the darkest and most ambitious *Harry Potter* outing to date.

From this it can be deduced that, within the context of a film, the *implied author* (i.e. director and screen writer) is commissioned by the production company to, with the aid of many filmic devices and a team of specialists, put together a film that would satisfy the requirements as set out by the production company.

2.2.4.3 *The historical reader*

The *historical 'readers'* of a film, can be considered the viewers of the film: the man or woman who goes to the cinema or rents a film to watch at home. The *historical viewer* suggests the viewer as he/she watches the film, whether it be when the film is first released, or whether it be 20 years later.

2.2.4.4 *The implied reader*

The *implied reader* (viewer) would therefore, following the model for novels, suggest the person that the director intended the film for. In order to explain the idea of the *implied viewer* of a film, Berardinelli (2001:2) states that Chris Columbus, who directed *Harry Potter and the Philosopher's Stone*, attempted to "appeal to audience members of all ages". This is the first *Harry Potter*-film to be made, and the protagonist is an 11-year old boy. The viewers of the film will be young and old alike, because the film "has the virtue of not talking down to its viewers" (Berardinelli, 2001:2), implying that adult viewers will be as entertained as the younger viewers. Four years later sees the release of *Harry Potter and the Goblet of Fire* (2005). This film, however, has an age restriction of PG13. According to Berardinelli (2005:2), the age restriction is warranted, as the target audience "transitions from something for kids to something for teenagers and young adults". The director remains faithful to the book, and therefore the film contains scenes with violence and frightening images unsuitable for viewers younger than 13. The *implied viewer* for the first film, therefore, includes viewers of all ages; for the fourth film, the *implied viewer* excludes children younger than 13.

2.2.4.5 *The narrator*

The next element of the communication model is the *narrator*. According to Lothe (2000:28) narration is "completely central in film communication", but that there is "no narrator"; he also states that the viewer is seldom aware of an entity resembling a human being telling the story. From this it becomes apparent that a *narrator* as present in the novel, is usually absent from the film medium. As they are considered to be co-creators of the filmic narrative text, one might consider the photographer, cinematographer, editor, musical director, production designer and actors to be the *narrators* of the film: they are devices in the eventual narration of the story. Each of the 'co-narrators' make use of devices specific to their task in order to successfully communicate their *message*. Lothe (2000:30) states that the *implied author* (in this case the director) must 'direct' the *narrators* in such a way that the viewer can successfully "form the film narrator" so that he/she can experience all of them as necessary and thematically productive. This implies that the photographer must successfully make use of the camera to produce shots that would satisfy the visual demands of the viewer; the cinematographer must make optimal use of the lighting, colour and *mise-en-scène* (furniture, costumes, etc.) that will be placed in front of the camera; the editor must establish adequate rhythm, fading, etc. in order for the film to flow successfully; the musical director must be able to establish the tone of the film or scene by means of appropriate musical choices; the production designer must be able to make use of the correct locations and interiors to accurately portray the location the film is set in; the actors must be able to portray their characters convincingly in order for the audience to believe in them.

2.2.4.6 *The code*

The *code* (language) of the film can be divided into the *auditory and visual channels* (Figure 3). The *auditory channel* includes aspects such as the voices of characters (actors), the music as well as any additional sound that

may occur. These elements must all work together in synchrony in order for the communication to be successful.

The auditory element of film is also dependent on the point of origin of the sound, where the sound can either be on-screen or off-screen. On-screen sound suggests sound that is emanated simultaneously with the picture on the screen (an actor on screen speaking with another actor), while off-screen sound can include, for example, a voice-over narrator as in Gabriel Axel's *Babette's Feast* (1988) – "the viewer cannot see the person speaking at the time of hearing her voice" (Lothe, 2000:30).

The *visual channel* of film refers to the nature and treatment of the image as seen on screen (Lothe, 2000:31). Devices that aid in this include the camera, cinematography, editing, location and acting. As discussed earlier, these devices are 'operated' by the different co-narrators of the film (photographer, cinematographer, editor, production designer and actors).

2.2.4.7 *Contact*

Finally, *contact* within the *context* of the film is established when the end product (the film) is viewed by the *historical 'reader'*. This suggests that the communication process from *addresser* (*historical author* – production company) to *addressee* (*historical reader* – viewer) is complete and that communication has been successful.

As the communication model of Jakobson has been succinctly applied to written communication and audiovisual communication, it should now be attempted to apply the model to interactive, multi-media communication (computer games). The communication model in this chapter was developed from a model consisting of six basic elements (*addresser, message, code, contact, context* and *addressee*) to a complex model integrating several elements that together form part of a much more complex method of communication (the

feature film). Being an audio-visual medium, films reveal important correlations with computer games. However, one aspect that makes computer games a unique mode of communication, is the element of interactivity. The subsequent section of this chapter will attempt to present a communication model that will adequately demonstrate the communication process of computer games.

2.2.5 A communication model for computer games

Based on the rather complex model suggested by Lothe (2000) and integrated into Jakobson's communication model, this section will further incorporate the elements involved in the development of a computer game (as suggested by Novak (2005)).

2.2.5.1 *The historical author*

The *historical author* (i.e. the *addresser*) within the context of the computer game can be seen as the executive producer (representing the production company) who is responsible for production management, proposal and prototype management, and project support (Novak, 2005). Differentiation should be made between the executive producer and the producer (who works alongside an associate producer and assistant producer). Even though the producer has 'overall responsibility', the executive producer is in charge of the production over and above the producer and other role-players, usually overseeing multiple projects simultaneously.

2.2.5.2 *The implied author*

The *implied author* within this context is again separated into two role-players: the producer and the writer. The producer and writer work with those parties contained within the concept of *narrator* (Figure 4). From this follows that the *implied author* becomes the person(s) who communicate(s) a certain message, at a certain place and time to his/her audience.

The producer and writer, as with films, also have implicit products they incorporate in the process of conveying their message. The writer produces a computer game script which, appearing to be very similar to that of a film screenplay, is also a structural document containing the following key elements: the description of the characters; the exposition of events, including the conflicts experienced by the characters; the climax of the story; the resolution; and the dialogue (Garrand, 2001). The computer game script does, however, vary from film screenplays in that many variations exist within computer game script. According to Garrand (2001), the major elements of interactive narrative that must be understood by the writer are:

- The role of the player;
- Character development;
- Structure;
- Pace;
- Time; and
- Genres.

He also stresses that the key difference between linear narrative and interactive narrative is interactivity. He quotes Amy Bruckman in saying that: "in making a story non-linear, the story teller relinquishes the power to control the flow of information to the viewer...A balance must be struck between giving the viewer freedom and maintaining narrative coherence" (Garrand, 2001). The characteristics of the computer game script will be discussed in more detail in Chapter 3. An example of a computer game script is provided in Appendix C.

The producer, in turn, can make use of storyboards to help with the visualisation of the project prior to production. Samsel and Wimberley (1998) describe a storyboard as a series of sketches, with support documentation that describes all related audio, video, graphics and animation elements, within the design document (Samsel & Wimberley, 1998). An example of a computer game storyboard is provided in Appendix D.

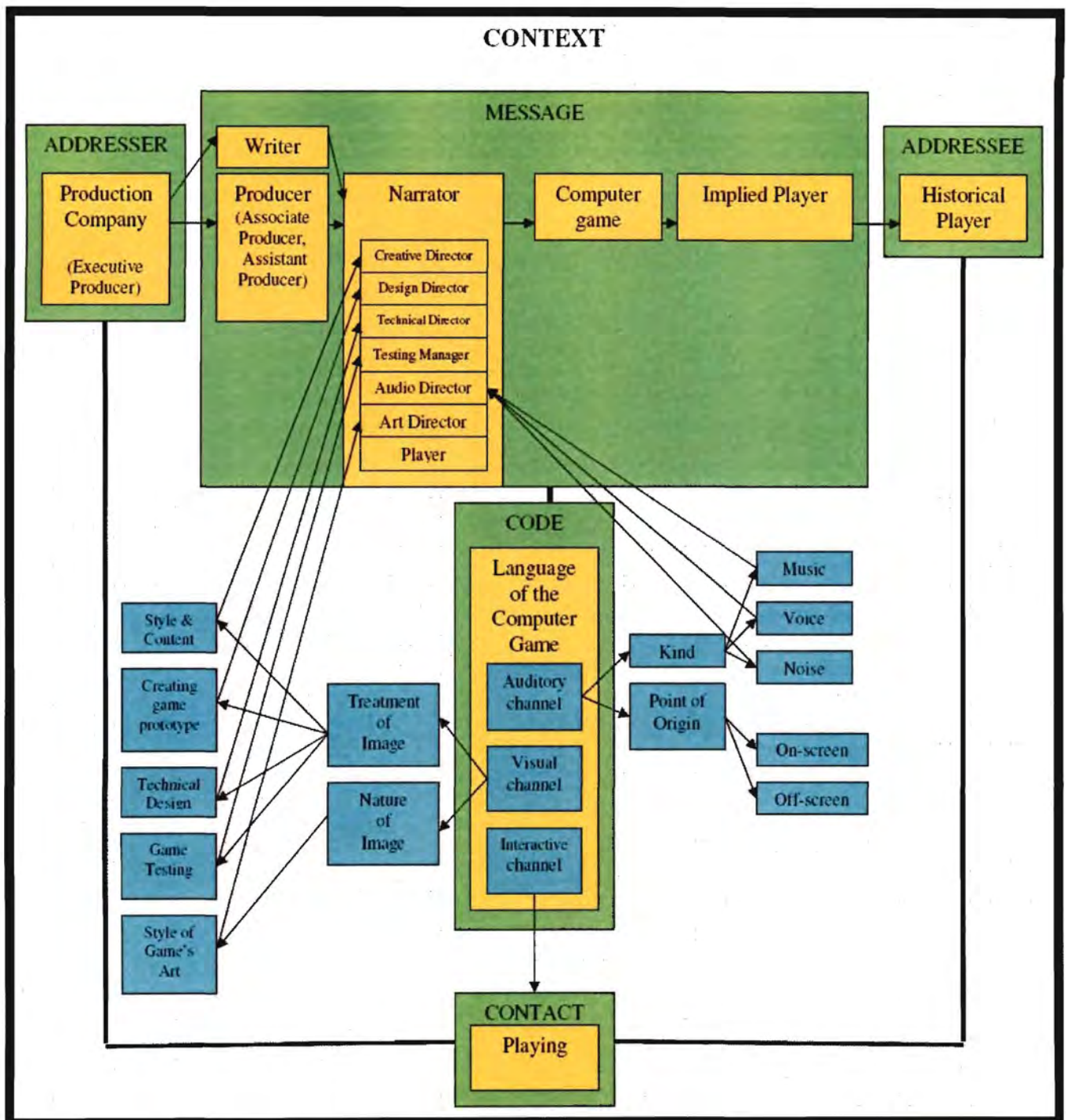


Figure 4. A Communication Model for Computer Games
 (adapted from Issacharoff 1997:1; Lothe, 2000: 31; Novak,
 2005)

Within the context of a computer game, therefore, the *implied author* (i.e. producer and writer) works under instruction of the production company (executive producer), alongside a team of specialists, to produce a computer game that adheres to the specifications as set out by the production company. Within the context of the current research, the emphasis will be on the functions and responsibilities of the writer as *implied author* in the computer game development process.

2.2.5.3 *The historical reader and implied reader*

The *historical 'readers'* of a computer game are the eventual players of the game: the man, woman or child who plays the game in an arcade or at home. The *historical reader* suggests the player as he/she plays the game.

The *implied reader*, following the model for novels and films, would therefore suggest the person that the producer intended the game for. In order to explain the idea of the *implied player* of a computer game, the following two games will be used to illustrate the concept: *Harry Potter and the Philosopher's Stone* (Electronic Arts, Inc., 2002) and *Grand Theft Auto: Vice City* (GTA) (Rockstar Games, 2002-2003). As with the film of the same name, *Harry Potter and the Philosopher's Stone* (2002), the computer game attempts to "appeal to audience members of all ages" (Berardinelli 2001:2). The producer therefore attempts to reach an *implied player* from all age groups. GTA, however, has an age restriction of 18, immediately narrowing the scope of the eventual audience as it contains scenes of extreme violence, sex, nudity and strong language.

2.2.5.4 *The narrator*

The next element of the communication model is the *narrator*. According to Garrand (2001:28) "narrative multimedia involves telling a story using all the

multimedia elements...including the use of many media and interactivity". Again, as with films, it becomes apparent that a *narrator* as present in the novel, is usually absent from the computer game. The co-creators of the computer game, the creative director, design director, technical director, testing manager, audio director, art director, and in this case also the player, can all be viewed as *narrators* of the computer game; devices in the 'narration' of the computer game. Novak (2005) briefly outlines the tasks of each of the 'co-narrators' as follows:

- the creative director ensures that the overall style and game content is consistent with the original vision for the project;
- the design director focuses on staff support, documentation, and guiding the design team in creating a game prototype;
- the technical director creates the technical design for the project, oversees its implementation throughout all phases of production, and selects the tools, hardware, and code standards;
- the testing manager is in charge of testing the game before its release to determine whether or not the game is playable;
- the audio director is responsible for managing the audio department and ensuring that the audio assets get properly incorporated into the game; and
- the art director directs the style of the game's art and also improves the process, quality and productivity of art development throughout the company.

The player of a computer game is also included in the 'collective' narrator of the computer game. This suggests one of the main differences between films and the computer game, namely interactivity. In computer games, unlike films, the player is not only the *addressee* (*historical reader*) of the *message*, but also fulfils the role of *narrator*. The player in a computer game has "significant control over the characters" (Garrand, 2001), as well as control, to a certain degree, over the action. According to Novak (2005:129) the player

has “the ability to manipulate the game in some way – in sharp contrast to an audience watching a movie or a television show. The game's story can change based on who's playing the game. In this way, players can be story-tellers in games – something they cannot do in books and movies”.

2.2.5.5 *The code*

The *code* (language) of the computer game can also be divided into *auditory*- and *visual channels* (Figure 4). The *auditory channel* includes aspects such as the voices of characters (voice-over artists), the music (a composer is hired to write the musical score for the game (Novak, 2005)), as well as any additional sound effects and ambient sound in the game (Novak, 2005). It is the job of the audio director to ensure that all these elements work together in synthesis. As in films, the auditory element of computer games is also dependent on the point of origin of the sound. The sound can either be on-screen or off-screen, where on-screen sound suggests sounds that can be heard by the player simultaneously along with actions visible on screen. This includes, for example, characters speaking to one another, or cars crashing into one another. Off-screen sound can include, for example, an off-screen narrator (*The Lord of the Rings: The third age* (Electronic Arts, Inc., 2004) – where the voice of Gandalf guides the player through cut scenes without being present on screen).

The *visual channel* of computer games refers to the nature and treatment of the image as seen on screen (Lothe, 2000:31). This includes the treatment of the game's style and content, creating the game prototype, overseeing the technical design, testing the playability of the game and determining the style of the game's art. These functions are fulfilled by the different teams under supervision of the mentioned directors and managers.

2.2.5.6 *Contact*

Contact within the *context* of the computer game is established when the end product (the computer game) is played by the *historical* 'reader'. The communication process is complete when the product intended by the *addresser* (*historical author* – executive producer) is played by the *addressee* (*historical reader* – player) in an interactive process.

Player interactivity in computer games distinguishes computer games from the other media that were discussed. Interactivity suggests that "the user can control the presentation of information or story material on the computer" (Garrand, 2001:4), thus implying that the player becomes part of the narrative. Samsel and Wimberley (1998:6) suggest that it is the player's "desire to participate that gives interactive writers a space to create, which is different from the place provided by novels or plays or films". It can therefore be stated that *contact* has been successfully established when a player can effectively participate in the narration of the game.

Successful *contact* in computer games also relies on certain interactive devices (part of the *code*) available to the computer game writer. These interactive devices rely on the player to make certain inputs that will lead to associated outputs. Garrand (2001) mentions, among others, icons, option menus, props and additional characters as ways for players to interact with the game. Menus, for instance, give players certain input options immediately providing the player with choice and resultantly freedom and interactivity. Whatever the player chooses on such an option menu immediately results in the output of the choice affecting the course of the game.

2.2.6 Concluding remarks: Communication model for computer games

This section set out to establish whether a communication model for computer games can in fact be proposed. Starting from the six basic elements of

Jakobson's communication model, elements suggested by Lothe (2000) for the written communication process were implemented into a communication model for novels. This model was further developed to explain the communication process that takes place in films, incorporating a more complex set of elements pertaining to the audio-visual character of film, into the existing model. Finally the model for films was adapted to suit the interactive medium of computer games, illustrating, among others, considerations the writer has to keep in mind when writing a script for a computer game, especially aspects pertaining to the role of the player, who, within computer games fulfils the role of both *addressee* and *narrator*, as well as the element of interactivity that distinguishes the computer game from the other methods of communication that were discussed.

2.3 A Game Development Model for Computer Games

From the discussion above, it is possible to illustrate the position of the writer of a computer game within the collaborative game production process. The writer takes on the role of the *implied author* within the process, along with the game's producer, suggesting that the writer becomes the person who communicates a certain message, at a certain place and time, to his/her audience.

The next step towards developing a script development model for computer games is to establish what the functions and responsibilities of the various role players are, and more specifically within the context of this study, those of the writer. These functions and responsibilities can be broken down into 'workflows' (term taken from Schach, 2005:45), resulting in a **game development model** for computer games.

In their document *Game Production Process: A preliminary study*, Manninen *et al.* (2006) state that there does not seem to be a single game development

model. They therefore propose a model for the game development process in which each of the phases in game development is carefully highlighted and discussed.

One aspect, however, that is not clear from their model, is who is responsible for what. The different phases are discussed in detail, but it is not clear what the functions and responsibilities of each of the role players within the development process are. They do, however, allude to the different role players, but the emphasis of their model is more on the phases in the game development process.

In her book *Game Development Essentials* (2005), Jeanne Novak provides descriptions of the role players involved in the game development process. She highlights who these role players are, as well as the tasks associated with their different roles, but does not definitively state the phases these role players are specifically involved in.

In the following two sections I am going to discuss and elaborate on these two models in terms of:

- The Unified Process (Schach, 2005), and
- The Framework for Systems Analysis (Whitten *et al.*, 2004).

These two software engineering models will not be discussed in detail, since the focus of this dissertation is on the role and function of the writer, rather than on a wide-ranging discussion of development models. Rather, I will discuss these models cursorily to indicate how the models of Manninen *et al.* (2006) and Novak (2005) can be refined to better understand the role and functions of the of the writer. The Unified process (Schach, 2005) will be used to elaborate on the model of Manninen *et al.* (2006) with regard to the workflows and phases of the game development process. Similarly, the Framework for systems analysis by Whitten *et al.* (2004) will be used to

elaborate on the model of Novak (2005) with regard to the role players involved in the game development process.

The relevance of the models by Schach (2005) and Whitten *et al.* (2004) for the current research can be summarised as follows:

- both models are relatively recent;
- both models are widely accepted (prescribed text books);
- both models are relatively straight-forward (simplicity); and
- both models are applicable to the research (as will be seen through the course of the research).

2.3.1. The workflows and phases of the game development process

In order to better understand the workflows and phases associated with the game development process, it is necessary to understand the broader software development process. Therefore the Unified Process (Schach, 2005) will be discussed with regard to the workflows and phases that are present in software production. The game development model developed by Manninen, *et al.* (2006) will then be discussed to establish the phases and workflows that are specifically associated with the game development process, which can then be placed within the broader software development framework.

2.3.1.1 *The Unified Process*

According to Schach (2005:66) the Unified Process is an adaptable methodology that can be modified for the specific software product to be developed. The Unified Process also consists of specific workflows and phases that apply to the software development process.

2.3.1.1.1 *The workflows of the Unified Process*

The Unified Process methodology is an object-oriented approach that makes use of iteration and incrementation, breaking down each workflow into a number of steps (Schach, 2005). Each of the steps within a particular workflow is repeatedly performed until the role-players within the development process are satisfied that they have an accurate model for the product to be developed. The reason for the iterative and incremental approach, as stated by Schach (2005), is that it is impossible to consider all aspects pertaining to software development at once, and therefore only a few units of information

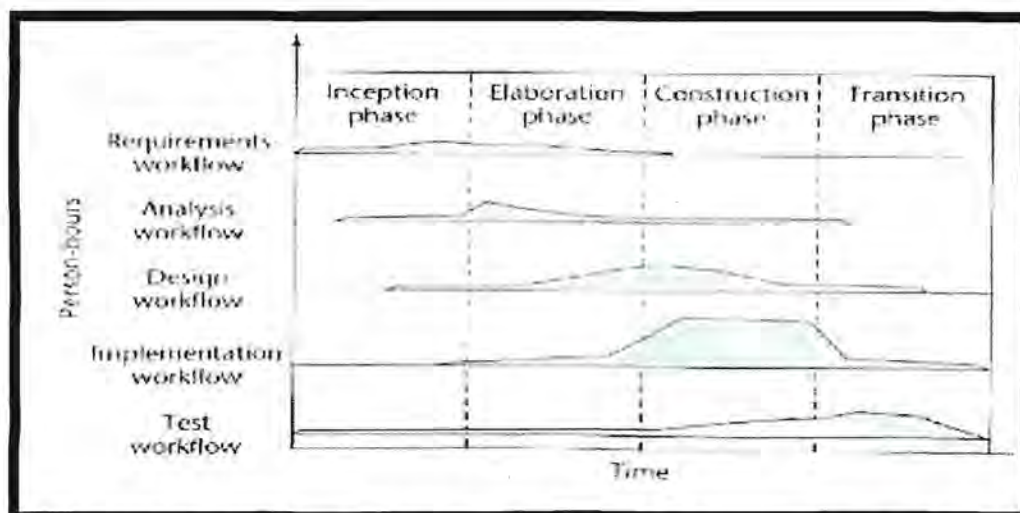


Figure 5: The core workflows and phases of the Unified Process, taken from Schach (2005:78).

are handled initially, growing in number as knowledge of the software to be developed is gained. This process is repeated until the software engineers are satisfied with the workflows associated with the development process.

The Unified Process as suggested by Schach (2005) consists of five core workflows (Figure 5), namely:

- the requirements workflow;
- the analysis workflow;

- the design workflow;
- the implementation workflow; and
- the test workflow.

▪ **The requirements workflow**

The aim of the requirements workflow, according to Schach (2005:68) is for the “development organisation to determine the client’s needs”. This entails for the development team having to form an understanding of the domain or environment the software will be applied to. During the requirements workflow, the client and developers meet in order for the client to indicate how he/she conceptualises the product to be developed. Constraints that should be considered are: deadlines, reliability and cost. If the requirements workflow is performed adequately, the client and development team will have, as output for this workflow, a refined and analysed business model. However, the refinement and analysis of the business model often continue throughout subsequent workflows.

For purposes of this research, the assumption will be maintained that the software to be developed will be an educational computer game. Another assumption that will be made throughout is that sufficient funding is available for the development to proceed to the end. This is done because software development is very costly, and is nearly always a constraint (Schach, 2005:69); however, for purposes of this research, the emphasis is on the development of a script development model, and not on an elaborate discussion of software development risk analysis.

• **The analysis workflow**

During the analysis workflow, the requirements as set out by the client are further refined and analysed to gain a clear understanding of the software product to be developed (Schach, 2005:70). It would appear as though the analysis workflow is redundant and that the requirements workflow could merely be

further refined and analysed. However, the main purpose of the analysis workflow is for the development team to further detail the requirements workflow output document, in a 'language' more understandable to the developers, and not necessarily to the client. One implication to consider in this regard is the fact that the specifications and requirements of the product will be contractually binding; therefore it is important for the specifications to be precise, so as to not lead to eventual legal action. The three pitfalls with regard to the output document of the analysis workflow, as stipulated by Schach (2005), are ambiguity, incompleteness and contradictions. The client and development team therefore need to 'sign off' on the specifications document before development can commence.

Another output associated with this workflow is assembling the appropriate personnel to the remainder of the workflows (Schach, 2005:71). Therefore, as soon as the document has been approved, the developers can prepare a software project management plan (SPMP) (Schach, 2005:72). The major components of the SPMP are the deliverables, milestones and budget. The SPMP also include finer detail such as the organisational structure, project responsibilities and priorities, resource allocation as well as schedules.

- **The design workflow**

The output associated with the design workflow, is to determine the *how* of the software product development (Schach, 2005:72). The outputs associated with the analysis workflow are refined until the material can be presented to the programmer in such a way that it can be implemented. The product is broken down into what Schach (2005) refers to as modules, independent pieces of code with well-defined interfaces to the rest of the product. The breaking down into models (architectural design) is followed by detailed design, in which the design team must keep proper record of design decisions. This detailed record is important with regard to iteration, should decisions be changed, as well as with regard to future possible changes.

- **The implementation workflow**

The main aim of this workflow is to implement the target software product in the chosen implementation languages (Schach, 2005:73). The implementation is usually executed by systems developers and programmers, who are provided only with the detailed design document. The outcome associated with this workflow is therefore coded artefacts that have been implemented.

- **The test workflow**

Testing as workflow, according to Schach (2005:74) is carried out throughout the development process, from inception onwards. It can therefore be stated that testing can be applied to the:

- requirements artefacts;
- analysis artefacts;
- design artefacts; and
- implementation artefacts.

As soon as the developers are satisfied with the testing results, the product is handed over to the client who will test it on the actual hardware it was intended for. Even if the client is satisfied with the product, the development team must be aware of the inevitability of *post-delivery maintenance*. This aspect of software development should be planned from the beginning of the project, as well as budgeted for. The development team should also keep a record of all changes made, as well as the reasons for the changes.

The final stage of the development cycle is *retirement*. Retirement occurs either when a product is replaced by a new version, or when a product has outgrown its usefulness (true retirement)(Schach, 2005:78). True retirement occurs when the client no longer sees a need for the use of the product.

Seeing as game development is a software development process, the game development process consists of the same workflows as the software engineering process. However, with regard to the phases of the game development process, there are certain shifts in emphasis, as well as certain aspects that are additional to the software engineering process. Therefore, the phases of the Unified Process will be discussed, followed by the Game Production Process as suggested by Manninen *et al.* (2006), at which time it will be indicated where the two sets of phases correspond and where they differ. This is done to present a model for the phases of the game development process based on the model suggested by Schach (2005)(see Figure 5).

2.3.1.1.2 *The phases of the Unified Process*

According to Schach (2005:78-79), in general, there are four phases (increments) associated with the development of a software product (see Figure 5), namely:

- the inception phase;
- the elaboration phase;
- the construction phase; and
- the transition phase.

Each of these phases has an associated deliverable or artefact that should be completed at the end of the phase. Each step within the software development process falls into both a workflow and a phase (increment). The differences in these two points of view are considered with regard to the technical context and the economic context. The workflows have to do with the technical specifications, whereas the phases deal more with the economic implications (Schach, 2005:79).

▪ **The inception phase**

The outcome associated with the inception phase is the determination of whether the product to be developed is economically viable. As stated in

2.3.1.1.1, two steps of the requirements workflow include understanding the domain and building a business model. The developers, however, cannot build a business model if they do not first understand the domain the software will be developed for. Therefore the first outcome they have to achieve in the inception phase is to gain knowledge and insight into the domain. Secondly, they should also understand the position of the client in this domain. Thirdly, the developers need to delimit the scope of the proposed project according to their understanding of the domain and the client's position in the domain (Schach, 2005:79).

In order to build the business model, the developers need to answer the following questions:

- Is the proposed project cost effective?
- Can the project be completed within the timeframe?
- What are the associated risks involved in continuing with the project?

As can be seen in Figure 5, the other workflows are also reflected in the inception phase. However, the scope of the current research does not allow a more in-depth discussion of this aspect. The two most important things to note, however, are 1) all of the workflows feature in all of the different phases (with the exception of the requirements workflow in the transition phase) and 2) planning and proper documenting are essential to the successful completion of the inception phase, where the outcome is an initial version of the business model.

- **The elaboration phase**

The aim of this phase is the refinement of the initial requirements, the architecture, the business case, monitor the risks and refine their priorities and produce the software project management plan (Schach, 2005:81). The major workflows associated with this phase, are the requirements-, analysis- and

design workflows. As its name suggests, the elaboration phase focuses on the elaboration on and refinement of all previous models (domain- and business), artefacts (requirements- and analysis), architecture, list of risks and the SPMP resulting in a completed business case (Schach, 2005:81). These are the deliverables of this phase.

- **The construction phase**

The aim of the construction phase is to produce a beta-release⁶ of the software product. The main focus of this phase, as seen in Figure 5, is the implementation and testing of the product. The various components are coded and tested, after which they are compiled into subsystems, tested again and finally combined into the overall system (Schach, 2005:82). The deliverables, according to Schach (2005), associated with this phase are:

- initial user manual;
- all artefacts;
- completed architecture;
- updated risk list;
- SPMP; and
- updated business model.

- **The transition phase**

The deliverables associated with this phase are 1) all the artefacts in their final versions, and 2) the completed manuals (Schach, 2005:83). This can only be released once the developers are certain that all of the client's requirements have been met. Feedback from beta-testing is the main driving force behind this phase.

⁶ The first operational-quality version of the software product (Schach, 2005:82).

2.3.1.2 *The Game Production Process according to Manninen et al.*

According to Manninen *et al.* (2006) there seems to be no single game production model, stating that the industry is still very heterogeneous in terms of game design and development. They therefore set out to illustrate a generic production model based on games literature and industry surveys. In their report, they clearly highlight in great detail the different phases associated with the game development process. This section will discuss these phases, as well as attempt to integrate them into the Unified Process model by Schach (2005). The purpose of this approach is to place the game development process into the context of the more general software development process, to clearly illustrate how the game development phases are related to software development. As soon as these phases have been accurately determined and described, it will make it easier to define the functions and responsibilities of the different role players in the game development process; and ultimately the functions and responsibilities of the computer game writer.

According to Manninen *et al.* (2006) the game development process can be broken down into the following phases:

2.3.1.2.1 *Game concept*

According to Manninen *et al.* (2006), this phase involves the initial steps towards creating the idea of the game. The tasks associated with this phase include getting and refining an idea for the game to be developed. Therefore, the main outcome or milestone for this phase is a synopsis that need not contain all relevant information, but should provide a clear understanding of what the game is about. Referring to the Unified Process model (Schach, 2005), the game concept phase of Manninen *et al.* (2006) fits into the Inception phase of the Unified Process, seeing as both deal with creating a clear understanding of the domain (in this instance, it would be computer game development). The subdivisions of this phase will be discussed in short, and each subdivision's associated further divisions will be provided in bulleted

lists, except where a concept needs to be explained within the context of this research. At the end of each bulleted discussion, the workflow or milestone will be provided in **boldface**.

- Idea treatment: This phase suggests getting the **idea**, which, according to Manninen, *et al.* (2006:20), is the most persistent entity in the game development cycle. This idea, according to the authors, can evolve and develop as the development progresses, but it is there from the start. Idea treatment can be further subdivided into the following steps:
 - *inspiration;*
 - *synthesis;*
 - *resonance;* and
 - *convergence.*
- Synopsis (Pitching): This step aims at expressing the fundamental spirit of the game (Manninen *et al.*, 2006:21), and serves to convince stakeholders of the game's viability. The **synopsis** should be concise (2-4 pages), containing only the key elements of the game concept. The steps associated with the writing of the synopsis are:
 - *overall direction and description phase;*
 - *rationale and preliminary market analysis;*
 - *target audience decisions;*
 - *treatment plans;* and
 - *key idea focusing.*
- Initial game design: The purpose of this phase is to develop an **initial game design document** (game treatment) that can be used as an illustrative and easy-to-access document for presenting the game to stakeholders. Developing this document suggests the following steps:

- *synopsis refinement and expansion; and*
 - *brief design document.*
- Initial concept art design: Itself not a document, these **rough sketches and concept sketches**, will convey the visual appearance and aesthetics of the game, in order for the game developers to share in the vision of the game idea. These sketches also add great value to the game designer's written documentation. These two sets of sketches can be categorised as follows:
- *early sketching; and*
 - *concept art catalogue.*
- Initial prototyping or concept demo construction: To further add value to the portfolio of documentation and sketches, it is necessary to create a "more concrete proof of concept" (Manninen, *et al.*, 2006:23), due to the fact that games create an interactive experience. This is done by means of developing **physical prototypes, game element mock-ups** and a **playable demo**. This phase takes place in these two steps:
- *low-tech prototyping; and*
 - *concept demo.*

2.3.1.2.2 *Pre-production*

According to Manninen *et al.* (2006:24), the pre-production phase is the most important stage of the project, and requires careful planning. They state that proper pre-production entails the distillation of all the game's requirements, an analysis stage to determine the implications of these requirements, a culling state to meet the business parameters, as well as a detailed game, art, audio, and technical design to detail the requirements. These aspects should be carefully planned due to the high costs involved in such multidisciplinary development. If all aspects are executed properly, the development team will

have sufficient information to deliver a completed version of the **business plan**. This phase therefore adheres to what Schach (2005) determined in the Elaboration phase when referring to the refinement, updating and completion of the project documentation. In the game development context, it also suggests the delivery of a playable **demo**⁷ (prototype) of the game. The subdivisions of the pre-production phase will now be discussed in short.

- Premise refinement: Developing an overarching **premise**, gives context to the formal elements of the game, creating engagement (Manninen *et al.*, 2006:24). The premise should contain the overall theme of the game, providing an extensive set of design material, establishing the action of the game within a setting or a metaphor. The two steps in this premise refinement phase are:
 - *theme research*; and
 - *thematic adaptation*.

- Market and competition analysis: Due to the fact that games do not exist in a vacuum, according to Manninen *et al.*, (2006:25), game developers should study and analyse the market thoroughly in order to get to know the audience. The **data and analyses** gathered by such research should guide design decisions, resource allocation and other aspects of the production. The two associated steps in this phase are:
 - *requirements gathering*; and
 - *comparative analysis of competing products*.

- Revised production plan documents: The **set of production plan documents** is developed in order to know and understand what will be done during the project. This phase includes as-

⁷ This demo is a further refinement of the demo mentioned in 2.3.1.2.1.

pects such as project planning and management issues, technological specifications and quality assurance plans. Where applicable, these documents can be distributed to the stakeholders. The different documents to be revised and finalised include the:

- *vision document (concept document);*
 - *game design document;*
 - *art design document;*
 - *technical design document;*
 - *project schedule;*
 - *risk mitigation plan; and*
 - *software testing plan / Quality assurance.*
- Pre-visualisation: Adapted from the film industry, the aim of the pre-visualisation task is to create elementary, simple and draft-like visual scenes portraying parts of the game (Manninen *et al.*, 2006:27). These can include **sketches, images, animations, mock-ups or interactive walkthroughs of the game**, enabling stakeholders to form a concrete idea of the game, before being fully functional. This phase can either be executed in stead of the demo development (see next bullet), or supplementary to it.
 - Demo/prototype development: The **demo or prototype** is a partially completed (preliminary) version of the game, showcasing some of the core features of the game (Manninen *et al.*, 2006:27). Demos can also be used to obtain funding for the development of the full game, seeing as it is more enticing than a proposal delivered in only paper format. Manninen *et al.*, (2006:27) stress that it is important to distinguish between the pre-production game demo and the marketing game demo used to promote the forthcoming title to the client.

- **Tool development:** Before the fully-fledged production can commence, the necessary **tools** should be prepared for the production team. These tools include audiovisual asset creation tools, level editing tools and quality assurance and testing tools (Manninen *et al.*, 2006:27). The lead programmer or specific tool development team create these tools.
- **Manuscript authoring:** According to Manninen *et al.* (2006:28) the process of manuscript authoring is the phase where all the narrative and verbal assets of the game are created, where a narrative analysis and design is conducted to define the game's structures and components. The outcomes associated with this process include the **dialogue**, **menu texts** and **thematic references**. The premise for such a narrative was determined in the design documents; however, the authoring task continues well into the production phase. Within the context of this research, this phase will become the most important one, in as far as determining exactly during which phases the writer will be involved and to what extent. This will become clearer during the course of the subsequent discussions.

2.3.1.2.3 *Production*

During this phase, the resources of the development team are utilised to a maximum. According to Manninen *et al.* (2006:28) the main tasks during the production phase are the various asset creation tasks, but a great deal of play testing and project management also take place. Referring to Schach's model (Figure 5), the construction phase's (2.3.1.1.2) main focus is the implementation and testing of the product being developed. Therefore, in the model of Manninen *et al.* (2006), both the production and quality assurance phases can fall into Schach's construction phase (Schach, 2005).

Aspects associated with the production phase include:

- *Concept art*

During the pre-production phase, the preliminary versions of the concept art have already been developed. These preliminary versions therefore need to be finalised, authorised and frozen, being used as reference and official working material for the two- and three-dimensional design and modelling tasks. The different outcomes of this process are:

- ***final concept art;***
- ***clay models; and***
- ***blueprints.***

- *Level design*

This phase includes planning and integrating various two- and three-dimensional objects that will form the game level. Structures and elements needed to create the game world are placed into their respective locations, and the lighting and other characteristics of the game level are arranged. Within this phase the 3D-artist provides the level designer with material, with which the level designer then works within the scope of the game level (Manninen *et al.*, 2006:29). The main objectives and tasks within level design are:

- ***level geometry;***
- ***object and actor placement; and***
- ***lighting.***

- *3D-design*

If the game contains three-dimensional aspects, the 3D-artists start working after the final concepts and blueprints have been finished. These artists then create **3D-models** that form the objects of the game world (Manninen *et al.*, 2006:30). The categories of deliverables within 3D-design are:

- ***static objects;***

- **dynamic objects; and**
- **effects.**

○ *Animation*

The animator makes use of some form of animation to present all movements within the game world; all the static elements in the game, like level geometry and objects, as well as player-controlled movement are brought to life using the best suitable type of animation available (Manninen *et al.*, 2006:30). The best way therefore to describe the outcome or deliverable of this phase, would be an **animated and alive game world**. There are three places where animations mostly occur, namely:

- *in-game animations;*
- *cut-scenes and full-motion video (FMV); and*
- *effects.*

○ *Textures and graphics*

The designers within this development phase are usually 2D-artists who paint the game world according to the guidelines stipulated by the concept art design (Manninen *et al.*, 2006:31). The outcome of these artists' work suggests a **well-defined and textured object**. There are different groups of 2D-artists that serve different purposes, both functional and decorative, namely:

- *menu and heads up display graphics (HUD-graphics);*
- *skins – textures for 3D-models; and*
- *textures for game levels.*

○ *Audio design*

This phase involves producing all the sounds and audio facets contained within the game (Manninen *et al.*, 2006:32). Included in these facets are the **music, menu sounds, in-game sound**

effects and **voice-over dialogue**. The different types of sound groups include:

- *menu and background sounds and music;*
- *level, character, vehicle and item sound effects; and*
- *speech effects.*

○ *Programme code*

As one of the most integral parts of game development, the programme code binds the whole game together (Manninen *et al.*, 2006:32). The programming is also a continuous process from start to finish that can also be conducted on various levels of detail. According to Manninen *et al.* (2006:32), the ultimate aim is the development of the structure and dynamics of the game. The milestone associated with this phase is then ultimately **source code**.

○ *Play testing*

As with programming, play testing should be integrated into the entire development process, as it is a continuous form of assessment, analysis and validation of the playability of the game. Very important to note is the fact that, according to Manninen *et al.* (2006:33), play testing is different from traditional software testing as it generally targets elements that are difficult to describe in terms of measurable outcomes. The outcomes could therefore be described as **user experience**, **user satisfaction** and **usability**. The aspects associated with play testing are:

- *bug-hunting and prioritisation; and*
- *reporting*

2.3.1.2.4 Quality assurance

The quality of the final product is at the root of the production process; therefore, quality assurance should be conducted throughout the development

process, making the most of the available resources (Manninen *et al.*, 2006:34). As mentioned in 2.3.1.2.3, the quality assurance phase corresponds to Schach's construction phase (Schach, 2005). Unlike play testing, during the quality assurance phase, there are more measurable criteria:

- *Final testing / system testing*

According to Manninen *et al.* (2006:34), software testing of the game development process is similar to traditional software engineering testing. Software testing (formal or informal) within the game development process is different than play testing, and refers to the **testing of the code**.

- *Alpha and Beta testing:* **Alpha testing** takes place when the game is feature complete – all the planned and designed features are in place and integrated. **Beta testing** takes place when the programme is said to be bug-free, and can be conducted on an open or closed basis, with a full or partial game being tested. It is accepted that the product sent for beta testing is considered ready for launch.
- *Bug fixes:* After a game has been tested, **a list of errors** found in the game is compiled. These errors are prioritised, resources assigned to them and corrected. Care should be taken to not create new errors (bugs) while fixing the identified bugs.

2.3.1.2.5 Release

Considered to be the climax of the production process, the aim of the developers is to deliver a finalised game to the publishers (Manninen *et al.*, 2006:35). This phase corresponds directly to the transition phase in Schach's model (Schach, 2005), suggesting the delivery of all artefacts in their final versions. Even though one of the last phases, the release phase can require many resources. The outcomes and milestones associated with the phase can be summarised under the following bullets:

- *Master Gold:* The ultimate outcome in this instance is having a **final version of the game ready for distribution**. Here the in-

cremental portions of the game are frozen in order to retain the balance and stability of the game.

- *User documents:* These documents include **installation guidelines, readme-files, manuals and help-files** and should be developed throughout the development process. The game design document and other documents developed through the project should provide useful information for these documents.
- *Distribution:* This phase relates to **marketing material** as well as **game demos**. The publisher is responsible for the marketing, while the developer provides playable demos to support the marketing process. This phase can commence before the game is completed.
- *Support services:* These services relate to various **technical support procedures** relying on the developers' knowledge.
- *Localisation, porting:* Localisation and porting suggest **adapting the game** to suit different market areas and technological platforms. Aspects that might need to be adapted include text, speech and user interface symbols. Some aspects of localisation should be considered early on in the development process, to ensure that resources for such changes are available.

2.3.1.2.6 Post-release

Although the developers are not responsible for all aspects of post-release, some issues need to be addressed by the game developers.

- *Patches:* **Patches** are post-release correction packages fixing the bugs that were not identified during the final testing phase. Ideally, there should not be a need to develop patches after the game has been released.
- *Upgrades and add-ons:* To increase the lifespan of a game, sometimes it is required of the game developers to produce **new content** for the game that can either be made available freely or sold separately.

- *Public Relation*: **Public relations and marketing** are important aspects in the game industry. Sometimes developers are even asked to participate in marketing events to promote the game or brand.
- *Community*: The game community can be divided into the players, requiring constant **attention and nurturing**, while in turn providing the developers with valuable information on the needs of the target audience. The professional community include people from the game industry who share their **experiences and trade secrets**.

Although not directly correlated with the transition phase of Schach (2005), the post-release phase suggested by Manninen *et al.* (2006) could be seen as part of this phase along with the release phase.

Based on the discussion above, it is now possible to present a visual representation of the core workflows and phases of the game development process (Figure 6). Figure 6 illustrates how the two models discussed in 2.3.1 have been merged into one model; a model that bases the game production process of Manninen *et al.* (2006) on the workflows and phases of the software development cycle as illustrated by the Unified process of Schach (2005).

The 'person hours' referred to in the y-axis of the model indicates the number of hours spent on a particular phase in the process. These hours include, in this instance, the cumulative hours from all role players involved in the specific workflow. It is also important to note that the 'person hours' is a relative estimation, and could vary from project to project. The 'time' as presented in the x-axis of the model, refers to the timeline (from inception to completion) of the entire game development process.

Within the game concept and pre-production phases of Figure 6, it is clear that there are significantly more hours spent on the requirements and analysis workflows than on the Inception and Elaboration phases of the Unified process for software development. In the Unified process, the developers need to determine the economic viability of the project, understand the domain of the project, as well as build a business model. No concrete development takes place in this phase. However, in the process by Manninen *et al.* (2006), the Inception phase (game concept) and Elaboration phase (pre-production) include aspects such as idea treatment, synopsis development, initial game design, initial concept art design and initial prototyping. These subdivisions will therefore make use of many more resources, such as designers and programmers, resulting in the elevated number of person hours as indicated in Figure 6. Very important with regard to the current research, is also to note the elevated person hours found in the Design workflow of Figure 6; this has to do specifically with the fact that the writer of the computer game must at this stage produce all of the narrative and verbal assets of the computer game. This work by the writer will continue throughout the Construction phase (production).

The Construction phase of the Unified process and the production and quality assurance phases of Figure 6, correspond a great deal with one another, seeing as both models indicate that the most person hours will be spent on the design, implementation and testing of the software that is being developed.

As stated in 2.3.1.2.5, the Transition phase of the Unified process, corresponds directly to the release and post-release phases of Figure 6. These phases deal mainly with the final release of the software product or game.

It can therefore be stated that, although there are a great number of corresponding features within the software development process (Unified process) and the game development process (Figure 6), there are some very important differences that occur as well.

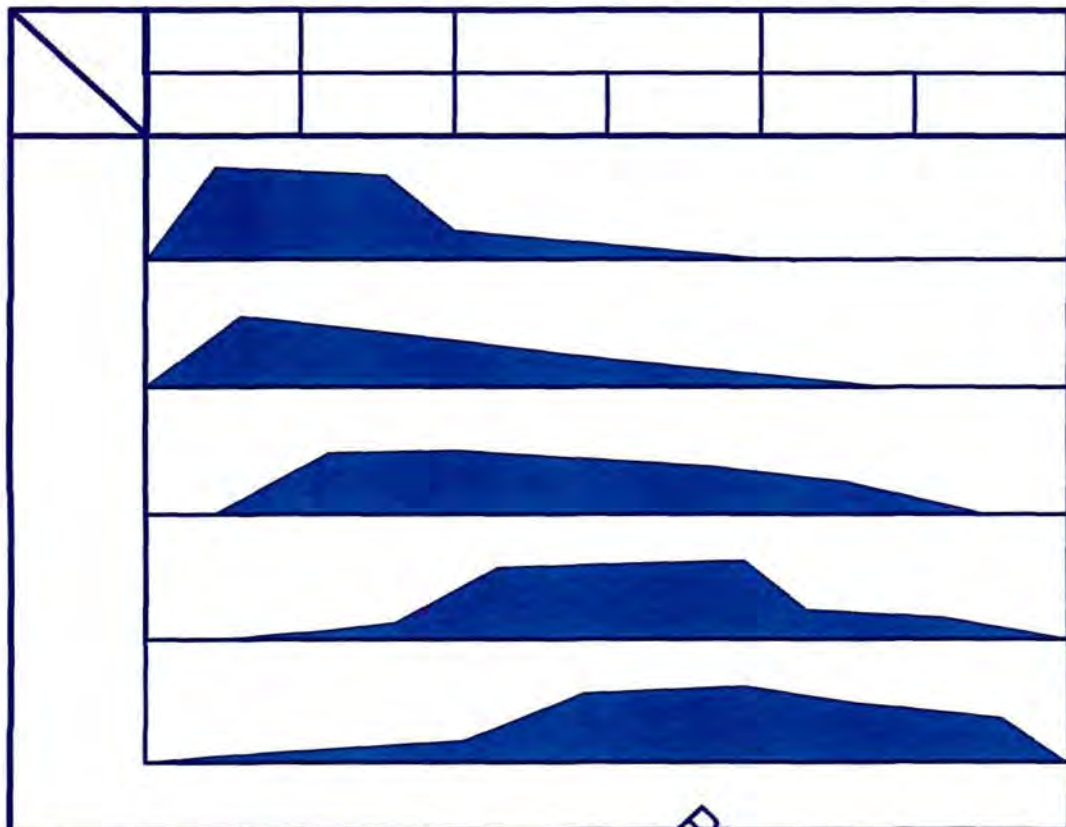


Figure 6: The core workflows and phases of the game development process (Manninen *et al.*, 2006), based on the Unified Process as suggested by Schach (2005:78).

2.3.2 The functions and responsibilities of the game development team

In her book *Game Development Essentials* (2005), Jeanne Novak provides descriptions of the functions and responsibilities of the different team players. These role players will now be discussed in more detail based on what Whitten *et al.* (2004) call 'the players within systems analysis and design'.

This discussion will be similar to the previous section, in that the model presented by Whitten *et al.* (2004) will firstly be discussed in short to get insight into the functions and responsibilities of the role players within the greater context of software development, after which the definitions by Novak (2005) will be discussed based on Whitten *et al.* (2004) in order to develop a clear and thorough model for the functions and responsibilities of the game development team.

2.3.2.1 *The players within systems analysis and design*

According to Whitten *et al.* (2004) there are five groups of stakeholders (players) within the systems analysis and design process. These five groups are:

- Systems owners;
- Systems users;
- Systems designers;
- Systems builders; and
- Systems analysts and project managers.

These five groups will be discussed briefly to determine what the functions and responsibilities of each of these groups are.

- **Systems owners**

Systems owners, according to Whitten *et al.* (2004:14), usually come from the ranks of management (middle or executive) and are mostly concerned with issues pertaining to the cost, benefits and value of development as well as giving the orders resulting in to inception of projects.

- **Systems users**

Unlike systems owners, systems users tend to care less about the costs and benefits of the systems, and are more focused on the functionality of the system (Whitten *et al.*, 2004: 14). There are different classes of systems users, broadly categorised into *internal* systems users and *external* systems users. These two categories can be further refined into the following classes:

- ***Internal systems users*** (employees of the businesses for which the systems are built):
 - clerical and service workers;
 - technical and professional staff; and
 - supervisors, middle managers and executive managers.
- ***External systems users*** (other businesses or direct consumers):
 - customers;
 - suppliers;
 - partners; and
 - employees.
- **Systems designers**

Systems designers are technology specialists that are interested in information technology choices and the design of systems that use chosen technologies (Whitten *et al.*, 2004:15); they also tend to focus on technical specialities. These systems designers can be classified into the following speciality fields:

- database administrators;
- network architects;
- web architects;

- graphic artists;
- security experts; and
- technology specialists.

- **Systems builders**

Systems builders are technology specialists for information systems who construct the system according to the systems designers' specifications (Whitten *et al.*, 2004:16). Systems builders can be categorised into the following specialities:

- applications programmers;
- systems programmers;
- database programmers;
- network administrators;
- security administrators;
- webmasters; and
- software integrators.

- **Systems analysts and project managers**

The role of the systems analyst is to bridge the communication gap that exists between the stakeholders discussed above (systems owners, users, designers and builders) (Whitten *et al.*, 2004:16). As indicated in Figure 7 below, the role of the systems analyst overlaps with the roles of the other players. The systems analyst identifies and validates business problems and needs for the systems owners and systems users, while ensuring for the systems designers and systems builders that the technical solution fulfils the business needs and

that the technical solution is integrated into the business (Whitten *et al.*, 2004:17).

According to Whitten *et al.* (2004:20) systems analysts must possess or develop the following skills and/or knowledge:

- working knowledge of information technologies;
- computer programming experience and expertise;
- general knowledge of business processes and terminology;
- general problem solving skills;
- good interpersonal communication skills;
- good interpersonal relations skills;
- flexibility and adaptability; and
- character and ethics.

The last 'player' within the systems development process, is the project manager. The role of the project manager is to manage the development team in such a way that the project is completed in time, within budget and adhering to the quality specifications as set out by the client. According to Whitten *et al.* (2004:22), project managers can come from the ranks of project analysts or sometimes project owners and they have to possess distinctive skills and experience in order for the team to work together to successfully build information systems.

2.3.2.2 *The role players within the game development process*

In *Game Development Essentials* (Novak, 2005) the different role players involved in the development of computer games are discussed; however, for purposes of this research, it is important to note that very little mention is made of the role of the writer of the computer game script. Therefore, in this section, I will attempt to present a model outlining the functions and responsibilities of the different people associated with each other in the game development process, as well as indicate where in the intricate web of role players the writer fits in. In the next section, specific attention will be paid to the functions and responsibilities of the writer, as well as the associated workflows and phases the writer will be involved in.

Novak (2005) distinguishes between the following role players in the game development process:

Executive producer: According to Novak (2005:301) an executive producer is usually the “highest-level producer on a project”. His/her responsibilities include production management, proposal and prototype management and project support. From this description, and looking at the different phases as suggested by Manninen *et al.* (2006), it is clear that the executive producer is involved in all aspects of the project. This does not necessarily suggest hands-on involvement, but it is expected of the executive producer to oversee all aspects of the project. The functions and responsibilities can therefore be summarised as follows:

Functions:

- managing (of staff, budget, project, schedule, etc.);
- supporting (of staff, processes, etc.); and
- writing of proposals and other documentation.

Responsibilities:

- to make decisions;
- to manage project(s);
- to support processes;

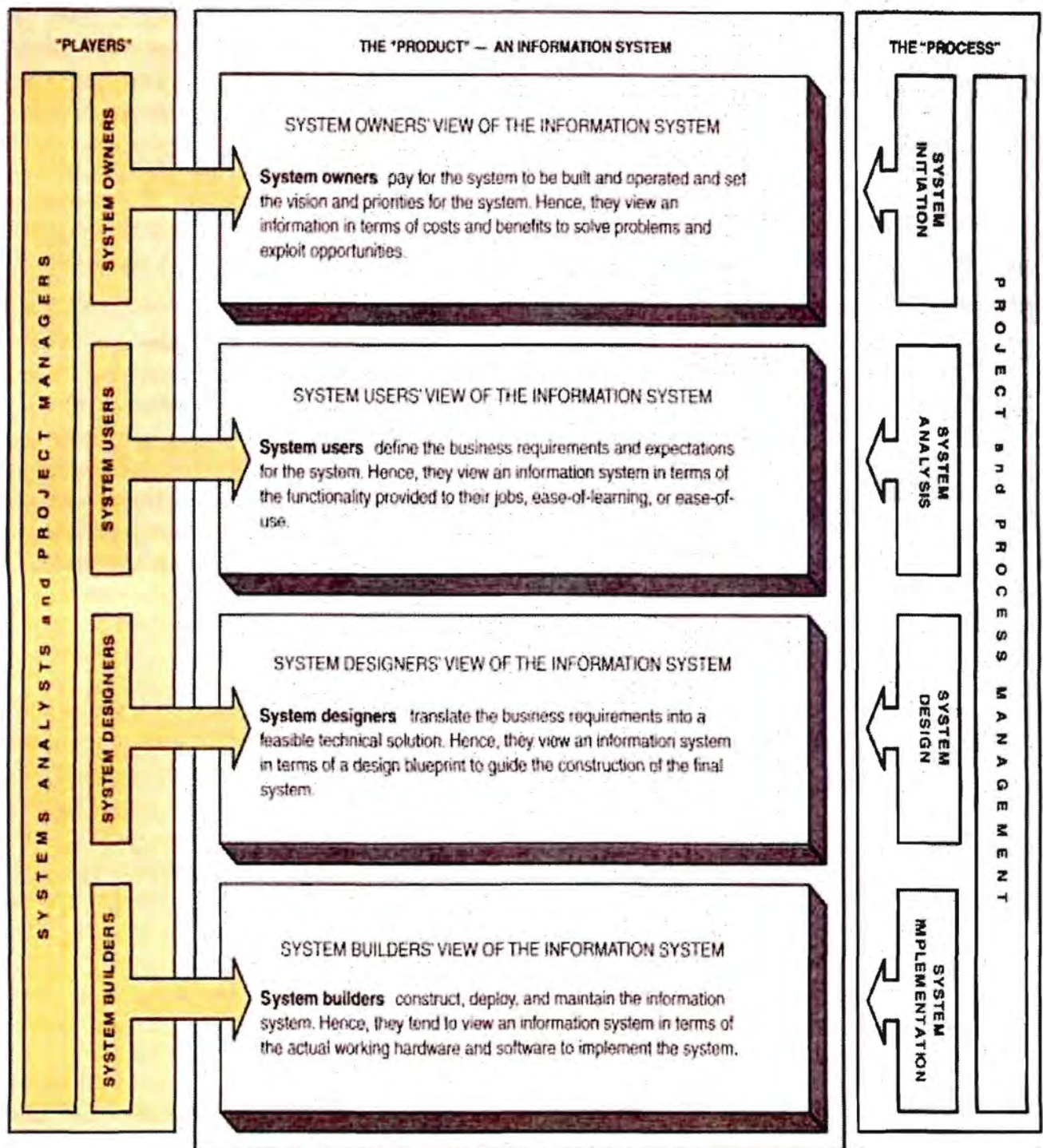


Figure 7: Systems stakeholders' (players) perspective of an information system according to Whitten *et al.* (2004:13).

- to support staff; and
- to write proposals and other documentation.

Due to the overall responsibility and managerial position of the executive producer, it would appear as though the executive producer in the game development process would be similar to what Whitten *et al.* (2004) (2.3.2.1) call the systems owners (see Figure 8).

- **Producer:** The producer is more directly involved with meeting goals and establishing policies (Novak, 2005:301). The producer is also directly responsible for managing the budget and quality of the product, as well as coordinating resources and directly managing the development teams. Internal and external communication is also an important responsibility of the producer (communication with the executive producer, development teams, and clients).

Functions:

- establishing policies;
- prioritising;
- scheduling;
- managing; and
- identifying tasks.

Responsibilities:

- to write contracts;
- to write protocols;
- to write conventions;

- to determine performance measures;
- to prioritise activities;
- to prioritise processes;
- to schedule goals;
- to schedule dates;
- to manage staff;
- to manage payments; and
- to manage budget.

Similar to the executive producer, the producer in the game development process also has a great many managerial responsibilities, albeit in a more hands-on capacity. Therefore, according to the model from Whitten *et al.* (2004), the producer would also be seen as a systems owner (see Figure 8).

- **Design director:** The design director is a management position focusing less on “hands-on design tasks and more on staff support, documentation, and guiding the design team in creating a game prototype” (Novak, 2005:303). Under the design director there are the following role players: **lead designer** (supervising the game design team), **interface designer** (determining the layout, content, navigation and usability features of the game interface), and the **level designer** (building the game environment or world).

Functions:

- supporting staff;
- documenting; and
- guiding the design team.

Responsibilities:

- to manage/guide the design team;
 - to schedule;
 - to do research;
 - to encourage creativity;
 - to document progress; and
 - to manage design team to produce prototype.
- **Technical director:** The technical director “creates the technical design for the project, oversees its implementation throughout all phases of production, and selects the tools, hardware and code standards” (Novak: 2005:310). The following people work under the technical director: **lead programmer** (supervises the programming team, involved in daily programming process), **engine programmer** (creates the core game engine), **tools programmer** (designs tools to assist members of art and design teams), **graphics programmer** (programming solutions to specific graphical game issues), **artificial intelligence programmer** (responsible for making game the ‘intelligent’), **audio programmer** (implements sound and music into the game), **physics programmer** (researches, develops and optimises efficient physics, collision systems, particle systems and body dynamics), **interface programmer** (designs and creates expandable, customisable, graphical user interface systems), **quality assurance programmer** (develops automated testing tools for the Quality Assurance team to test product releases), and the **associate programmer** (adds small elements to the game project).

Functions:

- technical design;

- implementation; and
- selection of tools, hardware and code standards.

Responsibilities:

- to create technical design documents;
 - to implement design documents throughout all phases of production;
 - to select the tools, hardware and code standards;
 - to manage the programming team, under supervision of the lead programmer;
 - to track progress of programming team; and
 - keep necessary documentation.
- **Audio director:** He/she is responsible for “managing the audio department; interfacing with the audio programmer (or team) to ensure that the audio assets get properly incorporated into the game” (Novak, 2005:315). The audio director is also responsible for hiring the personnel responsible for the various audio aspects involved in a computer game, like composers, sound designers, and voice artists. The team members under the audio director include: **composer** (writes the musical score), **sound designer** (creates sound effects), and **voice artist** (provides spoken-word narration and dialogue).

Functions:

- managing;
- interfacing with the audio programmer; and
- hiring.

Responsibilities:

- to manage the audio department (including schedule, budget and quality);
 - to hire appropriate personnel for the different audio aspects of the game;
 - to ensure proper incorporation of the audio assets into the game; and
 - to report back to the producer/executive producer with regard to progress, deadlines, goals, and quality.
- **Art director:** According to Novak (2005:306), the art director "operates the art department, overseeing scheduling, development, budgeting and hiring". Under the art director, the following positions can be found: **lead artist** (supervises the game art team), **concept artist** (creates drawings, sketches and storyboards), **technical artists** (help set standards with the tools, and are often experts with particular art packages and scripting), **modeller** (creating 3D assets from 2D drawings), **texture artist** (generates 2D image maps that are applied to 3D models), and **animator** (applying movement to objects and characters in the game world).

Functions:

- scheduling;
- developing game art;
- budgeting; and
- hiring.

Responsibilities:

- to direct the style of the game's art;

- to manage the mood, look and feel of the game;
 - to manage the processes, quality and productivity involved in the development of the game's art;
 - to manage the schedule involved with the development of the game's art; and
 - to manage the budget allocated for the game's art.
- **Testing manager:** The testing manager, according to Novak (2005:316) "manages the testing budget and interfaces with upper management to ensure that products being tested are completed in a timely manner". The testing manager is in charge of ensuring quality and reliability of the end product. Persons reporting back to the testing manager include: **lead tester** (supervises the testing team), **compatibility tester** (tests cross-platform compatibility), **playability tester** (makes suggestions for improving, adding or deleting features), and **beta tester** (tests games in privacy of own home).

Functions:

- managing the test budget;
- managing lead tester (and by implication the entire test team);
- communicating with upper management; and
- managing test schedule.

Responsibilities:

- to communicate regularly with testing team in order to manage the testing process;
- to ensure the quality of the products being developed;

- to detect product defects in order for them to be rectified before release; and
- to test the product for consistency and compatibility.

According to the model by Whitten *et al.* (2004), systems designers are technology experts interested in information technology choices and systems design. Systems designers also have certain expertise and skills that allow them to oversee processes specifically related to their field of expertise. In this regard, all the managers and directors discussed (creative, design, art, audio, technical and testing) can be considered to be systems designers (See Figure 8).

All the co-workers mentioned in each section, the different types of designers, artists, audio staff, technical staff and testing staff, can be seen as what Whitten *et al.* (2004) call systems builders. These role players are technology specialists constructing the computer game according to the specifications as set out by the client. These role players are also managed by their respective directors/managers, who in turn are managed by the producer and executive producer (see Figure 8).

Within the context of this research, the writer can be seen as a systems builder, reporting directly to the creative director, who is responsible for managing the game content.

- **Creative Director:** According to Novak (2005:303) the creative director "ensures that the overall style and game content is consistent with the original vision for the project". This suggests a possible close collaboration with the art director. Within the context of the current research, it is also important to note that the writer / and or educational expert (pedagogue) reports back to the creative director (Figure 8).

Functions:

- ensuring consistency with original vision of game.

Responsibilities:

- to maintain art style of game; and
 - to maintain original vision of game.
- **Writer:** In Novak's (2005) book, very little mention is made of the functions and responsibilities of the writer of the computer game narrative. What is expected of the writer is a computer game script with a good story and good dialogue (similar to that of a film screenplay). Therefore, the **function** of a writer of a computer game is writing a script. The writer is hired for the specific purpose of producing a script that can be developed into a game, in collaboration with the other systems builders. The **responsibilities** that arise from this function are to produce the script. This process involves the following responsibilities: **communicating** with other team members with regard to the scope and possibilities involved in the project, this includes evaluating the progress of the implementation of the script into the game, conducting proper **research** before writing the script, and finally to execute the **scripting** process. This discussion of the writer will be elaborated on in 2.3.3.

The final groups of stakeholders that Whitten *et al.* (2004) mention, are the **systems analysts** and **project managers**. As indicated in Figure 7, the roles of the systems analysts and project managers overlap with the roles of the other role players, suggesting that these role players are involved in all stages of development of the project, and they manage the project on all levels, including business problems, needs, budget, communication and documentation. Novak (2005) does not mention project managers and systems analysts pertinently as stakeholders in the game development process; however, due to the absolute necessity of these individuals in any software devel-

opment environment, they were added to the game development model in Figure 8.

Based on the discussions on the stakeholders as set out by Whitten *et al.* (2004) and the team members as highlighted by Novak (2005) a graphical representation of the different role players in the game development can now be presented (Figure 8) based on software development and design. The representation includes all the role players from Novak (2005), categorised according to the main stakeholders as set out by Whitten *et al.* (2004).

The red lines in Figure 7 represent the 'players as suggested by Whitten *et al.* (2004) (Figure 7), namely:

- systems owners;
- systems designers;
- systems builders;
- systems users;
- systems analysts; and
- project managers.

Integrated into these divisions by Whitten *et al.* (2004), are the role players as suggested by Novak (2005). In this representation, it can be seen that the executive producer and producer are seen as systems owners; the creative director, design director, art director, audio director, technical director and testing manager are systems designers, whereas all the role players that resort under them, become systems builders (including the writer). From this representation it can also be noted that the systems analysts and project managers, are present throughout all of these role players' development to be able to manage all of the role players continuously.

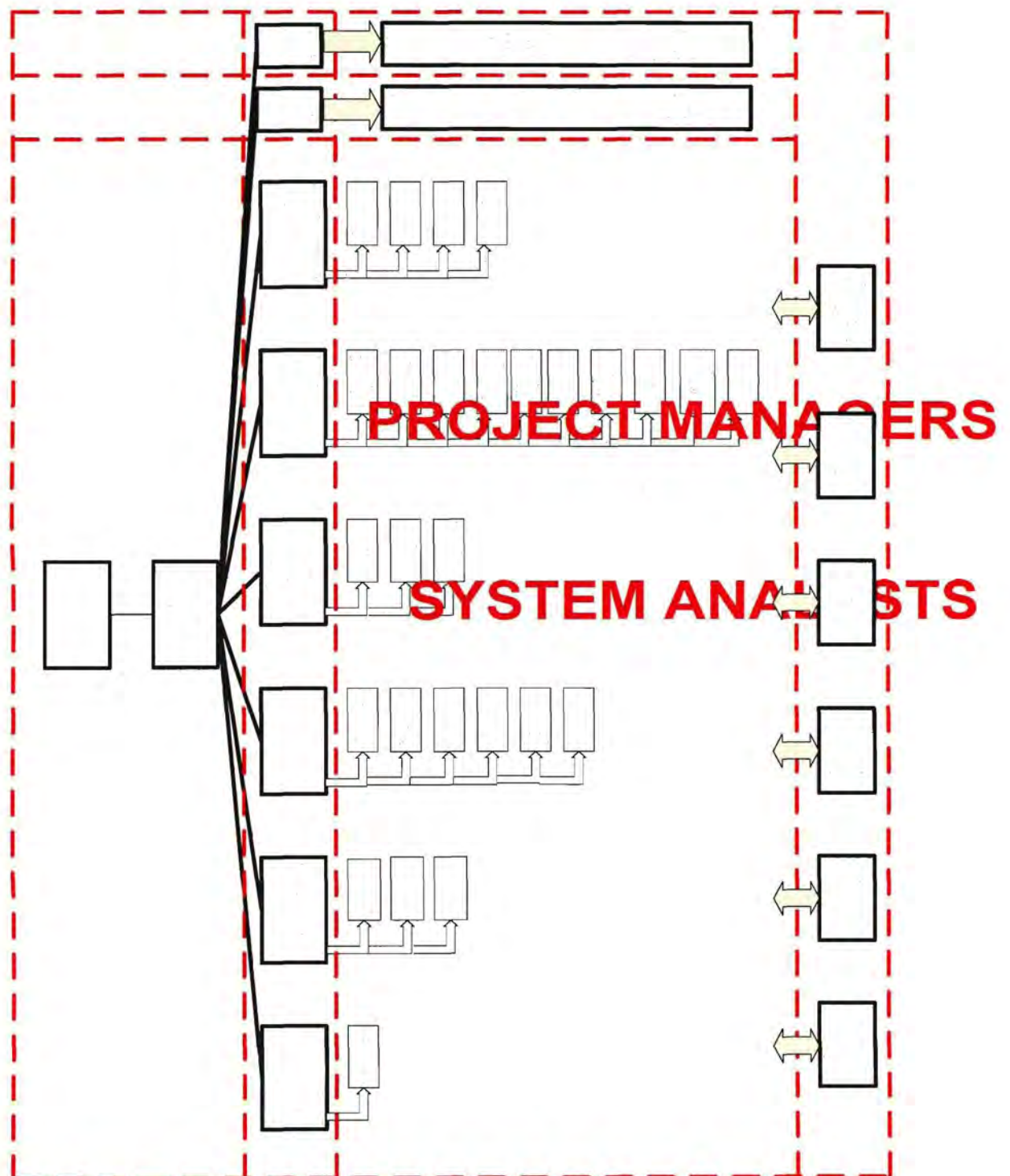


Figure 8: Graphic representation of the role players within the game development process.

2.3.3 The writer in the game development process

Based on the model presented in Figure 6, where the phases from Schach (2005) and Manninen *et al.* (2006) have been integrated into one model, the writer's involvement in the phases of the game development process will now be discussed. Due to the fact that the writer of the computer game script has to work in close collaboration with the other role players in the game development process, the writer will be involved to a greater or lesser extent in most of the workflows and phases of the game production process. The involvement of the writer in the game production process will also ultimately depend on the specific context of the game that will be developed. Therefore, the following sections will deal specifically with the workflows and phases that the writer of the computer game will be involved in, represented in a model (Figure 9) similar to the model presented in Figure 6.

2.3.3.1 *The writer and the workflows of the game development process*

Based on the workflows of the game development process (Figure 6)(see also Figure 9), the first workflow in the model is the requirements workflow, where the software developers determine the client's needs (Schach, 2005:68).

In this workflow the development team forms a clear understanding of the domain or environment the software will be applied to.

During the second workflow of the game development model, the client's requirements are refined and analysed to develop a more defined understanding of the product. In this workflow it is necessary to eliminate any ambiguity, incompleteness and contradictions that may arise in the previous workflow (Schach, 2005:70). It therefore seems that the writer should, along with the other members of the development team, be more involved in this process, in order for all role players to understand fully what is expected of them during the development process. It is also in this workflow that the necessary personnel is assembled and the different milestones, deliverables and budgets are developed.

As stated in 2.3.1.1.1, the output associated with the design workflow of the game development model, is determining the *how* of the game development process (Schach, 2005:72). The game is broken down into different modules, one of which is the computer game narrative. Therefore the writer will during this workflow also be a prominent figure, communicating with the other role players with regard to what is specifically expected of him/her, also conducting thorough research into the different aspects that need to be determined before the actual authoring can commence. It is in this workflow that the writer will write the computer game script, continually keeping in touch with the other role players when questions arise with regard to the implementation consequences of the script into the product.

The next workflow, in the game development model, is the implementation workflow. At the commencement of this workflow, the different modules of the game are implemented into the target software product (Schach, 2005:73). This workflow, however, continues through most of the development process and the writer will be active in this process more or less throughout the development process. This is the case because the writer must continually communicate with the other role players to determine whether he/she is still on track with regard to writing a computer game narrative that can be successfully implemented into the computer game.

The next workflow, in the game development model, is the test workflow, which carries on from the inception phase right through to the end. The writer will be less involved in this workflow, but should, during the development of the project, it be deemed necessary to bring about changes in the computer game script, the development team will call in the services of the writer to make the required changes. After the development team is satisfied with the product, they hand the product over to the client. Inevitably there will be some measure of post-delivery maintenance, which will not regularly involve the writer; however, it might be possible that some amount of rewriting is required from the writer. The writer's involvement in this workflow is therefore minimal.

From the discussion above, it is therefore clear that the writer will be mostly involved in the analysis and design workflows, during which time he/she will be required to write the computer game script. However, the writer will be involved, albeit to a lesser extent, in all of the processes, constantly communicating with the other role players to develop the script in line with the client's requirements and specifications, always being sure that the script can be implemented into the game, adhering to the schedule and budget.

2.3.3.3 *The writer and the phases of the game development process*

During the **inception/game concept phase**, the main outcome is the establishment of a synopsis that provides a clear understanding of what the game is about as well as the domain of the game. During this phase, the writer will be involved in facets such as the idea treatment, synopsis, initial game design and (to a lesser extent) the initial concept art design. In this phase the writer can communicate his/her ideas with regard to the game story to the other role players to determine whether all his/her ideas can

be implemented into the game, keeping in mind aspects such as schedule, budget and specifications.

During the **pre-production/elaboration phase** all the game's requirements are distilled and analysed, and a detailed game, art, audio and technical design is set up (Manninen *et al.*, 2006:24). In this phase Manninen *et al.* (2006) also specifically refer to manuscript authoring – all the narrative and verbal assets of the game are created. The specific outcomes the writer has to reach are dialogue and menu texts. Within the context of the current research, this phase is the most important with regard to the role, functions and responsibilities of the writer of the computer game script. This section will be elaborated on in the section dealing with the development of a script development model for computer game writers (Chapter 3). The most important aspect to note in the current discussion, is the fact that this phase is the phase that the writer will spend the most 'person hours' on (Figure 9).

In the **production/construction phase**, the writer is still involved to a certain extent, but by this time it would have been expected of the writer to have delivered a computer game narrative to the creative director. During this phase, the writer will continually communicate with the creative director and the development team to bring about minor changes to the script should the need arise. By this time the writer should have at least a first final draught of the script, because in this phase the animation and development of cut scenes and full motion videos (FMVs) take place. The animators will in this phase make use of the computer game script and its directions to visualise and develop these scenes.

The **quality assurance/construction phase** is an ongoing phase that entails continuous quality control on all aspects of the game development process. During this phase, the involvement of the writer is probably minimal; however, it might be brought to the attention of the developers

that certain scenes might need to be rewritten, at which time the writer will again be involved.

The **release/transition phase** entails the delivery of all final artefacts and manuals meeting the client's needs and specifications. As with the post-delivery workflow, again the involvement of the writer is minimal, but should it be required of the writer to perhaps assist in processes such as localisation of the game, the writer will again be actively involved. Also, it might be possible that certain bugs are reported and that the assistance of the writer might be needed before certain patches can be released.

Based on the game development process in Figure 6, it is now possible to present a model for the phases and workflows the writer of the computer game script will be involved in during the game development process (Figure 9).

The person hours (y-axis) in this figure refers specifically to the amount of time spent on the development by the writer of the computer game; however, similar to Figure 6, this is an estimation and can vary from project to project. The time as indicated by the x-axis, refers to the timeline (from inception to completion) of the entire game development process.

As can be seen in the figure, the writer will spend a notable amount of time on the game concept during the analysis workflow, assisting the development team in establishing the specifications of the game that is to be developed. However, the most important aspects to note with regard to this figure, is the fact that the writer will spend most of his/her time working in the pre-production and production phases, specifically within the design and implementation workflows. During this time, the writer will need to continuously work in close collaboration with the other team players, especially the creative director, when developing the verbal and narrative aspects of the computer game.

2.4 Concluding remarks

In this chapter, the position of the writer within the game development communication process was established by developing a **communication model for computer games**. It was established that the writer, along with the producer, becomes the *implied author* within the communication process. The writer produces a computer game script which is a structural document containing the following key elements: the description of the characters; the exposition of events, including the conflicts experienced by the characters; the climax of the story; the resolution; and the dialogue (Garrand, 2001).

Furthermore, in this chapter, the different workflows and phases within the game development process were illustrated by making use of the model as suggested by Manninen *et al.* (2006). This model was discussed based on the basic software development model of Schach (2005). A model was presented integrating the processes of Schach (2005) and the **workflows** and **phases** that are specific to the game development process (Manninen *et al.*, 2006).

After the different workflows and phases had been determined, a model was developed to indicate the **functions** and **responsibilities** of the different role players in the game development process. This model is based on the model presented by Whitten *et al.* (2004) that is based on the systems development process. The role players associated with the game development process according to Novak (2005) were discussed and a graphical representation of the different role players in the game development process was presented, integrating both Whitten *et al.* (2004) and Novak's (2005) models.

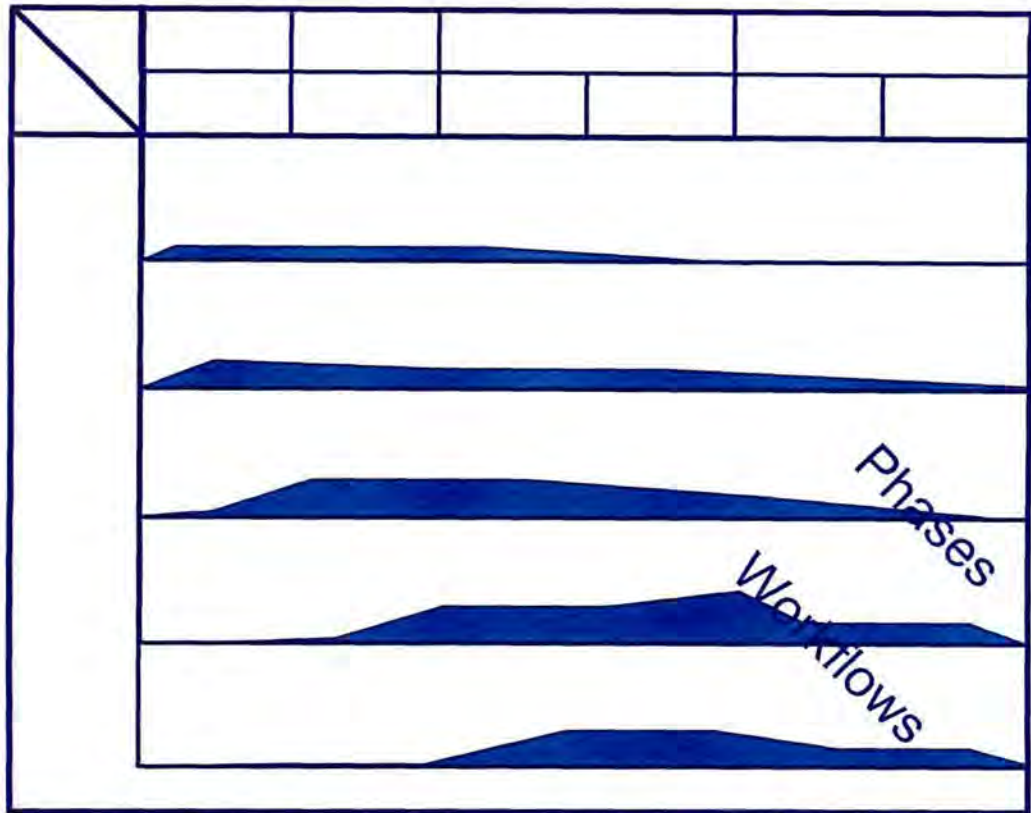


Figure 9: The workflows and phases associated with the writer of a computer game script

Requirements

In this model it was established that the writer of the computer game script reports directly to the creative director, seeing as he/she is directly responsible for the game content. It was also established that the primary function of the writer is to **produce a computer game script**. It is the responsibility of the writer to develop such a script in collaboration with the other role players (especially the creative director and other systems builders) in order for him/her to be aware of the specifications, possibilities and scope of the game that is to be developed.

In the last section of this chapter, a workflows/phases model for the writer was developed in order to ascertain where and to what extent the writer

Hours

Design

will be involved in the entire game development process. In this section it was determined that the writer is involved to a lesser or greater extent in all of the workflows and phases, but that the main focus for the writer is during the analysis and design workflows, and the game concept, pre-production and production phases.

In the next chapter, the **functions** and **responsibilities** of the writer will be further refined based on the outcomes of the research to date to determine what the specific associated **workflows**, **tasks** and **outputs** for the writer will be in order to develop a computer game script. This will be done by means of developing a **script development model** for the writer of a computer game narrative.

3 A script development model for computer games

3.1 Introduction

Traditional computer games (e.g. *Spacewar*, *Pong*) were designed around “a combination of simple gameplay elements” (Bridgett, 2005). *Spacewar*, for example, involves two players controlling spaceships trying to shoot the other before being shot him/herself. This would seem a rather simple game compared to the highly interactive and narrative games of the present (games that increasingly tell stories)(cf. *Harry Potter*-games, *Tomb Raider*-games, etc.). Falstein and Fox (1997) state that it was not uncommon in the early days of the computer game industry for only a few people to develop a computer game. However, as games grow in size and complexity, developmental tasks are now divided among 30-40 people (see Chapter 2).

Jenkins (2004) states that, “in many cases, game designers want to create a series of narrative experiences for the player”. This is true to such an extent that there has been, over the past few years, an enormous boost in creative experimentation within the gaming industry. Jenkins (2004) warns, however, that if game designers are going to be telling stories, they should tell them well. It is important therefore for the producers of computer games to ensure that if they should choose to develop a narrative game, they should ensure that the “narrative architecture” (Jenkins, 2004) of the game is of a high standard.

This chapter will attempt to provide a **script development model** for computer game writers, indicating how to approach the task of writing a compelling computer game. The writer will need to consider the function and responsibility of the writer - to write a script - and developing it into the tools, strategies and tasks the writer will need.

This chapter will focus on the tasks of the computer game writer, viz. communication, research and scripting⁸. These tasks will be broken down into developing the game context, determining the creative strategy and thoroughly understanding the analytical frameworks (research), and didactical writing, scene scripting, dialogue writing and developing additional content, such as educational content (scripting). The final outcomes or milestones associated with these tasks are a research report as well as a computer game script. For the first milestone (research report) a template will be developed to aid future computer game writers when writing a script, and for the second milestone (script), the template developed during the research phase will be used to develop a thin slice of a computer game script (Chapter 4).

3.2 Tasks of the computer game writer

In 2.3.2.2 it was illustrated that the **function** of the computer game writer is to produce a script for a computer game. This function had three associated **responsibilities**, namely: to communicate with other role players to ensure that the original vision of the computer game does not get lost along the way, to do proper research before writing the computer game script and to write a script. These responsibilities can be broken down into certain **tasks** that the writer has to complete in order to fulfil his/her function of producing a computer game script.

⁸ Communication as task for the computer game writer will only be discussed cursorily, with the main focus being on research and scripting.

For purposes of this study, communication as responsibility of the game writer will only be discussed cursorily. Communication among all collaborators within the game development process is of the utmost importance. This is especially true for the writer of the game script, as Bridgett (2005) states that the writer should at all times be involved with the team members involved in the production process, "making sure that the content that is created by the writer fits into any particular game mechanics that have already been defined".

Hyman (2006), in this regard, mentions gamewriter Marc Laidlaw, saying that "much of his day is spent brainstorming with other departments - with artists, with level designers, with programmers - developing the backstory for the worlds within the game, for the events that will be played out, giving them an internal consistency". Jongheum Park, lead designer for Nexon (Novak, 2005:41) further emphasises this point, calling the communication process between the key members of the team a synchronisation of brains. This communication process is not restricted to a specific phase of the development process, but should rather be an ongoing process, starting from the inception phase of the game and continuing until the final product is released.

For purposes of this thesis, research and scripting as responsibilities of the computer game writer will be discussed in detail (based on the responsibilities outlined in Chapter 2):

3.3 Research

According to Samsel and Wimberley (1998), "most writers experience some frustration when moving from books or stage plays or scripts to the interactive screen", suggesting that before the interactive writer can start writing a computer game, he/she must have a clear understanding of what

it is that he/she would like to achieve with the end-product. This understanding can be established by means of thorough research.

Research as part of the analysis phase of developing a compelling and effective computer game script is crucial, as Allen (2006:22) states that: "there's no limit on how much time and effort can be put into upfront analysis". He does point out, however, that it is not wise to spend too much time on research. So how does one make the most of the research phase, without spending too much time on it? This study will aim at shedding light on the aspects associated with research, therefore guiding the writer in making informed decisions in a quick and structured way. The associated milestone for this phase is therefore a research report, documenting the results of the research. A template will be developed that the computer game writer can use when conducting the research to properly document all findings, decisions and comments (Appendix E).

With regard to the research phase, the following aspects will be discussed, as well as their associated outputs/milestones:

- **Game Context:**
 - Purpose;
 - Target audience;
 - Genre; and
 - Delivery platforms.
- **Creative strategy:**
 - A simulation;
 - An original idea; or
 - An adaptation.
- **Analytical framework:**

- Ludology, and
- Narratology.

3.3.1 Game context

3.3.1.1 *Defining the purpose*

Defining the purpose of the game that will be developed is of the utmost importance due to the fact the overall content of the game will be influenced by this decision. The purpose of the game can be either for educational purposes or for pure entertainment purposes; or a combination of the two (edutainment). It follows then that a game based purely on entertainment purposes will not have any educational value; concomitantly, an educational application might not have many entertainment features. Edutainment aims at developing games that contain features of both educational and entertainment value.

The writer of the computer game will quite possibly not be too involved in this decision, and will probably only be required to develop the verbal and narrative aspects of the game. It is, however, very important that the writer should be aware of the purpose of the game before the content development can commence.

It can therefore be stated that writers of computer games should be aware of the different obstacles that they might face when writing a computer game script; whether it be for entertainment, educational or edutainment purposes. They must learn from previous attempts to develop games, as well as take note of what research has suggested up to now with regard to developing compelling games.

3.3.1.2 *Defining the target audience*

Understanding the needs and expectations of your target audience is crucial for potential computer game writers (Garrand, 2001; Novak, 2005). Samsel and Wimberley (1998) suggest the writer asks the following questions:

- What are the age and education levels of my target user?
- How experienced is the person with interactive technology?
- What is the gender of my target audience?
- What is the cultural background of my target audience?
- Will my audience access this application from home or the office?
- How often will my audience interact with the application?
- Will my target user interact alone or with a group?
- What type of computer equipment does my target user own?
- In what type of environment will my audience use the application?
- Does the user have any preconceptions about the application?
- What should the language of the application be, and what is the audience's proficiency in that language?

With these questions answered, the writer will have a much clearer idea on who his/her target audience will be. These decisions will also ultimately influence the educational content of the game, should the game be developed for edutainment purposes. For purposes of the current research, I visited primary and high school teachers to determine the answers to these questions (cf. Du Plessis (2007), Enslin (2005), Hougaardt (2007)).

3.3.1.3 *Defining the genre*

Once the purpose and target audience for a project have been determined, the prospective writer must decide on the genre of the game (along with the rest of the development team, if necessary). According to Novak (2005), game genres are “categories based on a combination of subject matter, setting, screen/presentation, player perspective, and game-playing strategies”. The most common and popular genres in modern-day interactive games include:

- **Action:** The goal of most action games, according to Novak (2005), is to quickly destroy your enemy, before being destroyed yourself. The core of action games must be simplicity, because they are usually fast-paced and leave no room for reflective thought. Examples of action games include *Donkey Kong*, *Deus Ex* and *Tomb Raider* (Novak, 2005:86-87).
- **Adventure:** Different from action games, adventure games allow the player time for reflective thought. Characteristics include exploration, collecting, puzzle-solving, navigation through mazes, and decoding messages (Novak, 2005). According to Novak (2005:89); *Myst* is the most popular adventure game of all time.
- **Action-adventure:** This genre is a hybrid of the previous two. The player can typically dodge enemies and take part in fight scenes, while also being allowed to take part in the more story-based, reflective element of interactive games. An example of an action-adventure game is *Beyond Good & Evil*.
- **Casino:** These games are often electronic versions of popular casino games, such as *roulette*, *craps*, *poker*, *blackjack* and *slot machines* (Novak, 2005).
- **Puzzle:** Although puzzles may appear in other games, such as adventure and action-adventure games, pure puzzle games involve no characters, and merely rely on the player solving a series of

puzzles. According to Novak (2005), most puzzle games involve no characters, are often timed, and contain elements of strategy. *Tetris*, according to Novak (2005:91) is the most popular electronic puzzle game of all time.

- **Role-Playing Games (RPGs):** In many aspects similar to the adventure game (strong story-line, exploration, etc.), RPGs are, however, unique in that the player takes on the roles of characters, often becoming emotionally involved in the characters he/she becomes. Novak (2005) refers to this process as *immersion*. An example is *Wizardry 8*.
- **Simulations (Sims):** Simulations attempt to replicate systems, machines, and experiences using real-world rules (Novak, 2005). Sims are not only of entertainment value, but can also be used in training and recruiting. One of the most popular non-entertainment simulations is Microsoft's *Flight Simulator*, which teaches pilots to fly without their having to actually be in a plane. According to Tyson (2006), games based on another game medium (such as board games and card games) are also simulations.
- **Massively Multiplayer Online Games (MMOGs):** These are games that are played by a multitude of players all over the world, on-line, while never actually having met, for example, *Planetside*.
- **Sports games:** According to Computer Hope.com, sports games "take on the role of real and sometimes fictional sport games." (Computer Hope.com). Sports games can therefore be seen as a type of simulation, but due to the great number of games available, they are awarded their own category. Sports games include games such as *Fifa Soccer*, *Madden NHL* and *PGA Tour Golf* (Electronic Arts®).

According to Garrand (2001), action-adventures currently dominate the world of the interactive narrative. This seems likely, as players get the

opportunity to move through fast-paced action sequences, while also enjoying an exciting story line. It would appear that, for the new-comer to computer game writing, a 'safe' choice would be action-adventure games, because, as indicated, it is already a popular genre, immediately establishing a potential audience. As output for this stage, the writer can now indicate in the template in Appendix E what genre of game he/she will develop.

3.3.1.4 *Defining the platform*

The outcome/milestone of this workflow, however abstract it might appear, is a definitive decision; a decision as to the platform to be used. This decision, however, will not necessarily be determined by the writer, but will quite possibly be an indication from the executive producers involved in the game. This decision can be concretised by means of accepting it as final and indicating it in the report structure (see Appendix E).

Interactive games, those available to the public, were first introduced in the form of arcade games (Novak, 2005). The interactive gaming industry, however, quickly developed from arcade games to hand-held console games until the personal computer revolution (Novak, 2005) revolutionised the gaming industry, bringing computer games into the homes of people (at present mobile technology has also brought about a revolution in the industry). Interactivity was further promoted with online games increasing the possibilities of multiplayer interactivity. Although consoles became increasingly popular, computer games remained a popular platform, because of the emergence of the possibilities that online games offered.

The different types of platforms can be illustrated in the following way:

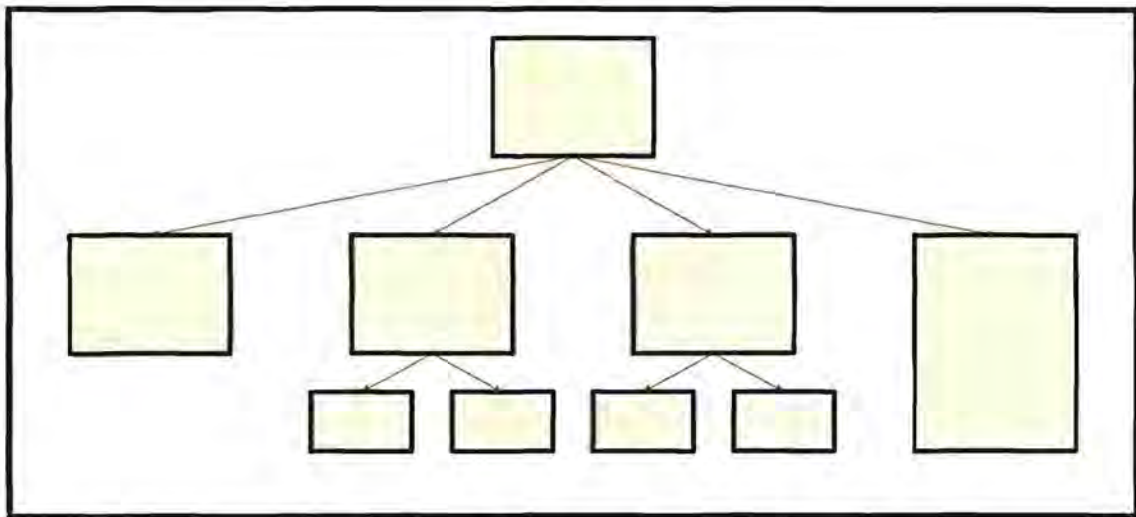


Figure 10: Different types of game platforms

The writer must therefore be certain as to which of these platforms the game will be developed for. This will to a great extent determine the possibilities available to the computer game writer. It should also be noted that certain games are cross-platform games, meaning that they are developed for more than one platform (e.g. *Jurassic Park*).

When the writer has determined the purpose, target audience, genre and platform of the game, he/she can start investigating the next task as part of the research responsibility, which is determining the creative strategy that will be utilised in the game.

3.3.2 Creative strategies

Arcade

Tyson (2006) mentions several sources of ideas when approaching the conceptualisation of computer games that I divided into three broad **creative strategies**:

- Original Ideas
- Simulations

- Adaptations

The table below presents the different sources of ideas as provided by Tyson (2006), divided into the categories proposed above.

Original Ideas	Simulations	Adaptations
• An original concept presented by an employee • An original concept pitched to the company by an outsider	• A simulation of another game medium (e.g. board games and card games) • A simulation of a real world event	• A sequel to an existing game • A spin-off based on a character from an existing game • A game based on an existing character or story

Table 1: The different sources of ideas for computer games (adapted from Tyson, 2006).

Charla (2003) suggests that, unless you are a skilled writer of computer games, you will probably be working with licensed material, i.e. **adaptations**. Even though this means that the storyline and design of the game will be much more restricted than those for a completely original game concept (Tyson, 2006), there are positive aspects related to adapting existing material into a computer game. According to Falstein and Fox (1997), one such an advantage is that “if the design is based on pre-existing characters or situations,...those characters and situations will help provide a basis for a common vision”. When one adapts already existing material into a computer game, Jenkins (2004) states that the process

"typically involves translating events in the film into environments within the game". It can therefore be concluded that one of the greatest advantage of adapting existing material into a computer game, would be that characters, events, etc. already exist (restrictive as they might be), also insinuating that those who have read or seen (depending on the medium) the original, will be familiar with the basic background of the resultant computer game.

It is therefore my opinion that adaptation as strategy to write computer games, especially for newcomers to the industry, would be more fruitful than venturing into creating a purely original game. The focus of this research will therefore be on **adaptation** as strategy in writing a computer game's script.

In layman's terms, adaptation can be defined as "something that is changed or changes so as to become suitable to a new or special application or situation" and "a composition that has been recast into a new form" (Answers.com). Similarly, the *Cambridge Advanced Learner's Dictionary* (CALD: 2003:13) states that to adapt something, is to change it to suit different conditions or uses. Within the context of the current research, these definitions can be applied to various situations; a novel can be 'changed' into a film; a film can be 'changed' into a computer game; a novel can be 'changed' into a computer game. This process, however, will not succeed unless the result is "suitable" within its new "situation". The events, characters, and actions from the source text must be adapted to suit the computer game environment.

It should be noted that several terms similar to adaptation are used by different authors. These terms, within the context of the discussion, can be seen as **aspects of adaptation**, used to enhance the full meaning and purpose of adaptation. These terms include translation, manipulation,

transposition, and interpretation. These terms will accordingly be discussed briefly to establish how they contribute to the full understanding of adaptation as a strategy.

- **Translation:** The term translation, in its most basic definition, suggests, “to **change** words into a different language” (CALD, 2003). According to Nida and Taber (1982), “the older focus in translating was the form of the message, and translators took particular delight in being able to reproduce stylistic specialties”. However, another approach to translation suggests an emphasis on the response of the receptor (Nida & Taber, 1982).
- **Manipulation:** To manipulate suggests **controlling** something or someone to your advantage (CALD, 2003). The *Kernwoordeboek vir Afrikaans* concurs, stating that to manipulate means to skilfully handle something (*‘behendig beheer’*) (de Villiers *et al.* 1970). The significance of manipulation when adapting an existing text to a computer game is that, if manipulated effectively, the end result will ultimately be a success.
- **Transposition:** Kelly (1979) states that “formal structural equivalence **reproduces** the grammatical features of the source text”, a process known as transposition. Although a computer game adapted from a novel hardly ever retains the grammatical features of the source text, the definition can be manipulated in such a way as to suggest that ‘grammatical features’ could refer to structural elements, as Chatman, (quoted by Juul, 2001) suggests that “this transposability of the story is the strongest reason for arguing that narratives are indeed structures independent of any medium”.

- **Interpretation:** According to the UNC University Libraries: *Manuscripts research Tutorial Glossary*, interpretation suggests “an intellectual process in which you **select**, gather, and resemble information and evidence within the framework of your own ideas” (UNC, 2004). When adapting a novel (or any other text) to a computer game, one has to select and gather the elements from the source text that could be implemented within the idea you have of what the computer game will look like. Also, not all elements contained within a novel could be successfully adapted to the computer game platform; therefore information must be interpreted correctly in what could certainly be called an “intellectual process”.

Adaptation can therefore be seen as an amalgamation of all the aspects discussed above, suggesting **change** (translation), **control** (manipulation), **reproduction** (transposition), and **selection** (interpretation). However, the primary purpose of adapting a source text into a computer game is rooted in the first definition: to become suitable to a new or special application or situation.

A source text becoming suitable to a new or special situation (adaptation) is commonplace in the film industry, where many novels and plays are regularly adapted for the screen (for example Joseph Conrad's *Heart of Darkness*, adapted for the screen as *Apocalypse Now* by Francis Ford Coppola, *The Trial* by Franz Kafka, adapted for the screen by Orson Welles (Lothe, 2000), or any of the *Harry Potter*-novels adapted for the screen by a variety of directors). However, adaptation is also evident across other media (i.e. novel to film, film to computer game, computer game to film). It seems therefore that investigating these different types of adaptation can help one conceptualise those aspects that either made a success of an adaptation, or caused the adaptation to fail. Therefore, in

the following section several different adaptations, across different media will be cursorily discussed to determine the different successes and failures associated with each.

- *Novel to film*

There are fundamental differences that exist between the written word and the visual image. Bluestone (1957:23) argues that “filmic metaphor has a finite boundary, it is encased in what we see. The literary image, however, extends further, into what we can imagine or have experienced, covering the breadth of our associations”. An adaptation makes “great demands on visual creativity” (Lothe, 2000:86), even from the starting point. In the adaptation of Ken Kesey’s acclaimed novel *One Flew Over the Cuckoo’s Nest* (1982), director Milos Forman maintains most of Kesey’s ideas, material and form, but does not diagram them the way the book does. Although the structure of the text was altered considerably, the main themes of non-conformity and liberation from repression remained intact. The filmic adaptation might be considered a paraphrase of the novel, yet the most important messages and themes are present, even though, at a superficial level, they might not appear to be the same. Of all the different forms of adaptation across genre, adaptation from novel to film, it would seem, has to date been the most successful and prevalent.

- *Novel to film to computer game*

The *Harry Potter*-series (Rowling) has been successfully adapted into a series of films; becoming increasingly successful. The first two films had “a tendency to focus mainly on the mystery/adventure aspects of the story, leaving out most of the emotional scenes” (Wikipedia: 2005), which inevitably bred criticisms of a lack of character development and related issues. In the third film, the paradigm was reversed with more emphasis on Harry’s angst than on the plot. This provided the third

film in the series with a much darker tone than the previous films. According to Berardinelli (2005), the fourth film, *Harry Potter and the Goblet of Fire* (Newell, 2005), "proves to be the darkest and most ambitious Harry Potter outing to date". This suggests an even greater movement to what Berardinelli (2005) calls an action-oriented approach.

The *Harry Potter*-phenomenon, however, did not end with the films. Computer games of the different books have also been developed. The computer game *Harry Potter and the Prisoner of Azkaban* (2004) is a very accurate adaptation of the novels and films, in so far as the medium allows it. Inevitably certain elements were lost. Characterisation, finer plot details and the bulk of the dialogue could not be applied to the medium. However, many other elements were successfully incorporated into the game: the main events were captured accurately and one does not get the feeling that the game could easily have been played with other characters or settings. The player could truly experience Hogwarts and the enchantment of magic.

- *Film to computer game*

The arcade game *Star Wars* is based on the George Lucas film of the same name. In the film *Star Wars*, an army of rebels fight a heroic battle against the evil galactic empire (Juul, 1999:32). As a whole, this adaptation is not considered to be a great success. This has nothing to do with the success of the game, because as a game it is rather successful (Juul, 1999). However, as an adaptation, the game fails due to the fact that, if the title should be removed, the "connection" between film and game is not that obvious. Subsequently, *Star Wars* the game "does not contain a narrative that can be recognised from *Star Wars* the movie" (Juul, 1999:32).

- *Computer game to film*

This type of adaptation is different from the others that were discussed, in that it seems to move in the opposite direction as the previous adaptations. Critics were divided regarding the success of the adaptation of *Tomb Raider* into a film. Topel (2005) states that "*Tomb Raider* was a good adaptation of the video game because it portrayed the game's physical puzzle solving". However, he reiterates that the story was simply too small, "some caves, some temples, some bad guys, the end". Another film reviewer, James Berardenelli, tongue-in-cheek, claims that it's the best "computer game-turned-motion picture to date" (2001). In the next paragraph, however, it is obvious that this is not the achievement one might think. He states that to date, this small genre "has met with disappointing box office returns and an even less enthusiastic critical response" (Berardenelli, 2001). For all its lavish effects and computer graphics *Tomb Raider* fails to create an engaging world or people to inhabit it, with the result that the audience cares little for anything or anyone in it. Much of the game's appeal lies in the fact that you can take an active part in what is happening. This opportunity is denied to the moviegoer. The problem with an adaptation of this nature is the inherent lack of character building in a computer game. When a novel or film is adapted into a computer game, the game inevitably runs at a loss in terms of character; the interactive nature and action sequences are more important within the context of a game. When adapting a computer game into a film, the writer/director would have to be very careful not to let characters appear lifeless and without personality, which is exactly what happened in this instance.

- *Book to computer game*

Although many computer games exist that are based on comic strips (*Batman*, *Spiderman*), not many games exist that are based purely on

books. However, there are some examples of this, as can be seen in the game adaptation of Daniel Defoe's *Robinson Crusoe* (TIVOLA, 2001). In this computer game, the player assumes the role of castaway Crusoe in a "smart-play, interactive adventure" (Farris, 2001). Although this is a fun game, one of the main features of the game is that it has been developed for edutainment purposes, and according to Farris (2001), is a "must for educational institutions and public libraries interested in adding quality computer learning material to their collections." Based on the apparent success of this game, it becomes clear that, although not many such games exist, there is a definite niche market for such games.

The above mini-discussions illustrate some of the successes of adaptation as a strategy, as well as some of the less successful instances. Clearly it is important to allow the adaptation to remain true to the original. This does not imply a mirror-image, but rather suggests a faithfulness to the basic underlying elements of the original. *One Flew over the Cuckoo's Nest* (Kesey, 1982) was successful in maintaining the original theme and discourse of the original, even though the manner of application was vastly different and certain elements were adapted for the new medium. *Harry Potter* also illustrated that moving from novel to film to computer game can be successfully executed. The series did, however, learn from its mistakes and each consecutive film/game has improved on its predecessor. Certain disappointments in character building of the first two films were seriously addressed within the third and fourth films, making them more successful than the first two. The computer games, though devoid of much character building, are true to the contents of the novels with regard to storyline and event depiction. This is where a game like *Star Wars* failed. If the name is removed from the game, one would no longer be aware that it is an adaptation of the very popular films.

Based on the *Robinson Crusoe* game ((TIVOLA, 2001), it can be seen that the adaptation of novel to computer game is possible, however, the game must in its final product still resemble the source text in order for it to be called an adaptation. In the end, an adaptation remains a “composition that has been **recast** into a new form” (Answers.com, 2005).

As already stated, the focus of this study will be on adaptation as creative strategy when writing the computer game script. Therefore, it follows that the writer (alongside the creative director) must decide on the source of adaptation and there are several things that need to be considered. The prospective writer has to be very selective in choosing a source, as Scoredos and Johnson (2006) stress that something that might seem simple, could very well turn out to be very difficult to execute. Some aspects that need to be considered are discussed below.

- **Genre:** According to Pearce (2002) “certain story genres are more innately game-like to begin with”. Therefore, as discussed earlier, deciding on the correct genre is imperative. She continues to argue that mysteries or adventures, such as *James Bond* or *Mission Impossible*, lend themselves well to the interactive game platform. One can only imagine that it would be far more difficult to adapt a psychological drama like *One flew over the cuckoo's nest* (Forman, 1975) into a compelling computer game.
- **Concept:** The concept of the story needs to be clear and simple (Scoredos & Johnson, 2006). These authors warn against extraneous storylines and plot structures, suggesting that ambitions that are too big are often too difficult to execute. Therefore, being inventive with a simple concept will be more rewarding than struggling with a complex one. This is probably why games based on animated films are hugely popular: their storylines are based on simple concepts that easily

translate to the interactive medium (*Shrek*, *Finding Nemo*, etc.). Another concept that is highly successful, and implements the idea mentioned above of a simple concept being treated in an inventive manner, is that of the prequel/sequel. The success of a game like *Escape from Butcher Bay* lies in the fact that it is not a direct adaptation of the films it is based on (*Pitch Black* (Twohy, 2000) and its sequel *The chronicles of Riddick* (Twohy, 2004)), allowing the writer the freedom of not being bound by the storylines of these films. In actuality, *Escape from Butcher Bay* is a prequel to the films it is based on.

- **Characters:** Pearce (2002) argues that games are weaker at character development, whereas they excel at adventure, mystery and action. She suggests that source material with characters that are archetypal and cartoon-like make a better transition into the game world. Jenkins (2004) explains that more often than not, the characters in computer games are stripped down to the bare bones. Taking this into consideration, it makes sense that games such as *Indiana Jones* and *Blade Runner* have met with commercial success; in both instances, the protagonists in the original films are archetypal and almost cartoon-like.
- **Visualisation:** When considering a source, the writer must be able to visualise whether the game would be able to stand on its own and not be a mere reflection of the source. The writer must be able to understand effects such as temporality, speed and pace that could affect the events of the story world (Dillon, 2006).
- **Intellectual Property/Copyright:** A licensed property can be described as "an intellectual property that's brought to the game developer; that brings with it pre-assumptions about the game's potential characters, content and story; and that the developer does not have creative control over" (Charla, 2003). When creating a new game, li-

censed properties have many advantages, as already discussed, and are probably the best choice for computer game writers who are yet to reach the top of their game. However, there are obstacles to this process. According to Scoredos and Johnson (2006), "it is not enough to have the rights to the story alone – you need to have the rights to the characters, the names, and the music if any". It is therefore imperative that the game writer obtain all the necessary rights before continuing with the project.

The aim of this section, based on the discussions above, therefore suggests that the selection of the creative strategy is a great determining factor in the development of a computer game script. The writer and creative director, and other involved stakeholders, have to decide whether the game will be an adaptation, simulation or come from an original idea. As stated above, the aspiring computer game writer should probably first venture into writing games adapted from existing material, seeing as an existing text will provide the writer with basic foundations from which to create the script. Hence, for purposes of this study, the focus will be on the development of computer games based on the adaptation of existing material. This decision can be indicated on the research report in Appendix E.

When a writer has decided to make use of adaptation as creative strategy, he/she must select a source on which to base the game. This source selection is based on a careful decision-making process, involving certain aspects that best lend themselves to the computer game environment.

3.3.3 Analytical framework

Two **theories** that also need to be considered by the writer of a computer game script, while in the research phase, are ludology and narratology. Ludology is the study of gameplay, and supporters of this movement remain "deeply committed to designing rule sets, which results in a compel-

ling **play** experience" (Jenkins, 2004). Ludologists argue that certain games' "over-reliance on cinematic conventions interfered with gameplay" (Elkington, 2005). At the other side of the spectrum, one finds those who support narratology within computer game design. Narratologists increasingly think of game designers as storytellers, focussing on the **story** of the game, oftentimes found in games based on film and television licenses (Elkington, 2005; Jenkins, 2004). This relationship between narratology and ludology needs to be discussed further to establish what the balance between these two strategies should be in order for a writer to write a successful computer game.

The debate regarding the tension between ludology and narratology is discussed especially within the context of what theorist Henry Jenkins has labelled "transmedia storytelling" (Elkington, 2005), especially with regard to film/game adaptations. According to Dillon (2006), ludology is "a response to the overemphasis on the narrative explanations of gaming", and ludologists prefer to focus on the relationship between the strategy, gameplay, rules and outcome of the game. Furthermore, criticism is aimed at many games adapted from successful films, as attempts to "generate easy money by exploiting marketing hype around a particular license, without regard to quality" (Elkington, 2005). Rouse (2000) quotes Chris Crawford as saying that computer game developers have "movie envy", meaning that some designers actually wish that they were making movies instead of computer games.

Still, many games are developed from blockbuster films (cf. *Enter the Matrix*, *Spiderman*, *Batman Begins*, *Underworld*, *Van Helsing*, *GoldenEye*, *Harry Potter*-series, *Escape from Butcher Bay*, and many more). Critics state that many of these games, however, fail to impress game players. *Van Helsing*, for example, was described as providing "shallow, unchallenging gameplay, mediocre graphics, and a predictable narrative based

directly on the film" (Elkington, 2005). Because ludology focuses on the "game-specific dynamics of games, such as the relationship between rules, strategy and game outcomes" (Dillon, 2006), ludology has made an important contribution to game theory. Dillon (2006) states that by "addressing the medium on its own merits, ludologists have provided the beginning of a coherent understanding of what makes video and computer gaming unique and the particular form of gameplay they support".

Narratology on the other hand, considers "video and computer games as part of an extended tradition of how humans use tools to express themselves and tell their stories" (Dillon, 2006). Even though computer games are not traditionally considered to be a narrative medium, they often do possess narrative elements such as characters, plot, setting and events. It is true that not all games tell stories, but many games do have narrative aspirations. As Jenkins (2004) states, a discussion of the narrative potentials of games need not imply a privileging of storytelling over all the other possible things games can do. Jenkins (2004) also discusses the possibility that games do not necessarily tell whole stories, but that certain narrative elements enter the game on a more localised level, and calls game designers not storytellers, but "narrative architects". Simply put, **games tell stories differently from other media.**

From this it would seem that a certain balance should be established between these narratology and ludology. According to Jenkins (2004), "game designers increasingly think of themselves as storytellers [], yet they still remain deeply committed to designing rule sets". Game designers should never lose sight of the fact that computer games remain an interactive medium, and although narrative elements occur, the main intention of computer games, to be played, should not be forsaken. Due to this, the writer of a computer game should at all times keep both these approaches in mind; he/she should "understand the underlying principles

behind both approaches, their contributions and implications for game culture and the next generation of game development" (Dillon, 2006).

In order for the writer to realise this vision of creating a balance between narratology and ludology, it is essential that he/she understands the narratological and ludological elements of computer game theory.

3.3.3.1 *Narratological elements*

A narrative presents a chain of events, which is situated in time and space. According to Lothe (2000:3) "there are narratives not only in literature but also in other cultural utterances that surround us". The importance of narrative lies in the fact that it is fundamental not only to different forms of cultural expression but also to our own "patterns of experience and to our insights into our own lives" (Lothe, 2000:3). Juul (1999:31) states that the problem of the narrative is the fact that "the narrative as phenomenon can not be viewed independently...but only through another medium like oral storytelling, novels, and movies".

The classical argument for the existence of the narrative is the fact that a story can be translated from one medium to another (Juul, 2001:3). Chatman (1978:20), on the issue of narratives, argues that "this transposability of the story is the strongest reason for arguing that narratives are indeed structures independent of any medium". Brooks (1984:3-4) correspondingly states that "narrative may be a special ability or competence that, when mastered, allows us to summarise and retransmit narratives in other words and other languages, to transfer them into other media, while remaining recognisably faithful to the original narrative structure and message". In order for a writer to develop a compelling narrative, he/she should have a clear understanding of the elements that constitute a narrative. Several narrative elements exist, but for purposes of this study, the following elements are to be discussed: narrator, time and space, events

and character. These narrative elements seem to be the core elements as found in literature (cf. Lothe, 2000; Juul, 1999; Juul, 2001); other elements do exist, but these ones overlap in all literature reviewed. Therefore, within the scope of this study, only these ones will be discussed.

3.3.3.1.1 Narrator

The narrator is an integral part of the fictional, and is a narrative instrument that the author uses to present and develop the text, which is thus constituted by the activities and functions that the narrator performs (Lothe, 2000:20). In Lothe (2000:20) Gerald Prince defines the narrator as "the one who narrates, as inscribed in text. There is at least one narrator per narrative, located at the same diegetic level as the narratee he or she is addressing". According to Bal (1997:19) "the narrator is the most central concept in the analysis of narrative texts."

One of the most important distinctions to be made when studying the narrator is that of the first-person and third-person narrator. In addition to being a narrator, the first-person narrator is also active in the plot; the shaping of the actions, events and characters of the plot. It is often the combination of the first-person pronoun ("I") and active plot engagement that marks the narrator as the first-person narrator. This narrator is directly connected with his/her practical experiences, with the joys and sorrows he/she has experienced, with his/her personal needs and experiences. The first-person narrator therefore also implies a certain amount of subjectivity to the narration.

The third-person narrator in a novel can, on the other hand, either "share the space of the story world with the characters, or exist in a realm external to the events of the story" (Keen, 2003:38). From this follows that the narrator could either provide insight into the thoughts and feelings of the characters, or be entirely objective and merely give an external view of the

events and characters. The third-person narrator can therefore be labelled as either "limited" or "omniscient" (Keen, 2003:38). The limited third-person narrator narrates from the perspective of only one character, where a single character's perspective governs the perceptions included in the telling of the story. The omniscient third-person narrator exists outside the story world and can freely inform the reader about any and all information on all the characters and events.

The narrator within the computer game can probably best be explained as the operations that are going on while the player is not playing. This is sometimes accomplished, as in *Harry Potter and the Prisoner of Azkaban* (2004), through the use of moments when the player does not have control over the actions, when one or more character is involved in dialogue with one another, divulging information about the game to the player. This could be seen as the omniscient third-person narrator. It is important to note, however, that within the context of computer games and novels the perspective or narrator can shift. In the novel *A chain of voices* (Brink, 1983), for example, there are approximately fifteen first person narrators, resulting in each character being able to provide information from his/her point of view. In a computer game, for instance *Oblivion* (2004), the player can also shift between the first person and third person narrator.

As stated above, one can distinguish between a first person narrator, omniscient first person narrator and limited third person narrator. However, within computer games, the limited third-person narrator could not be found in literature; therefore a short description on only the first-person and omniscient third-person narrator within computer games follows.

- First person narrator: The first-person narrator suggests that the player assumes the role of one of the characters, inhabiting that characters movements and sight (Finn, 2003). An example of a first-person narrative is the game *Half Life*. According to Finn

(2003), first-person narrative is naturally not unique to computer games, but can also be found in short stories and novels. Implications related to game design associated with first-person narratives include the fact that the player will need a proper introduction to the game world by means of a full motion video (FMV) as well as tutorials for the player to get used to the game environment. These are factors that could ultimately influence the game design, and therefore the writer should discuss the possibilities with the creative director and development team.

- Omniscient third person narrator: Some games, like *The Sims* (EA, 2000) and *Black and White* (EA, 2001), give the player a third person omniscient point of view with some degree of control over what is seen (O'Keefe & Zehnder, 2004). This narrative point of view suggests that the player is aware of all events and does not experience the story/game from the perspective of one of the characters. It is also important to note that certain games can jump between the first person and third person omniscient point of view.

The writer of the computer game script must therefore decide, within the context of the direction the game has already taken on, what the best narrator will be for purposes of the specific game. His/her decisions will be based on the aspects discussed above and will impact on several aspects associated with the rest of the game's development process and should therefore be communicated with the systems builders and creative director of the game.

The milestones associated with regard to the narrative are decisions with regard to the narrator of the computer game. These aspects will be dis-

cussed in more detail in 3.4.2 when the didascalia of the computer game will be discussed.

3.3.3.1.2 Time and Space

Temporality is a fundamentally important category for human beings; however, according to Lothe (2000:49) "the concept of 'time' is so diffuse that it is practically impossible to define". One of the reasons why the idea of time is so complex, is that "it is linked both to the physical world and our perception of the world" (Lothe, 2000:49). Juul (2001:6) states that a narrative "is characterised by a fundamental distance between the events told and the discourse describing these events". Therefore there exists a duality within the definition of narrative time. This concept has been extensively addressed with regard to the written word. It can be illustrated when reading, for instance, *1984* by George Orwell. The novel was written in 1949, yet describes a world some forty years later. To read a novel or watch a movie is to a large extent about reconstructing a story on the basis of the discourse presented.

Time is also related to narrative **space**, "the fictional universe which the text presents through its narrative discourse" (Lothe, 2000:49). Yet again a duality exists between **story space** and **discourse space**. Story space contains the events, characters and the place where the action takes place; it is "elements from story space that we build on when we construct the story on the basis of the text we are reading" (Lothe, 2000:50).

The concept of narrative **time** and narrative **space** with regard to the computer game experiences a definite shift in definition. Within an action-based computer game like *Harry Potter and the Prisoner of Azkaban* (2004), it is hard to see a temporal distance between story time, narrative time and reading (playing) time. We can talk of a representation of some events, and as a player you try to reconstruct some events from this pres-

entation: the graphics can be interpreted so far as the player controls a character. Unlike the verbal narrative, "there is no grammatical time to explain the temporal relations" (Juul, 1999:34). Also, unlike narratives as such, the events displayed on the screen cannot really be considered past, since the player influences them in real time. As a consequence of this being an interactive medium, the events of the game are constantly influenced by the player's actions. The moment the events can be influenced by the player, "there is necessarily an implosion between the three times" (Juul, 1999:35)(story, narrative and reading time). In *Harry Potter and the Prisoner of Azkaban* (2004) there are instances, however, when the player watches video clips giving direction and information to the player. During this time the three times will move apart, but when the player starts performing actions again, the times will again overlap and implode.

In some games, like *The Sims*, the player can select the game speed, "thus specifying the relation between play time and event time" (Juul, 2004). Juul (2004) also states, however, that not all event time is mapped from play time, and that it is quite common for computer games to contain intro-sequences and cut-scenes that depict events in event time. The writer of the computer game script should keep this in mind when writing the script, to be able to depict where and when such cut-scenes occur.

According to Jenkins (2004) a game's **space** can be defined in terms of a place that has been acted upon. He states that spaces become the location of narrative events, and that aspects of the design of these spaces may also serve an expressive function, helping to define the atmosphere or tone of a particular game, or communicating important information about the characters (Jenkins, 2004). Space within the context of game design is therefore very important, as it will influence several aspects of the game. The writer must therefore work in close contact with the game

developers when 'writing' the game space, to be fully aware of the possibilities that exist. The understanding of space and time within the game development process is therefore of the utmost importance to the writer.

3.3.3.1.3 Events

In literature as well as film, characters are involved in the plot, and the actions they perform constitute a series of events, "related by causation" (Keen, 2003:73). These events are sequenced together to form the plot of the narrative, or story, as provided by the narrator. According to Lothe (2000:72), the story is an abstraction – a chronologically ordered summary constructed from the discourse. An event can only exist within the context of the text, and within the text, the story develops through a series of events. These events suggest a certain temporal dimension within the narrative, and as stated earlier, events are closely linked to narrative time.

An event is an integral part of the action, "it involves a change or a transition from one situation to another" (Lothe, 2000:72). Events also occur within a certain order, but this order does not, however, have to be linear. This is illustrated most clearly by a text that makes use of flashbacks or reminiscence. Events are also constructed by the author through the use of language as the narrator leads the reader through a sequence of happenings. These happenings or events possess different functions or purposes with regard to the story. Thus, "functions of events are closely related to the characters in the text, for they usually set the action in motion...on the basis of specific aims, wishes, desires, or experiences" (Lothe, 2000:75). Events therefore function as 'carriers' of the actions of the characters in a novel.

Events in the interactive computer game should be approached differently. Whereas in the traditional novel the reader has no control over the sequence of events, the player of a computer game has a certain amount of

control over the course of events. It is, however, not total control. The player can control the situation to a certain extent, but the basic structure of the game is predetermined. In, for example, *Harry Potter and the Prisoner of Azkaban* (2004), the player is given certain tasks, which require the player to make certain decisions as to how to successfully complete the task at hand. These decisions can result in the player making choices that can lead him/her to several different 'places' within the game. The skilled player will complete the tasks within a shorter time span, whereas the unskilled player might make decisions that could lead him/her astray. Thus, the unskilled player is faced with a series of less important events that are not necessarily part of the 'plot' of the game. There are, however, events that the player has no control over. Certain tasks have to be completed before the player can move to another level, or be presented with the next task that will lead to the eventual completion of the game. It is important that the writer has a clear understanding of the events within a computer game; this will ultimately guide the writer in creating events that fit in with the developmental possibilities.

3.3.3.1.4 Characters

In literature, the performing characters that narrative texts present, "are part of a linguistically constructed fiction" (Lothe, 2000:76); they are fictional. On the issue of character, Chatman (1978:117) states that: "characters as constructed imitations are not in any way limited to the words on the printed page". Of course their existence at the purely verbal level is relatively superficial. Character is reconstructed by the reader from evidence announced or implicit in an original construction and communicated by the discourse, through whatever medium. In literature, characters can be presented in different ways. Lothe (2000:81-82) suggests two main kinds of character indicators.

Firstly, direct definition means that a "character is characterised in a direct, summarising way – for instance by means of adjectives or abstract nouns" (Lothe, 2000:81). This type of characterisation suggests an objective description if provided by a third-person narrator, or more subjective if provided by the dialogue of other characters. It is also possible that the "assigning of names" (Lothe, 2000:81) of characters can have a characterising function. For example, in *Harry Potter and the Prisoner of Azkaban* (Rowling, 1999), some of the names of characters are subtly indicative of the personality of that character. Professor Snape is the much-hated teacher and head of Slytherin House. Both names suggest a link with snakes, generally having a connotation of evil.

Secondly, Lothe mentions indirect presentation, which "demonstrates, dramatises, or exemplifies a given character feature rather than naming it explicitly" (Lothe, 2000:82). Indirect presentation can be established through several different variants:

- Action – either a single action or repetitive actions;
- Speech – what a character says or thinks, whether it be in dialogue, direct speech, or free indirect discourse;
- External appearance and behaviour – usually presented by the narrator or another character; and
- Milieu – this includes external surroundings contributing to the indirect presentation of a character.

The presentation of characters in computer games is radically different from that in literary fiction. External features, for example, can be shown to the player due to the visual element of computer games. The player needn't imagine what a character looks like, because the character's features are explicitly represented. Different from novels, as well, some computer games require no character development because no characters exist, for example *Tetris* or *Space Invaders*. Others have characters,

but the characters need not be developed within the context of the game, such as *Pacman*, where characterisation is secondary to the purpose of the game. In most interactive games, however, there are characters that resemble some living entity (be it human, animal or imaginative, such as monsters and fairies). Games also exist where there is an amalgamation of the fictitious character and the player, for example *Quake III*. In *Second life*, players create a character that represents him/herself in the game. The writer has to keep all of these different types of characters in mind when writing the computer game script seeing as the choice of character will influence the other aspects of the game.

3.3.3.2 *Ludological elements*

If narratology as analytical framework makes use of narratological elements as tools, then it seems obvious that ludology makes use of ludological elements. What needs to be established, though, is what these ludological elements are, and how both ludological and narratological elements can be used as tools in the development of a compelling computer game script. According to Lindley (2004:1) commercial computer games “integrate **elements** of pure **game play**, simulation and **narrative**, resulting in very rich media experiences with different levels of meaning having complex interrelationships” (my emphases). It would seem therefore that integrating both types of elements into gameplay is indeed already being done.

According to Lindley (2004:3) a game is a “goal-directed and competitive activity within a framework of agreed rules”. This is what he calls the ludological definition of a game, lying at the heart of traditional game theory. From this definition, the following ludological elements of computer games can be highlighted:

- A computer game is **goal-oriented**: Lindley (2004:3) states that games, in being goal-oriented, “involve activity aimed towards some fi-

nal state". This final state suggests that the game develops or progresses towards some challenging or interesting goal and that this goal is achieved by means of play, which is at the heart of ludology. Within the context of this study, the writer must also be aware of the purpose of the game (educational, entertainment or edutainment)(3.3.1.1), which will also ultimately influence the outcome of the game.

- A computer game is **competitive**: This element of computer games suggests that games mostly contain some sort of a win/lose criterion. The competitive nature of computer games also implies that a player can compete against other (real) players, simulated players (the computer), or a combination thereof (Lindley, 2004:3).
- A computer game is bound to game **rules**: The activities in the game must obey the rules, and players implicitly or explicitly agree to those rules (Lindley, 2004:3). This definition of computer games does not imply that players have to learn the rules associated with the game; however, players do agree to those rules (Lindley, 2004:3). According to Juul (2003), one of the advantages of computer games is that the machine enforces the rules, relieving the player from the need to know all of the rules in detail. It is, however, important for the writer of the computer game script to at least have a proper understanding of the rules involved in developing a computer game. According to Lindley (2004:3) the rules associated with a computer game determine what the player will be able to do or not do, along with the associated consequences of certain actions. The player must therefore be aware of what he/she can do inside a game in order for him/her to progress through the game, and eventually complete/win the game.

3.3.4 Concluding remarks

At the end of the research phase, the milestone/output the writer should have reached, will be a thorough understanding of the strategies available

to him/her. The writer must therefore be fully aware of the purpose of the game, the target audience, the genre of the game, taking into consideration genres that might possibly be more conducive to gameplay, and he/she must also know the platform the game will be developed. As soon as these factors have been determined, the writer must consider certain creative strategies with regard to the origin of the game material: will the game be a simulation, original idea, or adaptation of existing material?

The writer must also be informed with regard to the balance that must exist between the narratology and ludology of the game (i.e. analytical frameworks). This balance must be realised by writing a game that will both satisfy the player's need for the game to be played, as well as the need for the game to tell a compelling story. The computer game writer therefore has the responsibility, when writing a computer game script, to balance the narratological elements as well as the ludological elements in the script, in order for the player to be left with an experience that has a well-structured narrative content, but which also adheres to the ludological aspects such as goals, competitiveness and rules.

After a writer has taken all of these issues into consideration, and has made decisions with regard to all of the possibilities that exist in writing for the computer game industry, he/she can start with the next phase, viz. scripting.

3.4 Scripting

The primary output/milestone associated with the responsibilities of the computer game writer is, of course, a computer game script. To achieve such a script, one that has a balance between ludology and narratology, and adheres to all of the aspects as stipulated in the research phase, the writer has certain aspects to address. These aspects include:

- Didascalia writing;
- Scene scripting;
- Dialogue writing; and
- Creating additional content.

Each of these aspects will be described in the following subsections.

3.4.1 Didascalia writing

The first aspect that will assist the writer when writing the computer game script is having a clear understanding of the didascalia of computer games (based on didascalian concepts of drama theory). The following section will highlight the different elements of didascalia, as well as how they could be applied when writing the computer game script.

The term didascalia, according to Mouton (1989:135), refers to aspects of the script that are not dialogue, providing information relevant to the story, characterisation and dialogue. Therefore, we can state that didascalia can refer to aspects such as the title, list of characters with brief descriptions of each, scene descriptions (or directions, in stage dramas/films) and narrative didascalias (Nkotsoe, 2001). Didascalia, therefore, mainly focuses on providing visual and auditive information (Mouton, 1989:136), as will become clear in the following descriptions of the different uses of didascalia. These elements are also included in the template in Appendix E to help the writer to be certain that all aspects were included in the writing process.

3.4.1.1 *Title*

According to Nkotsoe (2001:48), the main function of the title of a text is "to name the fictional dramatic world", often indicating what the text is about. It can therefore be stated that the title of a computer game can "convey an important meaning to the reader (player) about the subject

matter” of the text (Nkotsoe, 2001:48). The writer of the computer game must therefore decide on an appropriate title for the game to be developed. The title could communicate several aspects of the game: descriptive as to the content of the game (*Flight Simulator*), it could be the name of a character that the audience will know (*Shrek*), it could describe the milieu of the game (*Dungeons and Dragons: Shadow over Mystara*), it could highlight the main theme of the game (*Grand Theft Auto: Vice City*), or it could be the title of the work it is based on (*Harry Potter and the Prisoner of Azkaban*). The writer can, based on the above, indicate what the title of the game will be. This choice can then be substantiated with a possible explanation as to why the specific title was chosen as well as an indication as to the information that is provided by the title, e.g. is it a title that the player will be familiar with? Does the title describe the context, content or milieu of the game? The title of the game is provided at the beginning of the computer game script

3.4.1.2 Characters

According to Nkotsoe (2001:49), one function of listing the characters in a fictional world is to identify the various characters by giving them names. Additional information can also be provided on the characters such as age, occupation or relationship with other characters (Nkotsoe, 2001:49). Within the context of computer games, information such as special powers and greater detail with regard to physical appearance and abilities could also be included.

The writer can provide information on the characters’ physical appearance, facial expressions, gestures and movements. This information is provided in the body of the script. The information provided by the writer is important because it provides information to the developer, and eventually therefore the player, that is not contained in the dialogue and often says a great deal about a character. The list of characters is also pro-

vided at the beginning of the computer game script to provide a complete list of the characters to the development team.

3.4.1.3 *Space*

Descriptions of the space are also an important aspect when providing information in the computer game script. It is very important to provide the developers with accurate descriptions of where certain characters are situated at any given time. This is especially important if a character's position will influence other characters' reactions or the way in which an action will be executed. The description of the game space also includes descriptions of the different localities, such mountains, rivers, beaches, etc. The descriptions of the space within a computer game can be provided at the beginning of the computer game script, as well as continuously throughout the script at the beginning of each new, changing scene.

3.4.1.4 *Time*

Nkotsoe (2001:56) mentions that there are two types of time when writing a text: reading (playing) time and fictional time. It is important that the computer game writer indicate especially the fictional time to the developer and ultimately the player, because the span of the fictional time will have a definitive effect on the development of the game. If the game takes place in real time, interesting facets can come into play. For instance, in the game *The elder scrolls IV: Oblivion*, which takes place in real time, the sun rises and sets as the player plays the game, creating interesting effects and challenges to the player (and also for the graphics team), especially if he/she must now play in 'darkness'.

The elements of didascalia discussed above should be a very important tool for the computer game writer. Correctly implementing these elements will not only provide the writer with clarity with regard to aspects such as characters, time and space; it will also greatly ease the scripting process,

seeing as these sub-texts will guide the writer in the scripting process by means of the information contained in it. Similar to the descriptions of space, the descriptions of the time can be provided at the beginning of the script, as well as continuously throughout the script at the beginning of scenes.

3.4.1.5 *Directions*

According to Gray and Schalkwyk (1984: 9) directions can range from simple indications of who should say a line, how a line should be said or the actions that accompany a set of lines. These directions will guide the development team during the production of the computer game on how to integrate the characters' facial expressions, gestures and movements into the game. Directions will also guide the development team with regard to sound effects, music, props, entries and exists, and generally the whole movement and atmosphere of a particular scene or sequence (Gray & Schalkwyk, 1984).

The template provided in Appendix E provides the writer the space to indicate all of the different didascalian aspects of the computer game script before the scene scripting of the game can commence. The following section will therefore focus on the scripting of the computer game script, with all the didascalian aspects in place.

3.4.2 Scene scripting

A narrative script for a computer game is comprised of scenes and sequences. Garrand (2001) describes a scene as an "action that takes place in one location. A sequence is a series of scenes built around one concept or event". He also suggests that strong scene writing is of utmost importance to the interactive writer.

Scene scripting involves breaking down the story into scenes that include limited dialogue and interaction suggestions, each scene ending with a result that drives the story to the next level of the game (Spierling, 2005). According to Garrand (2001), no matter how short the scene, it must come to some sort of a conclusion. This means that one 'thought' cannot be split over two scenes.

Another consideration the interactive writer must bear in mind, is that scenes must be connected to one another – not only vertically, but also horizontally; the writer must therefore think non-linearly. Once the scenes have been written, they can be strung together and the writer can start writing the script.

The following will highlight some of the different game structures as suggested by Samsel and Wimberley (1998):

- **Linear (sequential) format:** Many interactive writers use this approach as the basis of both interactive and linear media projects, however, it is merely an underlying design system keeping things moving along. User navigation follows a strictly defined path: a user cannot move from point A to point C, without first moving through point B. This approach was first used in the early 1990s with the development of electronic graphic novels (Samsel & Wimberley, 1998).
- **Sequential with culs-de-sac:** One of the methods to start developing linear structures, is to let a linear sequence diverge into isolated non-linear deviations. Examples of cul-de-sac are puzzles, games, or sidebars that explore the themes of the game, but in no way affect the outcome of the story or objectives. An example of such a structure, is the *Grand Theft Auto*-series, where the player has the choice to develop flying skills, or stray off the storyline in order to make more money.

- **Branching:** In a typical branching structure, the user is presented with several choices or options upon arriving at certain pre-designated forks in the road. Branching structures are popular because the main point of interactivity, namely user choice, is demonstrated (e.g. *The elder scrolls IV: Oblivion*, where the player is free to explore the gameworld based on his/her own choices).
- **Conditional branching: Branching with barriers:** This structure requires the user to abide by the rules of a predetermined condition along the branch, before being able to proceed through the application. This is often presented in the shape of puzzles or obstacles. For example *Harry Potter and the Prisoner of Azkaban*, where the player must first learn to fly Buckbeak before the game can continue.
- **Conditional branching: Branching with forced paths:** Although appearing to be providing choices to the user, this application will often continue through the program, regardless of the user's choices. In other words, this programme offers the illusion of choice. An example of such a program is any of the *Harry Potter*-games, where the player has the freedom to move around the game world, but arriving at certain places, the game will continue automatically to another level, often by means of a cut scene introducing a new task.
- **Conditional branching: Bottlenecking:** Often used in interactive narrative, bottlenecking brings various nodes back into the spine of the story. This is especially used when considering the exponential possibilities associated with traditional branching. An example of this kind of structure is the *Wing Commanders*-series where the player is ultimately lead back to a final destination (Samsel & Wimberley, 1998).
- **Conditional branching: Branching with optional scenes:** Commonly found in educational and training programmes, this type of branching allows the user to make different choices, all resulting in different consequences. In *Grand Theft Auto*, *Vice City*, the player often has a choice with regard to mode of transport. If choosing to make use

of a car (a choice that requires a relatively low skill level), the player runs the risk of being arrested en route. Should the player opt to make use of a helicopter or plane, this risk is reduced, however, the skill level required to operate these vehicles is greater.

- **Exploratorium:** Here structures exist that allow the user to pause amid the programme in order to explore. The user therefore deviates from the primary objective to move around and explore the game world (e.g. *The elder scrolls IV: Oblivion*, where the player has the option of stalling the game's main storyline to first explore the different levels of the game world.).
- **Parallel streaming:** This structure describes many paths that exist simultaneously at various levels within the same application. In interactive narrative, the writer is allowed to create a single linear story, while the user can make use of different perspectives, paths or states (e.g. *Harry Potter and the Prisoner of Azkaban*, where the player, at some levels, has a choice with regard to perspective: either Harry, Ron or Hermione's point of view.).
- **Worlds:** This structure presupposes two or more environments that are interconnected by a common thread (theme, goal, mission, story). If a series of predefined events or tasks are added, one has the makings of a design structure that will work very well within interactive media programmes. In any of the *Grand Theft Auto* games, the player has several tasks to complete within a specific city. The player can at any given time decide to move to another part of the city and complete another task that is part of the common thread of the game.

Taking these types of game structures into consideration, the writer must now decide which one(s) will be best suited to the application he/she has in mind. What has to be remembered, however, when working with non-linear scripts, is that more than two scenes are connected to one another.

Garrand (2001) warns that changing one element in one of a series of connected scenes, will force the writer to adapt all the connected scenes.

In order to keep track of the scenes, the writer can make use of mind maps (for example, see Appendix F). This will assist the writer in being able to keep track of the storylines, as well as the way in which they are connected. Therefore, should an element in a series of connected scenes change, the writer will be able to follow exactly which scenes are affected. Mind maps can therefore be used to illustrate the scenes and sequences of the computer game, and how changes affect them.

3.4.3 Dialogue writing

The literature provides different approaches on exactly where in the scripting process writing the dialogue fits in (Garrand, 2001; Samsel & Wimberley, 1998). Just as several processes exist for the writing of scripts, exactly when the script is entered into the process does not matter. What is important, though, is realising the increasing importance and significance of dialogue within interactive, multimedia games. With the arrival of the spoken word to computer games, the professional skills of the writer have become critical to production (Bridgett, 2005).

Dialogue is an integral part of the game and can be divided into three different aspects, namely:

- the function of the dialogue;
- the form of the dialogue; and
- the qualities of the dialogue.

The **function** of the dialogue is to illicit interaction between different characters in the game and therefore also providing information to the player.

These instructions can be seen as providing additional information not necessarily provided in the didascalia of the computer game script.

The **form** of the dialogue can be presented as an interaction between two or more characters, or can be uttered by a narrator who then also provides information on the game and the characters to the player. Information can also be conveyed to the player by means of pop-ups or subtitles that are not recorded utterances, but also serve to provide the player with additional information about the computer game. In many cases, computer games also make use of what Tyson (2006) calls Full Motion Video (FMV). FMVs are sequences that help develop the story line. They usually occur at the end of a level as some instructional force that provides information on what to expect from the next level. The dialogue within a computer game, therefore, serves mostly an informative purpose guiding the player through the game.

In *The Semiotics of Theatre and Drama* (1980:136-137) Keir Elam proposes a set of projected **qualities** of dramatic dialogue that can greatly assist and guide the writer of the computer game script when writing the dialogue for the computer game. With regard to creative writing, a great deal has been written on developing dialogue, but for purposes of this study, I will make use of the work of Elam (1980) because it is widely accepted as an authoritative source. Elam (1980) provides the following as qualities associated with good dialogue writing:

- The writing/dialogue must present a supposed linguistic competence, suggesting a mastery of the rules of the language in question.
- The writing/dialogue must possess a broader communicative or semiotic competence including factors such as knowledge of the pragmatic rules of linguistic interaction, the ability to use language

for given communicative ends, the capacity for producing appropriate utterances adapted to their context, awareness of social and deictic roles, and mastery of the non-linguistic semiotic systems necessarily involved in the communicative exchange.

- The writer, in his/her writing, must reveal a background knowledge of the persons, objects and events referred to and an ability to locate them in the dramatic world.
- The writer must provide an explicit or implicit social status giving the speaker authority to make certain utterances.
- The writer must provide the speaker with a set of intentions and purposes in making the utterances.
- The writer must possess the capacity to create non-actual worlds referred to in the course of the dialogue, expressing a set of supposed desires, wishes, hypotheses, beliefs and fantasies.
- The writer must be able to create a location in an actual spatio-temporal context.

These qualities can serve merely as guidelines to the writer when creating the dialogue – aspects to consider when attempting to create dialogue that is compelling, informative and creative.

3.4.4 Creating additional content

In many cases it might be expected of the writer to create additional content for the computer game. Some additional content might include specific rules associated with the gameplay, instructions to the player of the game that will be provided throughout the game, or educational content if the game is being developed for edutainment purposes. However, it might

not be required of the writer to develop such content, or it could be the responsibility of the writer to ensure that such additional content is developed, while not actually writing it him/herself. For example, the writer might make use of the services of an educationalist or pedagogue to develop the educational content of a game, and then merely incorporating that information into the final computer game script. It should be noted that this current study does not focus specifically on the development of an educational computer game, but merely a script development model, in which the writer has the option to choose to include educational content in the computer game for edutainment purposes.

3.4.5 Concluding remarks

Based on the discussions on didascalia writing, scene scripting, dialogue writing and the development of additional content, the writer will now have all the necessary elements to successfully write a computer game script. These discussions serve to guide the writer in making informed decisions, following suggested criteria and/or successfully implement all the constituting factors associated with the writing of a computer game script. The writer can make use of the template provided in Appendix E as a guideline as to all the expected elements of a computer game script, which will ultimately also serve as a valuable document for the development team when creating the computer game.

3.5 Summary

This chapter focussed on the responsibilities of the computer game writer, namely research and scripting in order to develop a script development model for the development of computer games. There are two phases associated with the development of the computer game script, namely research and scripting.

A continuous collaborative partnership with the other role-players within computer game development is essential, as they can make valuable inputs that could alter the script considerably over the course of the production process. All of these aspects are indicated in the appropriate manner in the template provided in Appendix E, which will serve to guide and assist the writer throughout the writing process.

The next chapter of this thesis will involve a case study in which the researcher will make use of all of the discussed game contexts, creative strategies, theoretical frameworks and scripting guidelines constituting the script development model, to adapt an already existing property (*Fritz Deelman*, Leon Rousseau) into a computer game script for edutainment purposes. The purpose of the case study will be to determine whether the script development model developed in this chapter can be practically applied. Only a thin-slice of such a script will be developed to illustrate the script development model's level of success in creating a computer game script.

4 Case Study

4.1 Introduction

In this chapter I will develop a 'thin-slice' of a computer game script based on the script development model developed in Chapter 3, where all the game design elements, creative strategies, analytical frameworks and scripting guidelines that could aid the writer in writing the script were discussed. From this discussion two templates were developed (Appendix E and Appendix F) that could aid the writer with regard to the necessary aspects to consider when developing a computer game script.

With regard to the thin-slice that will be developed, certain assumptions and limitations need to be highlighted. *In lieu* of the fact that the Centre for Text Technology (CTexT™) is currently exploring ways and means to use gaming as a strategy/technique in language learning and evaluation (see 1.1), the thin-slice will be based on a game for edutainment purposes. Furthermore, the game to be developed will be based on adaptation as creative strategy, seeing as adaptation is a more accessible strategy to newcomers to the industry (see 3.3.2).

With regard to limitations, it needs to be noted that I did not have, during the course of this research, access to the other role-players in the game development industry; therefore the collaborative process of game development (see 2.3.2.2) could not be executed in full. In this regard, however, CTexT could be seen as the production company who indicated a need for such a product to be developed. Another limitation is the fact that seeing as this is not a full-scale game development process, issues such as budget and schedule could not be fully implemented in the thin-slice development.

This chapter will be structured around the templates that were developed in Chapter 3 (see Appendix E and Appendix F). All the aspects contained therein will be mentioned, along with the decisions/outcomes/milestones associated with each point. These points will not be discussed at length, seeing as they have already been discussed in Chapter 3. However, where necessary, certain decisions will be elaborated on to indicate exactly how they were reached. All decisions/outcomes/milestones will be completed on the templates, which can in the end, respectively, serve as a research report and scripting guide for the writer. In order to maintain the flow of the discussion, all decisions will also be indicated in a box at the end of each subsection.

4.2 Research phase

As stated in Chapter 3, research is an integral part of the script writing process. Before a writer can start writing a computer game script, he/she must be thoroughly informed about what will be expected of him/her. As stated by Samsel and Wimberley (1998), writers who are new to the 'interactive screen' often experience some frustration, often due to a lack in proper research.

The first part of the research task of the computer game writer includes determining certain aspects within the game design of the intended game. The writer must define the purpose, delivery platform, the target audience and genre of the game.

4.2.1 Defining the purpose

As stated in chapter 1, although this thesis will not focus on the of a script development model for the development of specifically edutainment games, the thin-slice that will be developed, will be based on edutainment,

Therefore, the assumption can be made that the decision pertaining to the purpose of the game has been provided to the writer. Furthermore, the current research will not focus on the advantages and disadvantages of edutainment; the emphasis will be more on the obstacles the writer might face, as well as the "conditions likely to induce" (Kirriemuir & McFarlane, 2004) a successful computer game for edutainment purposes.

According to Kirriemuir and McFarlane (2004) researchers, teachers and designers of learning resources are increasingly asking how the computer game as medium might be used to support children in the learning process, especially taking into consideration the fact that the youth of today is growing up in the information age.

Herring (1984) states that, traditionally, education "has not been considered a 'fun' activity". He furthermore points out that "learning, by the nature of the way we impose it, is simply not fun" (Herring, 1984). Therefore the following questions arise: should one venture into the field of developing edutainment computer games, what are the obstacles associated with previous attempts, and how are these obstacles overcome? Concomitantly, what are the aspects that might prove to be of help to the writer, with regard to previous edutainment games?

Kirriemuir and McFarlane (2004) state the following as reasons as to why most edutainment software has failed to realise expectations:

- The simplicity of the games when compared to games aimed at entertainment;
- Tasks being too repetitive, therefore becoming boring and 'work';
- Poorly designed tasks that do not support progressive understanding;
- The severely limited range of activities; and
- The target audience becoming aware of the fact that they are being coerced into learning.

Consequently, they (Kirriemuir & McFarlane, 2004) suggest the following conditions likely to induce better results for edutainment (*verbatim*):

- The activity should be so structured that the player can increase or decrease the level of challenges faced, to match exactly personal skills with the requirements for action;
- It should be easy to isolate the activity, at least at the perceptual level, from other stimuli, external or internal, which might interfere with involvement in it;
- There should be clear criteria for performance; a player should be able to evaluate how well or how poorly (s)he is doing at any time;
- The activity should provide concrete feedback to the player, so that (s)he can tell how well (s)he is meeting the criteria of performance; and
- The activity ought to have a broad range of challenges, and possibly several qualitatively different ranges of challenge, so that the player may obtain increasingly complex information about different aspects of her/himself.

It is my opinion that the writer of the computer game script should not be solely responsible for the development of the educational content of the game. Therefore, the writer can, in conjunction with the creative director, work alongside a pedagogue or specialist to develop the educational content of the game. The writer can then integrate such content into the overall structure of the game. In this regard it is important to remember that the entertainment element of the game is extremely important, especially because previous attempts at educational games have been unsuccessful due to the fact that they have not been fun enough, and children felt coerced into learning (Kirriemuir & McFarlane, 2004). It is therefore important that the writer works alongside the pedagogue and specialist to maintain the entertainment levels, thus making learning fun.

Purpose: Edutainment

4.2.2 Defining the target audience

In order to determine the target audience the game will be developed for, the computer game writer must answer the questions as set forth by Sam-sel and Wimberley (1998)(see 3.2.1.2).

- What are the age and education level of my target user?

In keeping with CText's language teaching ideology, I visited two primary school teachers and one high school teacher to determine the spelling and general language proficiency of primary and high school children (Enslin, A. 2005, personal communication; du Plessis, P. 2007, personal communication; Hougaard, 2007, personal communication). It was determined that, although children experience problems with linguistic skills from a very young age, the game should probably be aimed at children between the ages of ten and thirteen. This decision was based on the fact that younger children might not possess the skills necessary to master a complex, interactive computer game.

- How experienced is the person with interactive technology?

Considering the tremendous growth in the computer gaming industry, one can safely assume that children of the indicated age will be proficient in the gameplay required from an interactive computer game.

- What is the gender / cultural background of my target audience?

The target audience will consist of learners (both boys and girls) from grades 5 to 7. Considering the language group, the target audience will also consist mainly of white and coloured children.

- Will my audience access this application from home or the office?

The game to be developed will be available to schools as a medium of instruction / teachers' aid, or as a game that a child can play at home.

- How often will my audience interact with the application?

The assumption can be made that the game will be played at least twice a week, seeing that children will be able to play it at school and at home.

- Will my target user interact alone or with a group?

The target will interact with the software alone, with possible parental or teachers' supervision.

- What type of computer equipment does my target user own?

This will again depend on the equipment available to schools; however, personal communication with a primary school teacher indicated that primary schools are already making use of computers in their schools with regard to especially mathematical educational applications (du Plessis, 2007, personal communication).

- In what type of environment will my audience use the application?

The target audience will use the software either in the classroom or at home.

- Does the user have any preconceptions about the application?

The user will purchase the application with the preconception that while it is a computer game, it is also intended for educational purposes.

- What should the language of the application be, and what is the audience's proficiency in that language?

The users will be mostly Afrikaans-speaking children in need of language and spelling development.

Target Audience: The target audience can be stated to be Afrikaans-speaking school children between the ages of ten and thirteen, who are proficient in the use of interactive computer games, and have access to suitable computers. They will need little or no supervision in playing the game, and will be aware of the educational aspirations of the game.

4.2.3 Genre

As indicated in 3.2.1.3, the most common and popular interactive computer game genres include action, adventure, action-adventure, casino, puzzles, role-playing games (RPGs), simulations and massively multi-player online games (MMGOs). For the new-comer writing for the interactive gaming industry, as stated in 3.2.1.3, the 'safe' choice would be to work on the development of action-adventure games, as it is already a popular genre, immediately establishing a potential audience (see Appendix H).

Genre: Action-adventure

4.2.4 Delivery Platform

Even though Sony® (Playstation®), Microsoft® (Xbox 360™), Nintendo® Wii, GameCube and Personal Computer (PC) games, are all currently popular platforms, I will in this regard make the assumption that the script to be developed will be developed for PC games.

Delivery Platform: Personal Computer game

4.3 Creative strategy

According to Charla (2003), unless you are a skilled writer of computer games, you will probably be working with licensed material, i.e. adaptations. Therefore, as stated before, the thin-slice script will be developed for a game based on adaptation as creative strategy.

Creative Strategy: Adaptation

4.4 Source selection

Considering the issues discussed in 3.3.2, determining the source should take into consideration the following issues: genre, concept, characters, visualisation and intellectual property (IP)/copyright.

- Based on the discussion in 3.3.1.3, the **genre** of this case study will be on the development of a script for an action-adventure game (3.3.1.3). Therefore the source text must preferably also be an action-adventure text.
- The game **concept** should not be too simplistic – the target audience should want to play the game in spite of the fact that it is also for edutainment purposes.
- The **characters** of the game should not be too complex, because computer games are weak at character development, rather excelling at adventure, mystery and action.
- The writer must be able to **visualise** whether the game will be able to function independent of the source material, and should not be a mere reflection of the source. In this regard, aspects

such as temporality, speed and pace must be taken into consideration.

- The **copyright or intellectual property** (IP) associated with the source material must be considered. For purposes of this case study, the assumption will be made that the writer has the full rights to all aspects of the source material, because this is merely a case study, and not a fully-fledged development of a screenplay. For purposes of further development, full rights will need to be obtained.

For purposes of this study, the bullets above will now be applied to determine a source text for the thin slice that will be developed. Keeping the age of the target audience in mind, the first step was to determine what material is available for consideration. Several Afrikaans youth series were considered, including:

- *Buiter-series* (Gerrie Radloff)
- *Bienkie-series* (Ettie Bierman)
- *Buks-series* (John Coetzee)
- *Die Uile-series* (Cor Dirks)
- *Fritz Deelman-series* (Leon Rousseau)
- *Internet onbeperk-series* (Henning Paulsen)
- *Keurboslaan-series* (Theunis Krogh)
- *Liewe Heksie-series* (Verna Vels)
- *Maasdorp-series* (Stella Blakemore)
- *Oloff die Seerower-series* (Gerrie Radlof)
- *Saartjie-series* (Bettie Naudé)
- *Swart Kat-series* (Chris Sasner)
- *Thomas@-series* (Carina Diedericks-Hugo)
- *Trompie-series* (Topsy Smith)

At least one book of each of these series was read and carefully considered keeping the specific criteria in mind. Even though some of the series are very popular among the South African youth (based on interviews with teachers), not all of them lent themselves to the interactive computer game medium. Series like *Trompie*, *Bienkie* and *Saartjie*, however popular they are, do not possess the necessary pace required for a fully-fledged, action-adventure computer game. Others, for instance *Keurboslaan* and *Maasdorp*, could rather be adapted to become a television series due to greater character development, but again a lack of pace and speed required by a computer game.

One title that immediately stood out among the others was the *Fritz Deelman*-series⁹ (Leon Rousseau, 1950s and 1960s, redistributed in the early 2000s). This series deals with a character named Fritz Deelman, who is a member of the South African Division of the International Safety Police. He is a courageous action hero, sometimes called the James Bond of South Africa (in 3.3.2, Pearce (2002) states that James Bond would probably be a good choice of character for a computer game). The books are full of action, adventure, mystery and fantasy. They are fast-paced, with interesting, archetypal heroes and villains¹⁰, interesting locations¹¹, and are way ahead of their time in terms of futuristic gadgets and equipment, aspects that could still interest the youth of today (flying cars, interesting weapons, video conferencing, etc.). Even though the characters are interesting and well-developed, they remain archetypal, and could therefore successfully transition into the game world. The reader is never confronted with complicated character development; the focus of the series is on pure action-adventure fun.

⁹ Among the *Fritz Deelman*-titles are:
Fritz Deelman en die deipseeduikbol (Rousseau, 1958)
Fritz Deelman en die groen dood (Rousseau, 1958)
Fritz Deelman en die swart eiland (Rousseau, 1958)

¹⁰ Evil scientists, creatures from outer space, mysterious organisations, etc.

¹¹ Pacific Ocean, outer space, mysterious islands, the Amazon, etc.

Another aspect to be considered throughout the development process is the fact that, for purposes of this research, the script to be developed will be for educational purposes. This is in keeping with CText's language learning and development ideology. An important aspect to consider in this regard throughout the development process is the fact that the educational elements of the game should not overshadow the entertainment elements. The tasks should be designed in such a manner that the target audience should not be overwhelmed by the fact that they are being coerced into learning. Therefore, careful consideration should be given to the development of the educational elements, so as to support progressive understanding through exciting and well-designed tasks. These tasks and educational content should be developed in collaboration with the educational expert or pedagogue and should include aspects that deal with the improvement of language proficiency of Afrikaans-speaking youth. These tasks could include spelling games, word identification games and possibly even pronunciation games. Based on CText core business that has to do with the development of human language technology applications, and the fact that the *Fritz Deelman*-series make use of rather progressive technologies, it could be an interesting idea to make use of speech synthesis in the games that could prove to be an interesting venture for CText and associates.

At the end of this research phase, the completed template (Appendix E) will provide information to both the writer and the producers and could form the basis of a research report. On completion of the template, the writer can provide comments or reasons for certain decisions. For purposes of this thin slice, the number of each subsection where the decisions are reached and discussed are included to avoid unnecessary repetition.

Task				Output / mile-	Comments
------	--	--	--	----------------	----------

				stone / decision	
Research					
	Game context				
		<i>Purpose</i>			4.2.1
		• Entertainment • Simple gameplay • Edutainment	Edutainment		
		<i>Target audience</i>			4.2.2
		• Age and education level of target audience	Ten to thirteen-year old children (grades 5 to 7)		
		• Level of experience with interactive technology	Proficient in the use of interactive computer games		
		• Gender / cultural background of target audience	Boys and girls. Within the South African context probably white and coloured children		
		• How often will audience interact with the application?	At least twice weekly		
		• Will target user interact alone or with a group?	Alone, with possible supervision		
		• What type of computer equipment does target user own?	User will make use of equipment provided by schools		
		• In what type of environment will audience use the application?	Classroom or at home		

			Does user have any preconceptions about the application?	Game will be applied for edutainment purposes	
			What should the language of the application be?	Afrikaans	
			What is the audience's proficiency in that language?	User will use game to develop language and spelling proficiency	
		Genre			4.2.3
			Action	Action-adventure	
			Adventure		
			Action-adventure		
			Casino		
			Puzzle		
			Role-playing game		
			Simulation		
			Massively Multiplayer Online Game		
			Sport game		
		Delivery Platform			4.2.4
			Arcade game	Personal Computer	
			Mobile		
			Personal Computer		
			Console		
	Creative strategy				

		<i>Original idea</i>			
		<i>Simulation</i>			
		<i>Adaptation</i>		Adaptation	Should 'Adaptation' as creative strategy be chosen, the writer must consider the aspects discussed in 3.3.2.

4.5 Scripting

At this stage of the development process the writer should have a clear understanding of the type of game that will be developed, based on the outputs achieved in the research phase.

4.5.1 Scene scripting

A computer game script can be divided into a number of sequences; these sequences can be divided into a number of scenes; a scene is built around one concept or event. Scene scripting therefore entails breaking down the story into its different sequences and scenes (one concept or event), and adding limited dialogue and interaction suggestions.

For purposes of this research, it was decided to take one book in the *Fritz Deelman* series¹² and turn it into a computer game script; for future development, more books from the series could be used, where scenes from different books could be added into one game.

¹² Fritz Deelman en die Swart Eiland (Leon Rosseau, 1960)

Figure 11 provides a mind map of the scenes and sequences that will comprise the thin slice to illustrate the vertical and horizontal connections of the different scenes. After the mind map has been developed, the writer can make use of Template F to start the scripting process. The completed template will therefore contain all scenes, sequences, descriptions directions, dialogue, etc. and will be used by the developers and creative team when developing the computer game.

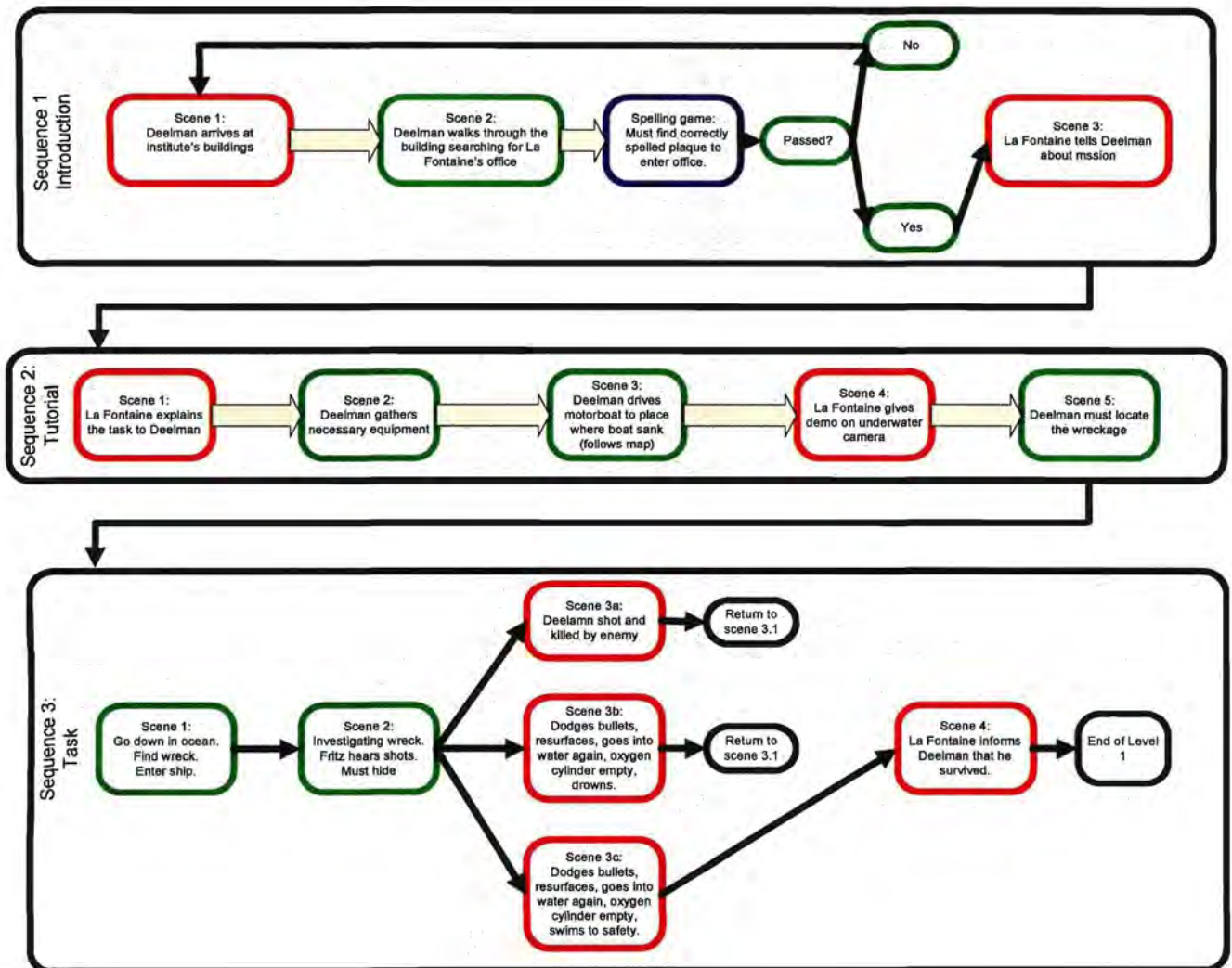


Figure 11: Mind map of the scenes and sequences of the thin slice

Title	Fritz Deelman en die Swart Eiland			
Characters	Attribute		Additional	Comments
Fritz Deelman				For purposes of further script development, the character list will include all characters involved in the entire computer game script
	Age	Mid-twenties		
	Body type	Athletic		
	Hair colour/cut	Brown		
	Eye colour	Blue		
	Length	Tall		
	Occupation	Lieutenant in the South African Division of the International Safety Police		
	Attire	Trench coat		
	Voice quality	Deep, serious		
	Special powers	N/A		
La Fontaine	Age	Mid-forties		
	Body type	Very thin.		
	Hair colour/cut	Grey		
	Eye colour	Brown		
	Length	Average		
	Occupation	Superintendent in the South African division of the International Safety Police		
	Attire	Suit and tie		
	Voice quality	Slow, serious (speaks with a French accent)		
	Special powers	N/A		
Sequence	1 (Introduction)			
Scene	1			
Type	FMV			
Characters	Deelman			
Space	Outside. The Sea Research Institute's buildings Typical military institute buildings on high rocks on the coast. The building's one side disappears under the waves. Concrete outside, grey buildings, South African flag. A strong wind is blowing.			

Time	Morning				
Scene description	Deelman arrives at the Sea Institute's buildings in his luxury sports motor. He gets out. The wind causes his coat to cling to his body.				
Dialogue		Directions	Popups	Additional Content	English dialogue
		Deelman looks serious as he approaches the building. He speaks to himself.	None	Sound: The Strong winds can be heard	
Deelman	Ek was nog nie hier sedert hulle kantore geskuif het nie. Ek sal moet soek vir La Fontaine se kantoor,				I have not been here since they have relocated. I will have to search for La Fontaine's office.
		He enters, passing two heavily armed guards.			
Sequence	1 (Introduction)				
Scene nr	2				
Type	Interactive				
Characters	Deelman				
Space	Inside the building. There are many corridors and doors.				
Time	Morning				
Scene description	Deelman must navigate himself through the building to get to a door with a plaque that says "La Fontaine: Superintendent". The building has many corridors and doors, most of which are locked. He must find the correct one before being able to enter La Fontaine's office.				
Dialogue		Directions	Popups	Additional Content	English dialogue
None		Deelman must search through the corridors for the door that has the word 'Superintendent' spelled correctly. He is informed about his task by Popup 1.	1) Om by La Fontaine se kantoor in te kom, moet jy die deur soek wat nie 'n spelfout bevat nie.	The different doors contain the following: La Fontaine: Suprintendent, La Fontaine: Supirintendent, La Fontaine Superintendent, La Fontaine Superintendent, La Fontaine Superintendent. Of which only the latter is	

		There are many doors and corridors. If Deelman tries to open the wrong door, a popup appears (popup 2) informing him that he has failed the task and has to start again.	2) Jy het die verkeerde deur gekies. Probeer asseblief weer.	correctly spelled. Sound: It is very quiet in the corridors, and only slight office sounds can be heard, along with Deelman's footsteps	
		As soon as Deelman finds the right door, it opens and he can enter.			

Sequence	1 (Introduction)
Scene	3
Type	FMV
Characters	Deelman La Fontaine
Space	Inside La Fontaine's office. The door is closed. The office is sparsely furnished with a large window overlooking the ocean. The walls are bare and the carpet brown. Everything is meticulously neat.
Time	Morning
Scene description	La Fontaine shares information with Deelman as background for his upcoming mission.

Dialogue		Directions	Popups	Additional Content	English dialogue
La Fontaine	Luitenant Deelman, sit gerus.	He looks perplexed and speaks in a lowered hushed voice.	None	At the invitation, Deelman moves to a chair in front of the desk and sits down.	Lieutenant Deelman, please sit down.
La Fontaine	Soos jy moontlik weet, is daar die afgelope maand nie minder nie as drie vyandelike duikbote by die ingang tot ons Visstrand hawe opgespoor – al drie atoomduikbote. Ons vermoed dat die duikbote daar geplaas is om spioene aan wal te sit om meer van ons	La Fontaine looks down the whole time he is speaking to Deelman.	None		As you might know, the past month, no fewer than three enemy submarines were detected at the entrance to our Visstrand harbour – all three atomic submarines. We suspect that the submarines have been placed there to mobilise spies

	uraanbronne agter te kom. Verlede week het 'n klein bootjie wat van Visstrand na die Kaap op pad was, spoorloos verdwyn.				to find out more about our uranium sources. Last week a small boat, on its way from Visstrand to the Cape disappeared without a trace.
Deelman	Ek het daarvan gelees. Twaalf manne word vermis.	La Fontaine nods.	None	La Fontaine takes a seat behind his desk.	I have read about it. Twelve men are missing.
La Fontaine	Dis korrek. Ons weet min of meer waar die boot gesink het, en ons weet dat daar op daardie stadium en plek geen storms was nie. Daar was ook 'n klein hoeveelheid uraan op daardie skip.	Deelman looks up, shocked.	None		That is correct. We know more or less where the boat has sunk and we know that there were no storms there at that time or location. There was also a small amount of uranium on that boat.
Deelman	U is dus van mening dat die skip deur 'n vyandelike duikboot gekelder is?	La Fontaine shows no emotion. He is uncertain	None		Are you implying that the boat was ambushed by an enemy submarine?
La Fontaine	Ons is nog nie seker nie, maar dit is waarom jy hier is. Ons het bewyse nodig dat die boot wel gekelder is om die uraan te bekom. Dit gaan dus van jou verwag word om te duik na die boot om vas te stel hoe hy gesink het, en of hy wel gekelder is.		None		We are not yet certain, but that is why you are here. We need evidence to prove that the boat was in fact ambushed to obtain the uranium. It will therefore be expected of you to determine how it sank and whether it was ambushed.
Deelman	Wanneer vertrek ons!?	Deelman is excited	None		When do we leave!?
Sequence	2 (Tutorial)				
Scene nr	1				
Type	FMV				
Characters	Deelman La Fontaine				
Space	Inside a warehouse. The warehouse is approximately 10x10 metres. Against the walls is equipment that will be needed for the dive. The equipment is behind glass enclosures that have keypads similar to computer keyboards next to them. There are diving suits, underwater cameras, harpoons, ropes, hunting				

	knives, oxygen masks, oxygen cylinders and ammunition.				
Time	Late morning				
Scene description	La Fontaine and Deelman are alone in the warehouse. They stand approximately two metres from one another. La Fontaine explains the task to Deelman.				
Dialogue		Directions	Popups	Additional Content	English dialogue
La Fontaine	Deelman, vir hierdie missie gaan jy 'n duikpak, onderwaterkamera, suurstofsilinder, jagmes, harpoen en tou nodig hê. Die toerusting word egter beskerm deur geheime kodes. Die glasskerms sal slegs oopgaan indien jy telkens die regte wagwoord insleutel in die beheerpaneel. Jy moet dus na die onderskeie beheerpanele gaan en die wagwoord ontsyfer. Die wagwoord is telkens 'n word wat te doen het met die spesifieke stuk toerusting, waarvan die letters gekommel is. Jy moet die letters in die korrekte volgorde intik om sodoende die glasskerms oop te sluit.	Deelman looks around him the whole time. He is quiet. As La Fontaine speaks, he motions to the equipment against the walls.	1) As La Fontaine lists the objects that Deelman will need, pictures of the equipment appear in a popup screen.		Deelman, for this mission you will need a diving suit, underwater camera, oxygen cylinder, hunting knife, harpoon and rope. The equipment is, however, protected by secret codes. The glass enclosures will only open as soon as you have entered the correct password in the control panel. You must therefore go to the different enclosures and decipher the password. The password is a word that has to do with the specific piece of equipment, of which the letters have been scrambled. You must enter the letters in the correct order to unlock the enclosures
Sequence	2 (Tutorial)				
Scene nr	2				
Type	Interactive				
Characters	Deelman				
Space	Inside the warehouse.				
Time	Late morning				

Scene description	Deelman is alone in the warehouse and must go to the different equipment La Fontaine listed, and enter the correct passwords.				
Dialogue		Directions	Popups	Additional Content	English dialogue
None		For the six pieces of equipment La Fontaine has listed, there are six passwords that, if unscrambled correctly, spell the following words: diuk-pak, kamera, suurstof, jag-mes, harpeon and tou.		The scrambled words are: diuk-pak, kamerra, sierstof, jag mes, harpeon, tuo.	
		Each time Deelman correctly enters a password, the glass enclosure slides open, and Deelman must take out the piece of equipment. It is moved to his inventory.	Each piece of equipment Deelman gathers is moved to a popup-inventory where Deelman can see what he has and still needs to complete the mission.		
		As soon as all of the equipment has been gathered, Deelman must locate the exit of the warehouse and leave the room. He can only do this if all the equipment has been gathered.	If the player has difficulty in correctly spelling the words, he/she can choose to activate a 'hint' that will give a simple spelling lesson.		
Sequence	2 (Tutorial)				
Scene nr	3				
Type	FMV				
Characters	Deelman La Fontaine				
Space	Outside on the docks. The ocean is stormy. A strong wind is gushing.. A motorboat awaits Deelman as he approaches La Fontaine who is already on the motorboat.				

Time	Late morning				
Scene description	Deelman must go to the motorboat and drive it to the place where the boat presumably sank. He and La Fontaine are on the boat.				
Dialogue		Directions	Popups	Additional Content	English dialogue
La Fontaine	Deelman, jy moet ons neem na die plek waar die boot vermoedelik gesink het. Hier is 'n kaart waar ons vermoed die wrak lê.	He speaks with urgency	A map appears at the bottom of the screen indicating the location of the sunken ship.		Deelman, you must take us to the place where the boat presumably sank. Here is a map indicating the place we presume the boat has sunk.
		Deelman gets into the boat and must steer himself and La Fontaine to the location of the ship. There are many small islands he has to steer clear of. If he hits one of them, the motorboat will sink and he will need to start the scene over.			
Sequence	2 (Tutorial)				
Scene nr	4				
Type	FMV				
Characters	Deelman La Fontaine				
Space	At the place where the boat presumably sank. Deelman and La Fontaine are on the motorboat. The ocean has calmed. The map indicates that they are at the correct location.				
Time	Late morning				
Scene description	La Fontaine gives Deelman a demonstration on how to operate the camera as well as what is expected of him.				
Dialogue		Directions	Popups	Additional Content	English dialogue
La Fontaine	Hierdie kamera weeg ongeveer 50 kilogram, maar on-	The camera is lowered with a strong cable and	A screen appears showing the images captured by the		This camera weighs approximately 50 kilo-

	der die water, weens die gesofistikeerde ontwerp van die toestel, is dit maklik beheerbaar en het dit byna geen gewig nie.	pulley to a depth of 30m under the surface. An image appears on the monitor of the ship. Deelman sees the underwater activities as captured on the camera. At this stage he only sees fish and other underwater sea life.	camera.		grams, but under the water, due to the sophisticated design of the camera, it is easily manageable and it has almost no weight.
La Fontaine	Deelman, jy moet vervolgens hierdie boot oor 'n area van een vierkante kilometer stuur, en deur middel van die kamera en beeld op die monitor, die boot wat gesink het opspoor. Ek stel voor dat jy dus stadig die hele gebied fynkam totdat jy die wrak opgespoor het.	Deelman listens carefully as La Fontaine explains.	The screen with the camera image is still there.		Deelman, you must now steer this boat over an area of one square kilometre, and located the sunken boat by means of the camera and the image on the monitor. I suggest that you slowly search the area until you have located the wreckage.
Sequence	2 (Tutorial)				
Scene nr	5				
Type	Interactive				
Characters	Deelman				
Space	On the motorboat				
Time	Late morning				
Scene description	Deelman and La Fontaine are on the motorboat and Deelman is trying to locate the wreckage with the camera and monitor.				
Dialogue		Directions	Popups	Additional Content	English dialogue
None		Deelman must navigate the boat within the demarcated area and simultaneously keep an eye on the		If he cannot find the wreckage, he can ask for a hint from the computer.	

		monitor to determine where the wreckage of the boat lies.			
		As soon as Deelman has located the wreckage, the screen fades and the next sequence is started.			

Sequence	3 (Task)				
Scene nr	1				
Type	Interactive				
Characters	Deelman				
Space	Underwater. A shipwreck is visible. There are many holes in the boat caused by the attack. A lot of underwater life passes by.				
Time	Early afternoon				
Scene description	As Deelman looks around him, a note appears on the screen with the task from La Fontaine. After reading the task, he must find the entrance to the boat and go inside.				

Dialogue		Directions	Popups	Additional Content	English dialogue
None		Deelman must navigate himself around the boat to try and locate the entrance. As soon as he starts moving, the screen freezes with a note from La Fontaine containing instructions for the task. After reading the task, Deelman must enter the wreckage.	1) Jy moet probeer om die wrak binne te gaan en die uraan op te spoor sodat dit na die oppervlak gebring kan word. Wees versigtig vir die vyand en moenie huiwer om terug te veg nie. Maar onthou, jou ammunisie is min, gebruik dit spaarsaam. Hierdie missie gaan werklik jou vernuftigheid toets.		

Sequence	3 (Task)				
Scene nr	2				
Type	Interactive				

Characters	Deelman				
Space	Inside the wreck. The wreck is filled with water. There are a few cabins Deelman can move around in. Fish and other underwater creatures move around through the wreck.				
Time	Early afternoon				
Scene description	While looking for the uranium, he hears shots. Above him he can see the motorboat he and La Fontaine arrived on speed away.				
Dialogue		Directions	Popups	Additional Content	English dialogue
La Fontaine	Die missie is gekanselleer. Jy moet probeer weg-kom van die vyand! Ek moes vlug! Verdedig jouself teen hulle, maar onthou om jou ammunisievlakke dop te hou! Ek is bevrees dat jou suurstof seker ook teen hierdie tyd laag is. Jy sal dus nie lank onder water kan bly nie.	He hears a panicked message from La Fontaine.			The mission has been cancelled. You must try to get away from the enemy! I had to flee! Defend yourself against them, but remember to watch your ammunition! I am afraid that by this time your oxygen levels are also low. You can therefore not stay under water for very long.
Sequence	3 (Task)				
Scene nr	3a				
Type	Interactive				
Characters	Deelman				
Space	Under water				
Time	Afternoon				
Scene description	Under water. Shots are fired. Deelman is trying to elude the enemy. Visibility is affected by dust and coral that are disturbed by the bullets.				
Dialogue		Directions	Popups	Additional Content	English dialogue
None		Deelman is spotted and the enemy starts to fire. He can shoot back and wound or kill the enemy. There are many places to hide, but he must re-			

		member that his oxygen levels are low. There are many of them. He tries to get away, but is unsuccessful. He is fatally wounded. This scenario a. This scenario is followed if the player does not elude the enemy successfully. Should Deelman be killed here, the player will be returned to the motorboat with La Fontaine, and must repeat the exercise.			
Sequence	3 (Task)				
Scene nr	3b				
Type	Interactive				
Characters	Deelman				
Space	Under water				
Time	Afternoon				
Scene description	Under water. Shots are fired. Deelman is trying to elude the enemy. Visibility is affected by dust and coral that are disturbed by the bullets.				
Dialogue		Directions	Popups	Additional Content	English dialogue
None		Deelman is spotted and the enemy starts to fire. He tries to get away and makes it to the surface to get a breath of fresh air. The shots continue and he cannot find anything to hold onto. He is forced to go underwater again to avoid being shot. Underwater there			

		are places to hide. This scene entails Deelman coming up for air and diving down again several times, until he either gets a fatal wound or runs out of breath and dies. This is scenario b. This scenario is followed if the player does not elude the enemy successfully. Should Deelman be killed here, the player will be returned to the motorboat with La Fontaine, and must repeat the exercise			
--	--	--	--	--	--

Sequence	3 (Task)
Scene nr	3c
Type	Interactive
Characters	Deelman
Space	Under water
Time	Afternoon
Scene description	Under water. Shots are fired. Deelman is trying to elude the enemy. Visibility is affected by dust and coral that are disturbed by the bullets.

Dialogue		Directions	Popups	Additional Content	English dialogue
		Deelman is spotted and the enemy starts to fire. He tries to get away and makes it to the surface to get a breath of fresh air. The shots continue and he cannot find anything to hold onto. He is forced to go un-	1) Baie geluk! Jy is veilig, maar het jou bewussyn verloor. La Fontaine het jou opgespoor toe hy na jou kom soek het.		

		derwater again to avoid being shot. If the player moves to where the boat's wreck is, he will notice a faint light. If he swims there, he will notice the shots dying down. He has reached safety. However, he loses consciousness. A message appears on the screen to inform the player of this. This is scenario c. If the player is successful in the execution of this task, the screen will fade indicating the end of the scene.			
Sequence	3 (Task)				
Scene nr	4				
Type	FMV				
Characters	Deelman La Fontaine				
Space	Under water				
Time	Afternoon. The ocean is calm and the light is shining bright.				
Scene description	Deelman and La Fontaine are on the motorboat again. Deelman is regaining consciousness. He is on the bed of the boat's cabin.				
Dialogue		Directions	Popups	Additional Content	English dialogue
La Fontaine	Alles is reg, jy is in	His voice is			Everything is all

	goeie hande.	comforting. Deelman cannot see him.			right. You are in good hands.
Deelman	Ek is Luitenant Deelman van die Internasionale Veiligheidspolisie. Neem my dadelik na Vuurwater se basis. Dit is dringend!	He speaks fast and anxiously.			I am Lieutenant Deelman of the International Safety Police. Take me to Vuurwater's base immediately. It's urgent!
La Fontaine	Dis ek, luitenant, La Fontaine. Jy was vir lank bewusteloos. Jy het jou rus nodig. Ons is op pad na die basis toe. Toe die skote gaan lê het, het ons teruggejaag na waar die wrak was en jy het wonderbaarlik aan 'n stuk hout vasgeklou en ons kon jou red! Ons is byna by Vuurwater. Rus nou eers.				It is me, lieutenant, La Fontaine. You were unconscious for very long. You need your rest. We are on our way to the base. As soon as the shots died down, we raced back to the wreckage site where you miraculously clung to a piece of driftwood and we could save you. We are nearly at Vuurwater. Rest now
		The screen turns dark and indicates the end of the sequence.			

4.6 Concluding remarks

In this chapter I developed a thin-slice computer game script based on the templates (Appendix E and Appendix F) developed as part of the script development model (Chapter 3). In order to do this, I researched and implemented the game context, creative strategies and theoretical frameworks available to the writer of the computer game script.

Firstly, the design elements (purpose, target audience, genre and platform) were determined based on the research guidelines as set out in chapter 3.

Secondly, a creative strategy (adaptation) was chosen, based on the fact that, according to Charla (2003), the new-comer to the gaming industry, writing computer game scripts, will probably have to start with adaptation as creative strategy. For purposes of this study, after weighing certain options, the *Fritz Deelman*-series (Leon Rosseau) was chosen as source text.

Also as part of the research phase, narratology and ludology as analytical frameworks were discussed in depth, and it was noted that the writer must at all times keep these theories in mind when writing the computer game script, in order to maintain a balance in the game – a balance between a strong narrative element, as well as having a strong gameplay element.

In the scripting phase, a mind map was drawn up to illustrate the different sequences and scenes that will comprise the thin-slice script. This was done to have a better visualization of the structure of the game. These sequences and scenes were then elaborated on making use of Template F to develop a structured computer game script. The completed thin-slice was developed making use of didascalia (as set out in drama theory) and dialogue writing.

Template E, after having been completed, can form part of the research report that the writer can provide to the producers/developers to substantiate certain specific decisions that he/she made. The information contained therein, will provide reasons/comments as to why certain decisions were made, e.g. why adaptation as strategy was chosen. It is my opinion, that the template in Appendix F greatly supported the script writing process, continually reminding me of aspects that should be considered throughout, as well as indicating decisions that should be made during the course of the scripting process. I am also of the opinion that it would in fact be possible to develop a full-scale script for a computer game making use of this document.

5 Conclusions

5.1 Introduction

Up to the present, the concept of implementing computer games into the learning process has been met with mixed reactions, mainly because traditionally education has not been synonymous with fun and entertainment (Herring, 1984). The current study therefore set out to develop a script development model that could aid computer game writers in producing a computer game script. Within the scope of this research, the model would be specifically applied in developing a script for a computer game based on adaptation as creative strategy. This model was developed specifically with the aim of isolating the game's context, creative strategies and analytical frameworks that could aid the writer in the scripting process. These aspects form part of the research function of the computer game writer. After the research phase, aspects pertaining to the scripting of the computer game script were discussed. These aspects can guide the writer in decision-making processes, as well as provide specific guidelines when creating characters, space, time and narratives in the computer game script.

In order to develop such a script development model, it was deemed necessary to first develop a communication model for computer games (based on the communication model by Roman Jakobson) to determine the position of the writer within the computer game development communication process. Based on this communication model, a game development model was developed to determine the functions and responsibilities of the different role players of the game development process – but specifically the functions and responsibilities of the writer in the development process.

5.2 Summary and main findings

The first research question posed was what a game development model for computer games look like; as well as indicating the position, functions and responsibilities of the writer within the macro-contextual communication model.

Based on basic research, the researcher undertook a theoretical investigation into the possibilities of developing a communication model for computer games to determine the position of the writer within the development process. A communication model was developed based on models by Roman Jakobson (Issacharoff, 2001) Jacob Lothe (Lothe, 2000) and Jeanne Novak (Novak, 2005). It was determined that the writer, within the communication model, fulfils the role of implied author along with the producer of the game. The writer becomes the person who communicates a certain message, at a certain time and place to his/her audience. Having established the position of the writer within the communication process, it was possible to postulate a game development model that could illustrate the writer's, and other role-players' functions and responsibilities within the collaborative development framework. It was established that the sole function of the computer game writer is to develop a script for the computer game. The associated responsibilities include communication, research and scripting. The main focus for the development of the game development model, was to place the writer within the game development process, as well as to determine what his/her specific responsibilities are, and how they possibly overlap with those of the other role players.

The second research question was aimed at whether a script development model for the computer game writer can be developed. Such a script development model would focus on the game context, creative strategies and analytical frameworks associated with writing a computer game script. Applied research was implemented to produce a broad base of knowledge

likely to form the background to the solution of the recognised problems (the lack of a detailed model for the development of computer game scripts), offering possibilities on how to solve them (CHE, 2005:9). A script development model was developed based on extensive research on computer game development, and the game context, creative strategies and analytical frameworks that have a specific bearing on the computer game writer were identified. The game elements of the game context that were defined, included defining the purpose, the target audience, genre and platform of the game. The creative strategies that were identified had specific bearing on the writing process and were adaptation, simulation or making use of an original idea. With regard to the analytical frameworks, two theories, namely ludology and narratology were identified that specifically influenced the script development process. It was noted that the writer needs to find a balance between these two approaches in order to develop a successful computer game script. This balance can be maintained by making use of the narratological as well as the ludological elements. Should the writer ensure that all these elements are incorporated into the computer game script, it is likely that the balance can be maintained.

The final research question was aimed at determining whether the script development model as proposed in chapter 3 can be successfully implemented to develop at least a thin slice of a computer game script (experimental development). In chapter 4 all the elements of the game context, creative strategies and analytical frameworks as stipulated in the model were followed and utilised to develop a thin slice computer game script for the Afrikaans children series *Fritz Deelman* (Leon Rousseau), for entertainment purposes, attempting to maintain a balance between ludology and narratology. Due to the lack in resources available to the researcher in terms of game development collaborators, certain assumptions with regard to the development process had to be made.

For future research, the researcher would like to utilise the script development model in full, and attempt to develop a full-scale computer game script. Such development would require for the writer to have access to all possible collaborators to make full use of the model.

Secondly, it could be interesting to provide prospective computer game writers with the script development model, to see whether they can successfully implement the model in order to at least develop a thin slice for another project, or to even develop a full-scale script. Feedback from such writers could also be implemented into the model to refine it according to the insights and comments of other writers of different levels of experience.

Thirdly, there seems to be a great deal of research and development work that could be done with regard to the edutainment aspect addressed in this dissertation. It is suggested that the relationship and interaction between the writer of the computer game script and the educationalist / pedagogue be further explored, in order to tap into the field of games aimed specifically at edutainment.

5.3 Concluding remarks

I am of the opinion that if a writer who wishes to write for the computer game industry follows the steps as stipulated in the script development model, while constantly being aware of the writer's position in the communication (development) process, as well as keeping the writer's functions and responsibilities (game development model) in mind, he/she should be able to develop a computer game script that could be successfully developed into a complete, interactive, well-balanced gaming experience. It should be noted that, although the game context, creative strategies and

analytical frameworks are specifically specified within this research, there is no one way to develop a computer game script; this model merely serves as guideline, attempting to cover all the possible considerations that the writer has to keep in mind. Should a writer, for example, make use of the other strategies illustrated in the model, the execution of the writing process will be different. This dissertation focused specifically on the development of a computer game script, based on adaptation as strategy, and, in keeping with the language learning ideology of CText, the script is developed for edutainment purposes.

In conclusion, the specific outputs of this research can be listed:

- A communication model for computer games
- A game development model for computer games
- A script development model for computer game writers
- Template that can be used by computer game writers to guide them through the research and scripting phases of a computer game script.

6 Bibliography

Literature cited

ADOBE SYSTEMS INCORPORATED. 2007. Variable Data Publishing Resource Center. <http://www.adobe.com/products/vdp/glossary.html>
Date of access: 11 Apr. 2007.

ALLEN, M. 2006. Creating successful e-learning: A rapid system. San Francisco: Pfeiffer. 190 p.

ANSWERS.COM. 2005. <http://www.answers.com/topic/adaptation> Date of access: 10 Aug. 2005.

BAL, M. 1997. Narratology: Introduction to the theory of narrative. Toronto: University of Toronto Press. 240 p.

BERARDINELLI, J. 2001. Harry Potter and the Sorcerer's Stone. http://movie-reviews.colossus.net/movies/h/harry_potter1.html Date of access: 27 Mar. 2006.

BERARDINELLI, J. 2005. Harry Potter and the Goblet of Fire. http://movie-reviews.colossus.net/movies/h/harry_potter4.html Date of access: 27 Mar. 2006

BLUESTONE, G. 1957. Novels into Film. California: University of California Press. 237 p.

BREWER, M. 2002. Fun and games in the year 2002: Writing for the gaming industry. <http://www.writergazette.com/articles/article149.shtml>
Date of access: 14 Mar. 2006.

BRIDGETT, R. 2005. Hollywood sound: Part three.
http://www.gamasutra.com/features/20051012/bridgett_pfv.htm Date of access: 18 Feb. 2006.

BROOKS, P. 1984. Reading for the plot. New York: Knopf. 363 p.

CALD (CAMBRIDGE ADVANCED LEARNER'S DICTIONARY). 2003. Adaptation. Cambridge: Cambridge University Press. 1550 p.

CALD (CAMBRIDGE ADVANCED LEARNER'S DICTIONARY). 2003. Manipulation. Cambridge: Cambridge University Press. 1550 p.

CALD (CAMBRIDGE ADVANCED LEARNER'S DICTIONARY). 2003. Translation. Cambridge: Cambridge University Press. 1550 p.

CHARLA, C. 2003. GDC 2003: Designing original games based on licensed properties.
http://www.gamasutra.com/gdc2003/features/20030308/charla_pfv.htm
Date of access 7 Jun. 2006.

CHATMAN, S. 1978. Story and Discourse: Narrative structure in fiction and film. Ithaca: Cornell University Press. 288 p.

CHE (COUNCIL ON HIGHER EDUCATION). 2005. A good practice guide for quality management of research for higher education institutions. Pretoria: The Council on Higher Education. 57 p.

COMPUTER HOPE.COM. Sport overview.

<http://www.computerhope.com/games/sport.htm> Date of access: 13 Dec. 2007.

DE VILLIERS, M., SMUTS, J. & EKSTEEN, L.C. 1970. Kernwoordeboek vir Afrikaans. Cape Town: Nasionale Opvoedkundige Uitgewery Bpk. 650 p.

DILLON, T. 2006. Computer game theory: narrative versus ludology.

<http://www.nestafuturelahb.org/viewpoint/art56.htm> Date of access: 14 Mar. 2006.

DU PLESSIS, P. 2007. Personal communication with author.

Potchefstroom. (Notes in possession of author.)

EL RHALIBI, A., ENGLAND, D., HANNEGHAN, M. & TANG, S. 2005. Extending soft models to game design: Flow, challenges and conflicts. *In* Proceedings of DiGRA - the Digital Games Research Association's 2nd International Conference, Simon Fraser University, Burnaby, BC, Canada, June 16-20.

ELAM, K. 1980. The semiotics of theatre and drama. London: Methuen & Co. 248 p.

ELKINGTON, T.G. 2005. How a salad bowl can improve transmedia storytelling: Integration and convergence in film and game development.

http://www.futureplay.org/papers/paper-176_elkington.pdf Date of access: 14 Mar. 2006.

ENSLIN, A. 2005. Personal communication with author. Potchefstroom.

(Notes in possession of author.)

FALSTEIN, N. & FOX, D. 1997. Collaborating in Game Design. *In* Computer Game Developers Conference 1997.

<http://www.electriceggplant.com/collab97.html> Date of access: 18 Feb. 2006.

FARRIS, D. 2001. Robinson Crusoe. <http://www.gtpcc/robinsoncrusoe.htm> Date of access: 12 Apr. 2005.

FINN, P. 2003. What you C is what you get: Formalizing computer game criticism. <http://www.chass.utoronto.ca/epc/chwp/CHC2003/Finn2.htm> Date of access: 13 Dec. 2007.

GARRAND, T. 2001. Writing for multimedia and the web. Boston: Focal Press. 341 p.

GRAY, S. & SCHALKWYK, D. 1984. Modern stage directions. Cape Town: Maskew Miller Longman. 220 p.

HERRING, R.E. 1984. Educational computer games? http://www.cyberroach.com/analog/an19/edu_games.htm Date of access: 14 Mar. 2006.

HOUGAARDT, A. 2007. Personal communication with author. Potchefstroom. (Notes in possession of author.)

HYMAN, P. 2006. Video games write stuff. http://www.hollywoodreporter..../video_gamedisplay.jsp?vnu_content_id=100188252 Date of access: 14 Mar. 2006.

ISSACHAROFF, M. 1997. Jakobson, Roman.
http://www.press.jhu.edu/books/hopkins_guide_to_literary_theory/roman_jakobson.html Date of access: 11 Aug. 2005.

JENKINS, H. 2004. Game design as narrative architecture.
<http://www.electronicbookreview.com/thread/firstperson/lazzi-fair> Date of access 10 Apr. 2006.

JUUL, J. 1999. A clash between games and narratives. Copenhagen: Institute of Nordic language and literature, University of Copenhagen (Thesis – MA).

JUUL, J. 2001. Games telling stories? – A Brief note on games and narratives. *International Journal of Computer Game Research*, 1(1): 1-12.

JUUL, J. 2003. The Game, the Player, the World: Looking for a Heart of Gameness. In *Proceedings, Level Up Digital Games Research Conference*: 30- 45. Copier M. & Raessens J. eds. 4 – 6 November 2003, Utrecht.

KEEN, S. 2003. Narrative form. New York: Palgrave Macmillan. 204 p.

KELLY, L. 1979. The true interpreter. Oxford: Basil Blackwell. 282 p.

KIRRIEMUIR, J & McFARLANE, A. 2004. Developing Games for Education. http://www.nestafuturelab.org/research/reviews/08_03.htm Date of access: 3 May 2005.

LINDLEY, C.A. 2004. Ludic engagement and immersion as a generic paradigm for human-computer interaction design.

<http://intranet.tii.se/components/results/files/ICEC2004reprint.pdf> Date of access: 13 Dec. 2007.

LOTHE, J. 2000. Narrative in Fiction and Film. Oxford: Oxford University Press. 253 p.

MANNINEN, T., KUJANPÄÄ, T., VALLIUS, L., KORVA, T. & KOSKINEN, P. 2006. Game production process: A preliminary study.
http://ludocraft oulu.fi/elias/dokumentit/game_production_process.pdf
 Date of access: 28 Apr. 2006.

McGRIFF, 2001. www.sjsu.edu/depts/it/mcgriff/kbase/theories/comm.html
 Date of access: 11 Aug. 2005.

MOUTON, M. 1989. Dramateorie vandag: die bydrae van die drama- en teatersemiotiek. Potchefstroom: PU for CHE (Thesis – Dlit) 342 p.

NIDA, E.A. & TABER, C.R. 1982. The theory and practice of translation. Leiden: United Bible Societies.

NKOTSOE, A. W. The dramas of J.H.K. Malao: Phitlhela and Motlhodi. Johannesburg: RAU (Thesis - MA) 76 p.

NOVAK, J. 2005. Game development essentials. New York: Thomson Delmar Learning. 430 p.

O'KEEFE, B.J. & Zehnder, S. 2004. Understanding media development: A framework and case study. *Applied Developmental Psychology*. 25: 720-740.

- PEARCE, C. 2002. Towards a game theory of game.
<http://www.cpandfriends.com/writing/firdt-person.html> Date of access: 14 Mar 2006.
- RIMMON-KENAN, S. 1983. Narrative fiction: Contemporary poetics. London: Methuen. 173 p.
- ROUSE III, R. 2000. Computer games, not computer movies. *Computer Graphics*. 34(4), November.
- SAMSEL, J. & WIMBERLEY, D. 1998. Writing for interactive media. New York: Allworth Press. 305 p.
- SCHACH, S.R. 2005. Object-Oriented and Classical Software Engineering. Boston: McGraw-Hill. 581 p.
- SCOREDOS, S. & JOHNSON, K. 2006. Pitching a small-scale story concept. <http://educationarcade.org/book/print/43> Date of access: 7 Jun. 2006.
- SONESSON, G. 1995. The multimediation of the lifeworld. In Noth, W. (ed.). *Semiotics of the Media: Proceedings of an International congress*, Kasel,. Berlin: Mouton de Gruyter, March.
- SPIERLING, U. 2005. Interactive digital storytelling: Towards a hybrid conceptual approach. In *Proceedings of DiGRA - the Digital Games Research Association's 2nd International Conference*, Simon Fraser University, Burnaby, BC, Canada, June 16-20.
- SRIDHARAN, M., FINK, S.J. & BODIK, R. 2007. Thin Slicing. In *Proceedings of PLDI'07*, San Diego, California, USA, 11-13 June.

TOPEL, F. 2005. "Cradle" 2 the Grave. Lara Croft: Tomb Raider – Cradle of Life movie review.

<http://actionadventure.about.com/cs/weeklystories/a/aa073103.htm> Date of access: 2 May 2006.

TYSON, J. 2006. How 3DO creates video games.

<http://www.howstuffworks.com/3do.htm/printable> Date of access: 2 May 2006.

WHITTEN, J. L., BENTLEY, L.D. & DITTMAN, K.C. 2004. Systems analysis and design methods. Boston: McGraw-Hill. 780 p.

WIKIPEDIA. 2005.

[http://en.wikipedia.org/wiki/Harry_Potter_and_the_Prisoner_of_Azkaban_\(film\)](http://en.wikipedia.org/wiki/Harry_Potter_and_the_Prisoner_of_Azkaban_(film)) Date of access: 10 Aug. 2005.

Novels cited

BRINK, A.P. 1983. A chain of voices. London: Penguin. 528 p.

KESEY, K. 1963. One flew over the cuckoo's nest. London: Penguin. 336 p.

ORWELL, G. 1949. Nineteen Eighty-Four, a Novel. London: Secker & Warburg. 368 p.

ROUSSEAU, L. 1958. Fritz Deelman en die diepseeduikbol. Cape Town: Tafelberg. 160 p.

ROUSSEAU, L. 1958. Fritz Deelman en die groen dood. Cape Town: Tafelberg. 160 p.

ROUSSEAU, L. 1956. Fritz Deelman en die swart eiland. Cape Town: Tafelberg. 160 p.

ROWLING, J.K. 1997. Harry Potter and the Philosopher's Stone. London: Bloomsbury Publishing. 448 p.

ROWLING, J.K. 1998. Harry Potter and the Chamber of Secrets. London: Bloomsbury Publishing. 448 p.

ROWLING, J.K. 1999. Harry Potter and the Prisoner of Azkaban. London: Bloomsbury Publishing. 448 p.

ROWLING, J.K. 2000. Harry Potter and the Goblet of Fire. London: Bloomsbury Publishing. 448 p.

ROWLING, J.K. 1999. Harry Potter and the Order of the Phoenix. London: Bloomsbury Publishing. 448 p.

SALINGER, J.D. 1951. The Catcher in the Rye. Boston: Little, Brown & Company. 192 p.

Films cited

AXEL, G. (director). 1988. Babette's Feast. Just Betzer, Bo Christensen & Benni Korzen.

COLUMBUS, C. (director). 2000. Harry Potter and the Philosopher's Stone. Warner Bros.

COLUMBUS, C. (director). 2002. Harry Potter and the Chamber of Secrets. Warner Bros.

CUARÒN, A. (director). 2004. Harry Potter and the Prisoner of Azkaban. Warner Bros.

FORMAN, M. (director). 1975. One flew over the cuckoo's nest. Fantasy Films.

HEREK, S. (director). 1996. 101 Dalmatians. Walt Disney Pictures.

NEWELL, M. (director). 2005. Harry Potter and the Goblet of Fire. Warner Bros.

TARANTINO, Q. (director). 1994. Pulp Fiction. Miramax.

TWOHY, D. (director). 2000. Pitch Black. Interscope Communications.

TWOHY, D. (director). 2004. The Chronicles of Riddick. Universal Pictures.

YATES, D. (director). 2007. Harry Potter and the Order of the Phoenix. Warner Bros.

Computer games cited

ATARI, 1982. Indiana Jones and the raiders of the Lost Ark.

ATARI, 1972. Pong.

BETHESDA SOFTWARE, 2007. The elder scrolls IV: Oblivion.

CYAN WORLDS, 1993. Myst.

DIGITAL ILLUSIONS, 2001. Shrek.

DISNEY INTERACTIVE, 2003. Finding Nemo.

EIDOS INTERACTIVE, 2000. Deus Ex.

EIDOS INTERACTIVE, 1996-2006. Lara Croft: Tomb Raider-series.

ELECTRONIC ARTS, INC. 2001, Black and White.

ELECTRONIC ARTS, Inc. 2004. Fifa Soccer.

ELECTRONIC ARTS, Inc. 2003. Harry Potter and the Philosopher's stone.

ELECTRONIC ARTS, Inc. 2004. Harry Potter and the Prisoner of Azkaban.

ELECTRONIC ARTS, Inc. 2004. Madden NHL.

ELECTRONIC ARTS, Inc. 2004. PGA Tour Golf.

ELECTRONIC ARTS, Inc. 2000. Sims.

ELECTRONIC ARTS, Inc. 2004. The Lord of the Rings: The Third Age.

MICROSOFT, 1982-2008. Flight Simulator.

NINTENDO, 1981. Donkey Kong.

OCEAN/SEGA, 1993-2005. Jurassic Park.

PAJITNOV, A., PAVLOVSKY, D. & GERASIMOV, V. 1986. Tetris.

RAREVIEW, 1997. Goldeneye, 007.

ROCKSTAR GAMES, 2002. Grand theft auto: Vice City.

SAFFIRE, 2004. Van Helsing.

SEGA SATURN, 1996. Dungeons and Dragons: Shadow over Mystara.

SHINY ENTERTAINMENT, 2003. Enter the Matrix.

SIERRA ENTERTAINMENT, 2006. Scarface.

SIR-TECH, 2001. Wizardry 8.

SONY ONLINE ENTERTAINMENT, 2003. Planetside.

SPIRIT OF DISCOVERY, 1994. Batman Begins.

STARBREEZE STUDIOS, 2004. The chronicles of Riddick: Escape from Butcher Bay.

STEVE RUSEELL, 1962. Spacewar.

UBISOFT, 2003. Beyond good and evil.

VALVE SOFTWARE, 2001. Half Life.

WESTWOOD STUDIOS, 1997. Bladerunner.

APPENDIX A - Example of a film screenplay

HARRY POTTER AND THE CHAMBER OF SECRETS

Screenplay by **STEVEN KLOVES**

Based on the novel by

J.K. ROWLING

FADE IN:

1 EXT. PRIVET DRIVE - DAY

WIDE HELICOPTER SHOT. Privet Drive. CAMERA CRANES DOWN, DOWN, OVER the rooftops, FINDS the SECOND FLOOR WINDOW of NUMBER 4. HARRY POTTER sits in the window.

2 OMITTED

3 INT. HARRY'S BEDROOM - DAY

Harry pages through a SCRAPBOOK, stops on a MOVING PHOTO of Ron and Hermione. SQUAWK! Harry jumps. HEDWIG pecks at the LOCK slung through her cage door, then glowers at Harry.

HARRY

I can't, Hedwig. I'm not allowed
to use magic outside of school.
Besides, if Uncle Vernon —

At the sound of the name, HEDWIG SQUAWKS again, LOUDER.

UNCLE VERNON (O.S.)

Har-ry Pot-ter!

HARRY

Now you've done it.

4 INT. KITCHEN - DAY

While AUNT PETUNIA puts the finishing touches to a PUDDING of WHIPPED CREAM and SUGARED VIOLETS, UNCLE VERNON struggles with DUDLEY'S BOW TIE, all the while glowering at Harry.

UNCLE VERNON

I warned you. If you can't control that bloody bird, it'll have to go.

HARRY

She's bored. If I could just let her out for an hour or two --

UNCLE VERNON

And have you sending secret messages to your freaky little friends? No, sir.

HARRY

But I haven't gotten any messages. From any of my friends. Not one. All summer.

DUDLEY

Who'd want to be friends with you?

UNCLE VERNON

I should think you'd be more grateful. We raise you since you were a baby, give you food off our table, even let you have Dudley's second bedroom... purely out of the goodness of our hearts.

DUDLEY

I thought he got the second bedroom because Mum was afraid he'd turn us into dung beetles if you put him back in the cupboard

under the stairs.

AUNT PETUNIA stops cold, exchanges a dark look with Uncle Vernon, then sees Dudley extending a finger for the pudding.

AUNT PETUNIA

Not yet, popkin. That's for when the Masons arrive.

UNCLE VERNON

Which should be any moment. Now. Let's run through our schedule one more time. Petunia, when the Masons get here, you will be –

AUNT PETUNIA

In the lounge, waiting to welcome them graciously to our home.

UNCLE VERNON

Good. And Dudley?

DUDLEY

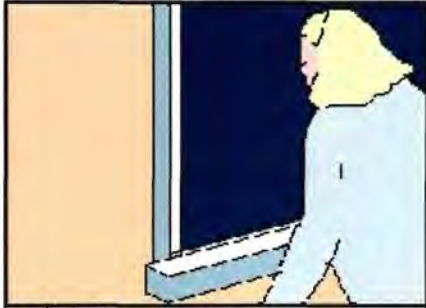
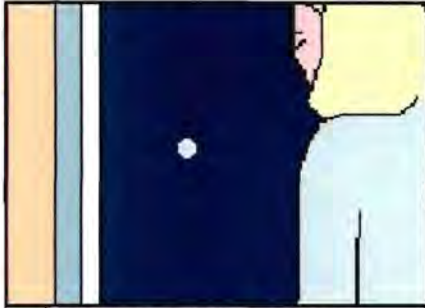
I'll be waiting to open the door.

UNCLE VERNON

Excellent.
(turning on Harry)
And you?

<http://www.imsdb.com/scripts/Harry-Potter-and-the-Chamber-of-Secrets.html>

APPENDIX B - Example of a film storyboard

TITLE _____		STORYBOARD sheet no. _____		PRODUCTION TEAM _____	
					
01	LS of exterior of house. One light on. Moonlight: spooky. A female silhouette appears at the window.	02	Cut to CU over left shoulder of girl as she looks out of window.	03	Shot 2 zooms a little to the bush where a flash of light like a torch is seen momentarily.
SFX	The sound of something in a bush is the noise which brings the figure to the window to investigate.	Silence.		Girl makes a short shocked gasp.	

APPENDIX C - Example of a computer game script

Excerpted from "TREE OF LIFE" © David Kennerly
kennerly@finegamesdesign.com

Exterior. Corrupted Tree of Life - Day (Intro)

FADE IN:

Underneath an imposing BLACK CLOUD is an even more imposing sight: The CORRUPTED TREE OF LIFE. The great oak's limbs span about a hundred feet in diameter. The trunk itself is thirty feet in diameter. It's withered, leafless, and spotted black. Some of its limbs are cracked or broken. It resembles a tree of death more than a tree of life.

MAIR, 30s, female AVIAN sheriff with a hawkish face, is visible beyond one of the massive ROOTS by the tree's TRUNK. Sleek feathers coat her athletic body, since avians are a species of bird-like humans.

MAIR

Look at what you've done to the Tree of Life --

Suddenly, from the root, CORRUPTED VINE 1 coils around her leg. It TRIPS her. She leaps to her feet and raises her SPEAR but behind her, CORRUPTED VINE 2 wraps around her neck and CHOKES her. She struggles and screeches.

Corrupted vine 1 rises and sways like a cobra, left of Mair, who is still being choked. Then CORRUPTED VINE 3 rises and sways on the right.

RESCUE MAIR (INTERACTIVE)

A vine attempts to trip, and hurt, the player.

THE FIRST TIME that a player JUMPS OVER a trip, the vine sweeps underneath in slow motion.

If the player has been tripped, then its next attack is a choke. While being choked, the player cannot act, except to STRUGGLE, and is slowly suffocated. Struggling for a few seconds releases the choke.

If a player is far away, a vine BURROWS underground, at a rate faster than a player can run. After catching up, the burrowing vine emerges be-

hind the player. While burrowing, the vine causes a small RIPPLE, which trips any character that it passes.

[SELECT SCENE]

Mair	dies.
Any player	dies.
The first corrupted vine	dies.
Any corrupted vine	dies.
All corrupted vines	die.

Repeat scene "Rescue Mair".

MAIR DIES

Mair gasps. The corrupted vine, having drained her life, lets her go. Her blackened body falls limp to the ground.

GAME OVER.

ANY PLAYER DIES

[Player] gasps. The corrupted vine, having drained her life, lets her go. Her blackened body falls limp to the ground.

GAME OVER.

THE FIRST CORRUPTED VINE DIES

BLACK SMOKE begins to rise from the corpse. The smoke touches and withers adjacent shrubs and grass.

[Player] looks at her weapon.

A wisp of black smoke rises from the weapon.

ANY CORRUPTED VINE DIES (INTERACTIVE)

A small cloud of black smoke rises from the vine's corpse. After a few seconds, the cloud fades away.

If a player touches the black cloud, she gains a DEMON BLOOD item. Using this item causes black smoke to rise from her weapon. On the player's next hit, the black cloud envelopes the opponent, which drains life, and then fades away.

[Repeat scene "Rescue Mair".]

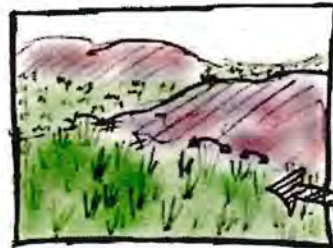
ALL CORRUPTED VINES DIE

http://finegamedesign.com/script/treeoflife_script.doc

APPENDIX D - Example of a computer game storyboard



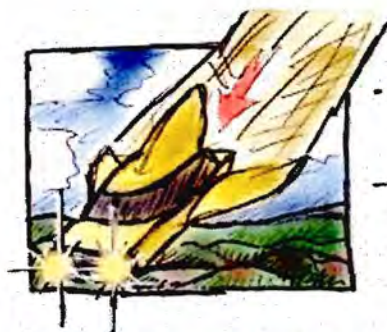
- MOUNTAIN LANDSCAPE.
- GRASS AND ROCK TEXTURE.
- FREE CAMERA.



- 2D-GRASS TEXTURE WITH
ALPHA BLENDING. GRASS ONLY
PRESENT IN THE VALLEYS.
- THE GRASS IS/CAN BE ANI-
MATED



- SKY
- MOVING CLOUDS TWO
LAYERS.



2/3
- UCFL - USER CONTROLLED FLYING OBJECT

- CAMERA FOLLOWS UCFO.



- COLLISION BETWEEN UCFO AND LANDSCAPE

- MULTIPLE CAMERA ANGLES



- WALKING CHARACTER.

- DIRECTION USER CONTROLLED

- MANUAL START/STOP MOTION CYCLE.

- "FOLLOW CHARACTER" CAMERA



- 3 / 2
- MOTION BLENDING.
BLEND BETWEEN
DIFFERENT MOVEMENTS.
 - USER CONTROLLED



- MORE?

And Tixten
2005

APPENDIX E – Template for research outputs

Task				Output / milestone / decision	Comments
Research	Game context				
		<i>Purpose</i>			
			• Entertainment • Simple game-play • Edutainment	Insert finding	
		<i>Target audience</i>			
			• Age and education level of target audience	Insert finding	
			• Level of experience with interactive technology	Insert finding	
			• Gender / cultural background of target audience	Insert finding	
			• How often will audience interact with the application?	Insert finding	
			• Will target user interact alone or with a	Insert finding	

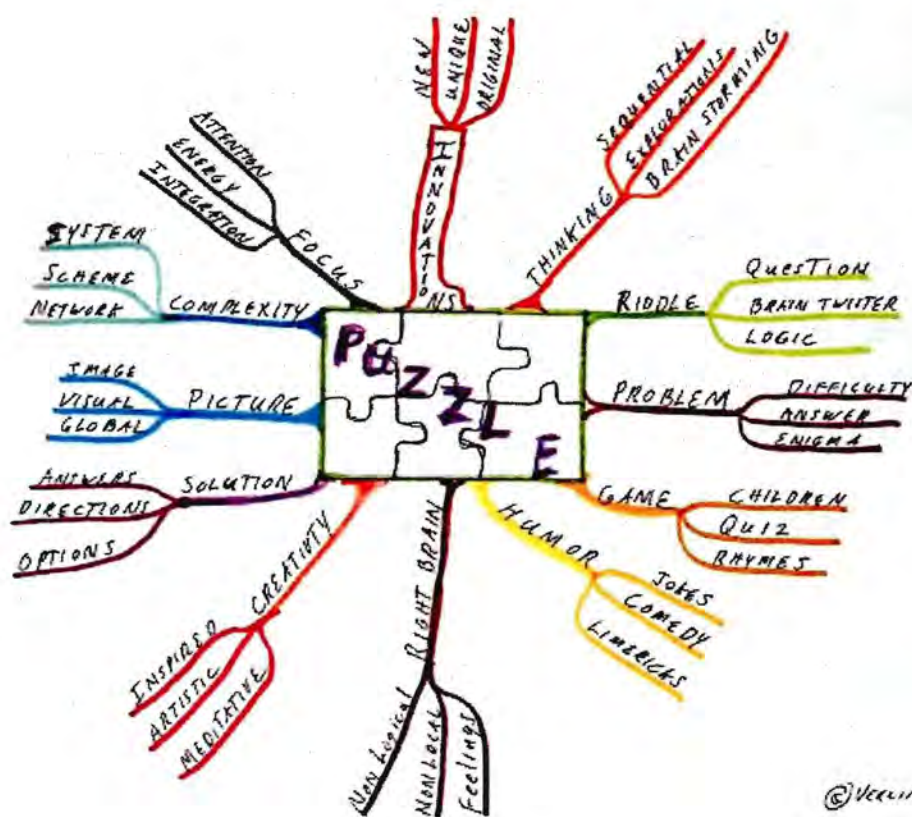
			group?		
			What type of computer equipment does target user own?	Insert finding	
			In what type of environment will audience use the application?	Insert finding	
			Does user have any preconceptions about the application?	Insert finding	
			What should the language of the application be?	Insert finding	
			What is the audience's proficiency in that language?	Insert finding	
		<i>Genre</i>			
			Action	Insert finding	
			Adventure		
			Action-adventure		
			Casino		
			Puzzle		
			Role-playing game		
			Simulation		
			Massively Multiplayer Online Game		
			Sport game		

		<i>Delivery Platform</i>			
			• Arcade game	Insert finding	
			• Mobile		
			• Personal Computer		
			• Console		
	Creative strategy				
		<i>Original idea</i>		Insert finding	
		<i>Simulation</i>			
		<i>Adaptation</i>			

	Length			
	Weight			
	Occupation			
	Attire			
	Voice quality			
	Special powers			
Sequence	Number (description)			
Scene	Number			
Type	FMV or Interactive			
Characters	List characters that are involved in scene			
Space	Describe the surroundings			
Time	What time of day is it			
Scene description	Short synopsis of what will transpire in the scene			
Dialogue		Directions	Popups	Additional Content
Character 1	Words that characters speak.	Movement, facial expressions, voice quality, etc.	Any additional screen features, e.g. menus, inventories, mes-	Music, sounds, any additional information that could be useful to the developers.

			sages, etc.,	
Character 2		Repeat	Repeat	Repeat

APPENDIX G - Example of a mind map



©VeeLina22, 2001
Especially RTW/Class
9/24/01

Mind Map of a puzzle by V. Miller <http://www.zodiacarts.com/articles/source/vmmmpuz.shtml>