Remembering Bogle Chandler (creative project)

The Principles of Database Storytelling (exegesis)

A project and exegesis submitted in fulfilment of the requirements for the degree

of Doctor of Philosophy – Creative Media

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Declaration

I certify that, except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of the work, which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged. Ethics procedures and guidelines have been followed.

Rebecca Young

6 September 2010

Acknowledgements

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Research Summary

The following thesis is submitted for a PhD in creative media. The thesis is composed of two parts: a creative project and an exegesis. This summary will outline the objectives and outcomes of my creative project and exegesis.

The first part of this thesis, my creative project, is an interactive narrative called *Remembering Bogle Chandler* (2008). The project is based on the true story of the Bogle Chandler murders. Margaret Chandler, a nurse and Gib Bogle, a scientist, died together on the banks of the Lane Cove River in Sydney, on New Year's Day 1963. Although it was obvious that both had died from some kind of poisoning, the cause of their deaths has never been established.

Remembering Bogle Chandler is an interactive narrative, but it is not a video game. Simply put, the project is a collection of over 100 short animations that incorporate photos, line drawings, text and sound. The animations can be played using a graphical user interface (GUI). The project is created in Adobe Flash and is optimised for web delivery. It can be viewed at the following URL: http://www.rebeccayoung.org or from the CD-ROM submitted with this exegesis.

My intention with this creative project is to utilise the unique properties of new media in order to tell a story. To identify these unique properties I examine and critique Manovich's five key principles of new media. Manovich's principles summarise the differences between old and new media. They are numerical representation, modularity, automation, variability and transcoding (2001, p. 36). In order to better understand the relationship between Manovich's principles and interactive storytelling, I observe them in two case studies: in my own project *Remembering Bogle Chandler* and in Jonathan Harris's *The Whale Hunt* (2007).

The Whale Hunt by Jonathan Harris tells the story of a whale hunt in Barrow, Alaska. It consists of over 3000 photos and captions that can be searched and accessed by

manipulating a visual interface. *The Whale Hunt* is "an experiment in human storytelling" (Harris 2007, Statement), and can be seen at the following URL: http://www.thewhalehunt.org.

Using Manovich's five key principles of new media, my creative project and the case studies, this thesis seeks to investigate and answer the following questions:

- According to Manovich, what are the principles of new media? b) According to Manovich, how do these principles manifest themselves in an interactive narrative?

- How may we observe Manovich's theories of new media in *The Whale Hunt*, by Jonathan Harris?

- How useful are Manovich's theories of new media in understanding my creative project, an interactive narrative called *Remembering Bogle Chandler*?

In the following exegesis I discuss Manovich's principles of new media and describe how, according to Manovich, they can be found in interactive narratives. I examine *The Whale Hunt* through the lens of Manovich's principles and draw conclusions about how these principles impact on Harris's storytelling in the work. I also use Manovich's five principles to examine *Remembering Bogle Chandler* and I reflect on the process of designing the work. I observe if and how Manovich's five principles manifest themselves in the work, and consider how helpful these principles are for understanding the work.

Examining these two interactive narratives as both a designer and a user provides me with an insight into the creative process of new media storytelling, from its inception to its reception. This analysis allows me to form insights about how the properties of new media can be utilised to tell a story. Such insights are useful because they provide other new media storytellers with an understanding of both the pitfalls and the potential of this emerging field.

This exegesis concludes that Manovich's theory is indispensable to our understanding of the past, the present and the future trajectories of new media because it provides us with "the first convincing genealogy of new media" (Bolter 2007a, p. 29). Applying Manovich's

theory to new media storytelling allows us to better understand the past, present and future of this form. In addition, by examining a larger set of new media narratives it would be possible to develop Manovich's principles of new media into a practical manual of pre-production planning strategies and production techniques for database narratives. The exegesis also concludes that further testing of users may illuminate how they experience Manovich's principles within an interactive narrative, and thus assist storytellers to utilise the language of new media in their works.

Introduction: The Principles of Database Storytelling

This exegesis is concerned with Lev Manovich's theory of new media and how that theory can be applied to the practice of new media storytelling. According to Manovich, when a designer uses a computer to record, create, store or distribute a work, the work will tend to exhibit certain unique characteristics not found in traditional media (2001, p. 43). Manovich distils these unique characteristics into five *principles* of new media. This exegesis explores the relationship between these principles and the practice of interactive storytelling. In order to explore this relationship, this exegesis examines two case studies: Jonathan Harris's *The Whale Hunt* (2007) and my own project *Remembering Bogle Chandler* (2008).

Description

Remembering Bogle Chandler is an interactive narrative, but it is not a video game. Simply put, the project is a collection of over 100 short animations that incorporate photos, line drawings, text and sound. The animations can be played using a *graphical user interface* (GUI). This interface is a collection of graphical icons or buttons that are spatially arranged to communicate the structure of the narrative. The project is created in Adobe Flash and is optimised for web delivery (that is, the images and sounds it contains are small enough to download quickly on a standard Internet connection). It can be viewed at the following URL: http://www.rebeccayoung.org or from the CD-ROM submitted with this exegesis.

The subject matter of *Remembering Bogle Chandler* is the elusive and intriguing Australian mystery that surrounds the deaths of Margaret Chandler and Gib Bogle. She was a young mother and nurse, and he was a brilliant scientist about to take up a prestigious position in an American laboratory. Both were married to other people, and both had young children waiting for them at home. Tragically, they fell ill and died, half-naked, on the banks of the Lane Cove River in Sydney, on New Year's Day 1963 (Silk 1963). This murder case is one of

the most mysterious in Australia's history, and despite almost half a century of national and international attention, it has never been solved.

My creative project and exegesis are primarily concerned with the practice of storytelling in the field of interactive media. Like many video games, my creative project tells a story. Like many video games, my project is a single-player, PC application that is played via a mouse and a monitor. *Unlike* the majority of video games, however, my project *does not have explicit goals or rules*. Contrary to the widespread belief that *interactive narratives* are synonymous with *video games* (Frasca 2001b, p. 5; Juul 1999, p. 6), these two forms can exist independently of each other. Whilst video games often tell stories, they are primarily concerned with game play *structured according to game rules*. In contrast, my project is primarily concerned with a form of storytelling that unfolds within *unstructured play*. The new media theorist, Noah Wardrip-Fruin terms such works "playable media". Whilst the user plays with these works, they set their own goals, usually in the context of the "dramatic situation" of the narrative (Wardrip-Fruin 2005).

The term *interactive narrative* can be explained using the following definitions. The literary theorist Gerard Genette defines narrative as "the representation of an event or sequence of events" (1980, p. 127). Genette distinguishes between *story* and *narrative* in the following way: the *story* is the content of the narrative (the events of the story), and the *narrative* is the form of the discourse (how the story is told) (1980, p. 3). For the purposes of this exegesis, a *narrative* is understood to mean the *telling* of a story. *Interactive* software, according to Manovich, "allows the user to control the computer in real-time by manipulating information displayed on the screen" (2001, p. 71). According to these definitions, an *interactive narrative* is software that allows the user to alter the telling of a story by manipulating screen-based information.

The key theorist used in this analysis of interactive narratives is Lev Manovich. Manovich is a new media theorist and practitioner, and the author of the seminal book *The*

Language of New Media (2001). In this work he defines new media as those media that are recorded, stored, created or distributed on a computer (2001, p. 43). He includes the following forms in his definition of new media: "Web sites, virtual worlds, VR, multimedia, computer games, interactive installations, computer animation, digital video, cinema, and human-computer interfaces" (2001, p. 35). Old media, for the purposes of comparison, are traditional forms of representation that existed before computers (for instance, films, novels, paintings, sculptures, audio recordings, newspapers and magazines). From an examination of all these forms, Manovich distils a set of *five principles of new media*.

As a designer transferring my skills from film and television to new media, I need to understand the properties of new media so I can utilise them more effectively in my work. For this reason, I examine and critique Manovich's principles of new media in this exegesis. It is also important for me to observe how the properties of new media manifest themselves in interactive narratives. In this exegesis, therefore, I observe Manovich's principles in two case studies: in my own project *Remembering Bogle Chandler* and in Jonathan Harris's *The Whale Hunt*.

The Whale Hunt by Jonathan Harris tells the story of a whale hunt in Barrow, Alaska. Harris employs a number of innovative strategies to convert the photographs of the whale hunt into a variety of visual sequences. Harris calls *The Whale Hunt* "an experiment in human storytelling" (Harris 2007, Statement). It is this emphasis on experimental storytelling, as well as Harris's acclaimed technical and design skills that make this work an ideal case study for this exegesis. *The Whale Hunt* can be seen at the following URL: http://www.thewhalehunt.org.

Questions

This exegesis (27,000 words) and my creative project (*Remembering Bogle Chandler*) are submitted as the research for my PhD in creative media. Together, the exegesis and the

creative project investigate Manovich's theory and use it to examine the practice of interactive storytelling. In doing so this research considers the following questions:

1. a) According to Manovich, what are the principles of new media? b) According to Manovich, how do these principles manifest themselves in an interactive narrative?

2. How may we observe Manovich's theories of new media in Jonathan Harris's *The Whale Hunt*?

3. How useful are Manovich's theories of new media in understanding my creative project, an interactive narrative called *Remembering Bogle Chandler*?

Methodology

Question 1: a) According to Manovich, what are the principles of new media? b) According to Manovich, how do these principles manifest themselves in an interactive narrative?

In *The Language of New Media* Manovich identifies *five principles* that summarise the differences between old and new media (2001, p. 36). These principles are numerical representation, modularity, automation, variability and transcoding. I discuss these principles and describe how, according to Manovich, they can be found in interactive narratives.

Question 2: How may we observe Manovich's theories of new media in The Whale Hunt, by Jonathan Harris?

I examine *The Whale Hunt* from the perspective of both a user and a designer. I observe if and how Manovich's principles are apparent in the work. I also examine whether Manovich's theory helps us to understand the ways in which this work tells a story.

Question 3: How useful are Manovich's theories of new media in understanding my creative project, an interactive narrative called Remembering Bogle Chandler?

I use Manovich's five principles to examine *Remembering Bogle Chandler* and I reflect on the process of designing the work. I observe if and how Manovich's five principles

manifest themselves in the work, and consider how helpful these principles are for understanding the work.

Examining these two interactive narratives as both a designer and a user provides me with an insight into the creative process of new media storytelling, from its inception to its reception. This analysis allows me to form insights about how the properties of new media can be utilised to tell a story. Such insights may be useful because they provide other new media storytellers with an understanding of both the pitfalls and the potential of this emerging field.

Rationale

This exegesis is concerned with interactive narratives that are not video games. Video games can be distinguished from other interactive works by their systems of rules and objectives (Aarseth 2001; Eskelinen 2001; Juul 2002). I created *Remembering Bogle Chandler* as an interactive narrative without a rule system or objectives for two reasons: rule systems can distract the user from the narrative (Poole 2004, p. 109); and rule systems are difficult to combine with stories that don't mirror their win/lose simplicity (Murray 1998; Frasca 2003a; Aarseth 2004; Juul 2005). Nevertheless, since video game scholars have written much of the theory concerning interactive narratives (Clarke 2001a, p. 4), some of the literature reviewed in this exegesis is drawn from video game theory. Manovich's theory of new media is not limited to video games, but includes a diverse range of other new media works. For this reason, Manovich's theory is more suited to the study of interactive narrative works that are *not* video games.

In her study of creative research methods for the screen, Lisa Dethridge examines the creative research process for writers of screen material. She reminds us that the creator of any media, whether film, video games or television, may need to establish a context or framework that accounts for the complex global inter-relations of industry, technology and culture (Dethridge 2009, p. 98). To that end, I have selected and framed scholarly and technical

references and examples that reflect this complexity. Through the review of literature and ensuing chapters, I refer to several examples of interactive media (including video games, interactive installations and websites) in passing. In chapter three I will make a focused and detailed analysis of the formal properties of a specific case study, *The Whale Hunt*.

The Whale Hunt by Jonathan Harris is not a video game, but an interactive work that experiments with new methods for interactive storytelling. Harris has received numerous accolades for his work, including three Webby Awards (otherwise known as the Oscars of the Internet). In 2006 New York Arts Magazine called Jonathan Harris a "wunderkind" and a "renaissance man for the information age" (Frist 2006, para. 1). John Maeda, himself a renowned graphic designer, artist, and computer scientist, notes that Harris's strength is "that he's neither a technologist nor an artist. ... He thinks out loud in a variety of mediums" (quoted in Ballant 2008, para. 7). In other words, Harris's skills as a visual artist and as a computer programmer allow him to experiment beyond the confines of both disciplines. It is the innovation and experimentation of *The Whale Hunt* that makes it a valuable case study for this exegesis.

The in-depth analysis of *The Whale Hunt* in chapter three will facilitate a more refined understanding of how Manovich's principles of new media are apparent in interactive narratives. Dethridge suggests that when the researcher makes an analytical case study, they may gain both creative stimulation and reflexivity. The researcher examines technical structures in great detail to develop awareness of what others are doing in the field. At the same time, they may develop mature self-awareness by reflecting critically upon their own practice and upon how an audience may read or interpret the work (Dethridge 2009, p. 104). Through my analytical case study of *The Whale Hunt* I aim to identify design strategies that can be usefully applied to other database narratives. This case study also provides a useful comparison with the manifestation of Manovich's principles in *Remembering Bogle Chandler*.

Video games are the most commercially successful and well-known form of interactive narrative (Glassner 2004, p. 9; Ryan 2005, para.1). Interactive narratives are, however, increasingly being created outside the field of video games. Producers of books, magazines, television, films and theatre are creating transmedia productions that tell stories across new and old media (Fingleton, Dena & Wilson 2008). Museum curators are bringing their collections to the public through web-based interactive narratives (Goldblum, O'Dowd & Sym 2007). Forensic investigators are using interactive crime and accident visualisations in courtroom and inquest situations (Noond & Schofield 2002). In addition, newspaper journalists are beginning to see interactive storytelling as a way of saving newspapers from extinction (Zadrayec 2008). For these storytellers, incorporating video game rules and objectives into their narratives is not always desirable, practical, or appropriate. These storytellers need a more flexible theory of interactive storytelling that can describe and explain a wider variety of new media narratives. Lev Manovich's broad analysis of new media works provides the basis for such a theory.

In *The Language of New Media,* Manovich attempts an ambitious study of the nature of new media and its historical origins. He endeavours to find common characteristics amongst diverse new media works, ranging from complex virtual reality environments to simple web pages. He then compares these characteristics with those of traditional media forms, in order to find out which characteristics are genuinely *new*. In his work, Manovich draws on the visual and media cultures of the last few centuries. His writing is informed by his study of cinema, painting, architecture, computer science, semiotics and his work as a three-dimensional (3D) computer animator and programmer. To date, no other new media scholar has achieved the kind of rigorous and far-reaching analysis presented by Manovich.

Manovich has received some criticism for his eclectic and ill-advised appropriation of terms from computer science, film theory, art history, and literary theory (Muller & van Eyck 2003; McKenzie 2006; Basford 2010). For instance, the new media artist and researcher

Philip Pocock writes that Manovich's conception of database is both "garbled" and "retrograde" because it "could just as well be a synonym for garbage can" (2003, para. 1). Similarly, the video game designer and theorist Ian Bogost is critical of Manovich's definition of algorithm as "A final sequence of simple operations" (Manovich 2001, p.197). As Bogost points out, algorithms vary greatly in their complexity (2006). Such criticisms, however, are outweighed by the praise Manovich has received for both the breadth and innovation of his theory. For instance, in his review of The Language of New Media, Sean Cubitt writes that Manovich is "unforgiving in his pursuit of a genuinely new critical paradigm" which makes his book "a vital work of new thinking in a new culture" (2001, para. 5).

This exegesis is significant on several levels. Manovich's theory is indispensable to our understanding of the past, the present and the future trajectories of new media because it provides us with "the first convincing genealogy of new media" (Bolter 2007a, p. 29). Applying Manovich's theory to new media storytelling allows us to better understand the past, present and future of this form. This study provides a theoretical evaluation of Manovich's theory by comparing it to the work of other well-known theorists, thus testing the flexibility and comprehensiveness of Manovich's theory. It also provides an in-depth analysis of how Manovich's five principles manifest themselves in two interactive narrative case studies. This analysis illustrates the relationship between the principles of new media and the aesthetic properties of these works.

This exegesis explains the underlying structures and operations of Manovich's new media theory, and illustrates the way they are manifested in two case studies. It also uses Manovich's five principles of new media to explain the design conventions that are apparent in these works. This study will be relevant to anyone interested in the relationship between storytelling and the unique properties of new media. This may include new media storytellers producing narratives for museums, newspapers, criminal trials, entertainment, advergaming, and transmedia adaptations of films, television shows, or novels. This study will also benefit

any storyteller who is transferring her skills from traditional media to new media because it explains the production of new media works in terms that traditional storytellers can understand.

The next chapter will review the literature about how stories are told in video games. As video games are one of the new media forms examined by Manovich, this chapter provides an introduction to his more general theory of interactive narrative.

Chapter One: Literature Review

Introduction

This chapter on storytelling in video games introduces and illustrates Manovich's broader theories of interactive narrative. Video games are a subset of the new media works that Manovich examines in his writing. As such, they exemplify many aspects of his theory and for this reason they are useful to this study. In addition, many designers attempt to tell stories through their video games. These stories may not approach the complexity or sophistication of the stories told in films and novels. Nevertheless, like films and novels, video games do contain representations of characters and events (Frasca 2003a; Ryan 2006; Aarseth 2003; Eskelinen 2004). In addition, just like films and novels, video games have their own techniques for representing time and space (Juul 1999; Frasca 2003a; Ryan 2006).

The characteristics that video games share with films and novels are of less interest to this study than the characteristics that make video games unique. One of Manovich's objectives in *The Language of New Media* is to identify the unique properties of new media. Similarly, this chapter is concerned with the unique properties of video games, and the relationship between these properties and the ways in which video game designers tell stories.

A review of contemporary video game theory reveals the following aspects of video games that set them apart from the traditional narrative forms of the film and the novel: *game rules* (Aarseth 2001; Juul 2002; Jenkins 2004; Ryan 2005); *simulation* (Frasca 2001; Aarseth 1998, 2001, 2004; Juul 2001a; Ryan 2006); *nonlinearity* (Juul 1999; Costikyan 2000; Ryan 2006); and *spatial representation* (Aarseth 1997, 2000, 2003; Juul 1999; Murray 1998, p. 71). Each of these unique qualities bestows advantages and disadvantages on the aspiring video game storyteller.

Storytelling in video games is often discussed in the context of the debate between the *ludologists* and the *narrativists*. Gonzalo Frasca notes that he is often called a ludologist,

along with Jesper Juul, Markku Eskelinen, and Espen Aarseth, whereas Janet Murray, Henry Jenkins and Marie-Laure Ryan are usually classified as narrativists (2003, pp. 2-3). The main point of contention in the ludologist/narrativist debate concerns the classification of video games. On one side of the debate are the *ludologists*, who believe that video games belong within the gaming tradition, alongside board, card and ball games (Aarseth 2004; Eskelinen 2001, 2004). On the other side are the *narrativists* who believe that video games belong within the narrative tradition that includes novels, films and plays (Murray 1998; Ryan 2006). As this chapter will demonstrate, ludologists tend to stress the difficulty of telling stories in video games, whereas narrativists tend to emphasise the storytelling potential of video games. The ludology/narratology debate is central to my research because it critically examines the practice of storytelling in interactive media.

This chapter begins with a discussion of *game rules* in order to explain how they can conflict with storytelling. It then discusses the other unique features of video games, *simulation*, *nonlinearity* and *space*, and considers how these features may help or hinder the telling of a story.

1.1 Game Rules

Game rules are the most obvious characteristic that set video games apart from traditional films and novels. Ludologists such as Aarseth, Juul, Eskelinen and Frasca emphasise that the rules of a game are its most important feature. Furthermore, for these theorists, the representational aspects of a game are its least important feature. To support this claim Aarseth cites Juul's example of how the rules of a chess game remain the same whether it is played with rocks, with Simpsons figurines, or with traditional chess pieces (Juul cited in Aarseth 2004, para. 9). According to Aarseth, the representational elements of the game are there only to support the game rules. He dismisses the visual elements of a video game, because they are not important to the advancement of the player towards winning the game:

the dimensions of Lara Croft's body, already analysed to death by film

theorists, are irrelevant to me as a player, because a different-looking body would not make me play differently. When I play, I don't even see her body, but see through it and past it (2004, para. 9).

According to Aarseth, the rules of a video game produce its *gameplay*. He writes, "Without rules to structure actions, but with a (virtual) world, we would have free play or other forms of interaction, but not gameplay" (2003, p. 2). For Aarseth, gameplay arises from the "application of the rules to the gameworld", resulting in a "players' actions, strategies and motives" (2003, p. 2). In other words, the game rules determines how the world of the game behaves, as well as defining how the game can be won or lost. The behaviour of the game world, and the winning goals of the game, both elicit certain strategies and actions from the player. Gameplay, therefore, is the interaction between the player and the game rules. For Aarseth, gameplay is the interaction between the player and the game rules.

According to the ludologists, video game rules, and in particular, the game's winning goals, can be incompatible with storytelling (Frasca 2003a; Aarseth 2004; Juul 2005). To illustrate this point, Juul imagines a video game version of Tolstoy's novel, *Anna Karenina* (1878). According to Juul, it wouldn't work to have this video game end with the protagonist (Anna) committing suicide. Juul explains that the goal of a video game "has to be one that the player would conceivably want to attain" (2005, p. 161). For Juul, making suicide the player's goal is nonsensical because suicide cannot be a desirable outcome for the player.

Murray, a narrativist, agrees with Juul and Aarseth that when a game designer combines winning goals and storytelling, this can result in a less than satisfying narrative. She asks: "How can we tell significant stories in a form that always has to end happily? How can we impose endings that yield complex story satisfactions on a form that is based on win/lose simplicity?" (1998, p. 142). For Murray, win/lose rules prevent video games from achieving greater levels of sophistication and artistry. In contrast to Aarseth, however, Murray does not believe that winning goals are a central feature of video games. She predicts that video games

will evolve away from "win/lose game playing" towards "the collective construction of elaborate alternate worlds" (1998, p. 142). Murray's vision for the future of video games as participatory narratives is outlined in the section on *nonlinearity*, later in this chapter.

Manovich would agree with Murray, that video game narratives are defined by the underlying rule system of a game. As he puts it "the narrative shell of a game" masks a sequence of tasks that a player must execute in order to win. This sequence of tasks (for instance, "kill all the enemies on the current level, while collecting all treasures") can be conveyed to the player through an appropriate narrative such as "you are the specially trained commando who has just landed on a Lunar base; your task is to make your way to the headquarters occupied by the mutant base personnel..." (2001, p. 197). Here Manovich would appear to agree with Aarseth that the representational elements of the game are there only to support the game rules. For Manovich, the video game narrative exists to convey the game rules to the player.

The critic Steven Poole suggests that in some cases, combining storytelling and gameplay can be problematic. He humorously describes how some players react to negatively to storytelling in video games: "You really want a good exciting game of ping pong, but you have to read a chapter of some crashingly dull science-fantasy blockbuster every time you win a game" (Poole 2004, p. 109). He goes on to describe other players who enjoy storytelling so much that the gameplay is seen as an annoyance: "It is as if you were reading a novel and being forced by some jocund imp at the end of each chapter to go and win a game of table tennis before being allowed to get back to the story" (2004, p. 109). For Poole, depending on your preferences, either storytelling or gameplay can be seen as an unwelcome distraction.

Theorists from both sides of the ludologist/narrativist debate, such as Aarseth and Murray, contend that the goal of winning a game is incompatible with stories that don't end happily. Manovich, it seems, would agree, since he states video game narratives are designed to convey the "simple algorithm" (or set of procedures) necessary for winning the game.

When the rule structures and the narrative of a video game are not well integrated, Poole notes that these elements can manifest as quite contradictory and jarring experiences, like a "game of table tennis" interspersed with "reading a novel" (Poole 2004, p. 109). Furthermore, as discussed in the introduction of this exegesis, the rule structures of a video game can be inappropriate in interactive narratives designed for a newspaper, courtroom, or museum. Thus we can conclude that it is not possible to tell every narrative within the context of a video game. How to tell an interactive story without the rule structure of a video game will be the focus of the remainder of this exegesis.

In the remaining sections of this chapter we will consider the unique characteristics that video games share with other new media works, namely simulation, nonlinearity and spatial representation. In the following section we examine *simulation* in video games, and the relationship between this characteristic and storytelling. The video game rules that govern how a game is won or lost form part of a broader system of rules that define the behaviours of all the characters, objects and environments in a video game. These behavioural rules define how the video game models or *simulates* the game world.

1.2 Simulation

One way in which video games differ from traditional narratives is in their *simulation* of characters, environments and events. The ludologists see *all* video games as simulations rather than narratives (Frasca 2001, 2001a, 2003a; Aarseth 2001, 2003; Eskelinen 2001). Gonzalo Frasca, one of the ludologists, offers a comprehensive theory of video games as simulations. He states that to simulate something on a computer "is to model (a source) system through a different system which maintains (for somebody) some of the behaviors of the original system" (2003a, p. 222). For instance, a flight simulator maintains some of the behaviours of an actual plane.

According to the Oxford English Dictionary, to simulate an animate or inanimate object means to "imitate the appearance or character" of that object. However, in relation to

new media, to *simulate* means to "produce a computer model" of the object (1989). In these definitions, there is a subtle shift of emphasis between a simulation that *imitates* an object and a simulation that *models* that object on a computer.

According to Manovich, the activity of simulation was indeed altered by the invention of computers. Before computerisation, "the human desire to simulate reality indeed focused on its visual appearance" (Manovich 2001, p. 166). Some examples of pre-computer simulations are: "Baroque Jesuit churches, nineteenth century panorama, twentieth century movie theatres" (Manovich 2001, p. 41). However, computers changed "our concept of what an image is" (2001, p. 167). With the advent of computers, "Image becomes interactive, i.e. it now functions as an interface between a user and a computer" (2001, p. 167). Thus an image on a computer screen can simulate both the *appearance* of an object, and the *behaviour* of that object. So a simulated beach ball can be visually accurate as well as bouncing and rolling like a real ball. For Manovich simulations can also be based on systems that we can't see with the naked eye, such as "the behavior of a weather system" or "the processing of information in the brain" (Manovich 2008, p. 42).

The theory of simulation is of interest to this study because it alters the traditional activities of telling and experiencing a story. Whereas traditional narratives are passive experiences, Frasca sees simulations as "laboratories for experimentation" by the player. The theory of simulation is of interest to this study because it alters the traditional activities of telling, listening to, or watching, a story. Frasca characterises traditional narratives as passive experiences, in contrast to simulations that are "laboratories for experimentation" by the player. According to Frasca, the user of a simulation repeatedly tests it in order to understand it: "knowledge and interpretation of simulations requires repetition" (2003a, para. 16). He states that in contrast to traditional narratives that describe a "fixed sequence of events", simulations can model many possibilities of a world (2003a, p. 225). For Frasca, a fixed narrative provides only one view of the world, whereas a simulation can provide a

multiplicity of experiences that together communicate a deeper and more complex understanding of its subject matter.

Although Frasca is primarily interested in simulation in video games, he also notes that there are elements of simulation in the graphical user interface: "For example, a folder in Microsoft Windows simulates a real folder" (2001a, p. 23). The interactive narratives that are analysed in the case studies of chapters three and four contain many simulated elements, such as the 'buttons' used to display their images and animations. According to Frasca's definition of simulation, these interactive narratives can also be seen as simulations in a broader sense. These interactive narratives model a source system (the telling of a story) through a different system (an interactive narrative), which maintains some of the behaviours of the original system. These interactive narratives model the different ways in which storytellers order the events of a narrative into a sequence. The user can experiment with the ordering of the narrative, and in doing so she learns more about this particular story, and about storytelling in general. In chapter two we will compare and contrast Frasca's theory of simulation with Manovich's principle of automation in order to understand the many ways in which automated (or simulated) behaviours may help to convey a narrative.

Since a simulation can produce many different outcomes, it is considered to be a nonlinear structure. In the next section we will look at *nonlinearity* in video games and the various structures that have been proposed to support this characteristic.

1.3 Nonlinearity

Nonlinearity is another aspect of video games that distinguishes them from the *linearity* of films and novels. The concept of nonlinearity is relevant to all areas of new media production, however it is particularly important to the context of video games and interactive narratives. This is because nonlinearity provides freedom of choice for the user. Freedom is an ideal commonly espoused by video game theorists. For instance, Greg Costikyan, a video

game designer and ludologist, states that: "players must feel that they have freedom of action - not absolute freedom, but freedom within the structure of the system" (2000).

The term *linear* refers to a narrative that is fixed or immutable (such as a novel or film), whereas the term *nonlinear* refers to a narrative that offers the user a choice about what will happen next (such as a video game). According to Costikyan, trying to create a nonlinear narrative is futile. For Costikyan *all* narratives have to be linear because they would be diminished if their events were changed, or told in a different order. He writes: "the author [of a narrative] consciously crafts it, choosing precisely these events, in this order, to create a story with maximum impact" (2007, para. 14). Ryan echoes Costikyan's doubts about nonlinear storytelling, noting that, "with too much user control over the plot, users will be deprived of some of the main sources of narrative pleasure, namely suspense, curiosity and surprise" (2005, para. 44). In the case study of *Remembering Bogle Chandler*, we will consider alternative configurations of suspense, curiosity and surprise within an interactive narrative.

Costikyan and Ryan agree that creating a nonlinear narrative poses a number of problems for the storyteller. Nevertheless, many theorists have proposed structures that support nonlinear storytelling. Manovich prefers the term *variability* to the term *nonlinearity*, although these terms essentially mean the same thing. In his discussion of variability, Manovich mentions *hypermedia* and *branching* structures, structures that are in fact closely related to one another. In a hypermedia structure such as a website, multimedia elements are hyperlinked to one another in a web-like structure. In a branching project, multimedia elements are connected in a tree-like structure. Each fork in the tree represents a choice regarding which branch to follow (2001, p. 57).

According to Ernest Adams, a video game designer and author, the branching narrative has been the most common approach to nonlinear storytelling in video games (2009, p. 173). In the *branching narrative*, the reader can choose from multiple events as the story

progresses, with each option forming its own story *branch*. With each subsequent choice the story branches yet again. The author of a branching narrative must write and produce each of its multiple story branches. In addition, the author must attempt to make each path a well-crafted story with a satisfying beginning, middle and end.

Theorists such as Murray and Poole note that branching narratives are very difficult to write and prohibitively expensive to produce (Murray 1997, p. 198; Poole 2004: 173). According to Adams: "The game industry has largely abandoned its efforts to create fully branching, or even partially-branching interactive narratives. They're too expensive to make, and it's not certain that players want or need them anyway" (2005, The Resurgence of Linearity). Instead of employing branching narratives, Adams claims that many contemporary video games provide the *illusion* of branching when in fact they are structured as *multilinear* stories (2009, p. 173).

In a multilinear story the player can only make decisions that have no real consequences. As Adams describes it, "the plot branches a number of times but eventually folds back to a single inevitable event before branching again" (2009, p. 174). According to Adams, when a user is interacting with a multilinear story she might feel as if she is control of events. Nevertheless, on replaying the story several times, the user will realise that all the story events were inevitable no matter what her choices.

As an alternative to the branching and multilinear models of nonlinear storytelling, Murray proposes the *Holodeck*. She derives this term from a fictional technological tool that was depicted in an episode of *Star Trek: the Animated Series* (1973 - 1974). The Holodeck is a room in which the user interacts with holographically simulated characters using voice commands. The stories that evolve inside the Holodeck environment don't have to be pre-recorded – the computer writes and produces them in real-time. Murray describes the Holodeck as a computer-generated alternate reality: "a universal fantasy machine, open to individual programming: a vision of the computer as a kind of storytelling genie in the lamp"

(1998, p. 15). The computer collaborates with the user, playing the role of a mechanised writer and filmmaker, "continuous with the larger human tradition of storytelling, stretching from the heroic bards through the nineteenth-century novelists" (1998, p. 26). The computer adapts the story to accommodate any action performed by the player and produces a well-formed narrative.

Murray's vision of the Holodeck has been widely criticised. According to Ryan, the Holodeck is impractical because it necessitates an artificial intelligence (AI) component that can generate good plots in real time, and can build these plots around the unpredictable actions of the interactor (2001, p. 348). Both Aarseth and Juul agree with Ryan that the Holodeck is unlikely ever to be built. Aarseth describes the Holodeck as "aesthetically problematic" and "technologically unachievable" (2004, para. 13) whilst Juul says that the Holodeck is a utopian idea that presents an "overwhelming technical challenge" (2005, p. 16). For Manovich, AI story systems like the Holodeck are unlikely to succeed, since, "the AI project has achieved only limited success since its beginnings in the 1950s" (2001, p. 53).

In his discussion of the principle of variability, Manovich suggests one further form of nonlinear narrative, which he calls a *database narrative*. For Manovich, database narratives are only found in the field of new media, although for other theorists database narrative can also be found in literature and cinema (Kinder 2002; Kinder 2003; Bizzochi 2005). Manovich describes the database narrative not as a structure but as a lack of structure, since the database "represents the world as a list of items" which it "refuses to order" (2001, p. 199). In theory, the database contains a collection of items or story fragments that the user can put back together to generate "a variety of end-user objects which vary both in resolution, in form and in content" (Manovich 2001, p. 56). Manovich does not explain the mechanism by which the user finds and sequences these story elements. Indeed, Manovich does not seem at all confident that the database narrative is a viable form. As he says, unless the author can "control the semantics of the elements and the logic of their connection" there is "no reason to

assume that these elements will form a narrative at all" (2001, p. 201). In chapter two we will examine the database narrative in more detail, in the context of Manovich's five principles of new media.

In the next section we will look at the simulation of space in video games and how this impacts on storytelling. We will also consider how simulations of space may be useful for connecting story elements to form a narrative.

1.4 Spatial Representation

Interactive three-dimensional (3D) representations of space are another distinctive feature of many video games, and they are the final aspect of video games examined in this chapter.

According to Juul and Aarseth, video games are fundamentally about spatial representation and navigation (1999, p. 70; 2000, p. 161). Murray writes, "The ability to move through virtual landscapes can be pleasurable in itself, independent of the content of the spaces" (1998, p. 129). Ryan agrees with Murray, stating that "the thrill of being in a world, of acting in it and of controlling its history" is equal to "the intellectual challenge, the subtlety of plot and the complexity of characterization that the best of literature has to offer" (2006, p. 195).

Juul contends, however, that the unique way in which video games represent space is incompatible with telling a story. He writes, "video games are about space, or at least about space on a level of detail that is not relevant in narratives" (1999, p. 66). He notes that in contrast to narratives, such as films and novels, that skip uninteresting places, video games construct unbroken spatial sequences for the player to navigate and explore (1999, p. 66). In addition, he asserts that films and novels manipulate time, but video games do not. He writes, "Narration presupposes a jumping and compressed time" whereas "interactivity requires real time" (1999, p. 8). By 'real time' Juul means that, "One minute in the time of the game corresponds to one minute of playing" (1999, p. 31). Juul points out that filmmakers and

authors edit and rearrange time and space whilst video game designers present time and space as continuous and unbroken.

The digital art scholars, Andy Clarke and Grethe Mitchell, would agree with Juul, that the representation of space in video games is detrimental to storytelling. They come to this conclusion through their analysis of 3D space in the archetypal first-person shooter video game *DOOM* (1993). In this game the player is a nameless space marine stationed on Mars. The player must single-handedly kill an onslaught of demonic enemies to prevent them from invading earth. Clarke and Mitchell claim that after the success of the first-person shooter *DOOM*, *immersion* in a 3D space became a key goal for video game designers (Clarke & Mitchell 2001).

The sensory immersion of *DOOM* is achieved through the unity of time and space combined with a first-person viewpoint; both these characteristics impact on the ways in which *DOOM* can tell a story. In *DOOM*, time and space are experienced as continuous dimensions, imitating the time and space of our lived experience. Preserving the continuity of space and time in the work prevents the video game from jumping forward or backwards in time, or cutting from one location to another, as a film or book might (Juul 1999; Clarke & Mitchell 2001). In addition, *DOOM* employs a first-person viewpoint, which means that the camera becomes the player's 'eyes' (Clarke & Mitchell 2001). The first-person perspective adds to the illusion that the player is in the *game-world* and it is also a good viewpoint from which to aim and shoot (Rouse 1999); however, this viewpoint makes it more difficult to move through the environment, because the player's 'body' is not visible (Rouse 1999). In addition, the camera can't move independently of the protagonist, as it does in cinema.

Clarke and Mitchell claim that the spatial interface popularised by *DOOM* has retarded the development of storytelling in video games because designers can't use "filmic techniques that break up the continuity of time, space and action for narrative ends" (2001a,

Conclusions). In other words, the spatial interface prevents the video game designer adopting cinematic techniques such as camera angles, montage, crosscutting, and slow motion.

Jenkins (a narrativist) disagrees with Juul, Clarke and Mitchell that current representations of space in video games limit their storytelling potential. Jenkins suggests that storytelling in video games should "emphasize spatial exploration over causal event chains" (2004, para. 12). Rather than structuring a video game story as a sequence of cause and effect, Jenkins proposes a video game environment that houses several self-contained narratives. Jenkins calls these "narrative elements" that "enter games at a more localized level" (2004, para. 13). The player freely explores these narrative environments, and by exploring them, activates or uncovers their narrative elements in a nonlinear manner.

Jenkins' *enacted story* space contains staging grounds for "localized incident" or "episode". These incidents are not tightly integrated into an overall plot, but are held together by "broadly defined goals and conflicts and pushed forward by the character's movement across the map" (2004, Enacting Stories para. 2). In the narratives proposed by Jenkins, spatial exploration is more important than an orderly exposition of cause and effect. The player's movement through space determines the playback of each story event. Jenkins' *embedded narrative* space has narrative information embedded in its mis-en-scene, such as the clues needed to solve a crime. This space "depends on scrambling the pieces of a linear story and allowing us to reconstruct the plot through our acts of detection, speculation, exploration, and decryption" (2004, Embedded Narratives para. 6).

In both Jenkins' storytelling environments, the *enacted story* and the *embedded narrative* space, the narrative is fragmented and scattered through the environment. These narrative fragments are like the records of Manovich's database narrative. Like Jenkins, Manovich talks of interactive storytelling in spatial terms, stating that the user of a database narrative *traverses* the database along *multiple trajectories* (2001, p. 200). In fact, Manovich states that, "navigable space can be legitimately seen as a particular kind of an interface to a

database" (2001, p. 218). The environmental narratives proposed by Jenkins may provide a way for the author of a database narrative to "control the semantics of the elements and the logic of their connection" (2001, p. 201). The combination of the database narrative form with a simulation of 3D space will be considered in the following chapter, and in chapter four, in the case study of *Remembering Bogle Chandler*.

1.5 Conclusion

This chapter on storytelling in video games is provided as an introduction to Manovich's broader theories of interactive narrative. Video games exemplify many aspects of Manovich's theory, and therefore this chapter identifies their unique properties and examines the relationship between these properties and interactive storytelling.

Video game theorists often discuss storytelling in the context of the ludologist/narrativist debate. This debate about whether video games are more like games or narratives has never been resolved. It has, however, "animated and energized the early days of the young academic discipline of video game studies" (Ryan 2006, p. 276). As outlined in this chapter, theorists from both sides of this debate tend to agree that video games are *rule-based*, *simulative*, *nonlinear*, and *spatial*. They agree that rules of play, especially rules that define a winning goal, are a key characteristic of contemporary video games, and they also agree that these rules can make it difficult for the video game designer to tell a "significant story" (Murray 1998, p. 142). In other words, the video game designer's primary goal is to create obstacles and challenges for the player to overcome in order to win the game. This goal can often distract and detract from the storytelling of the game.

The rule system of a video game is part of a larger structure of behavioural rules that defines the game as a simulation. According to Frasca, all video games are simulations. Frasca regards simulations as models that respond in certain ways to the actions of the player. In his view, the player can only understand the simulation through experimentation. For Manovich, new media can be used to create simulations that imitate both the visual and the

behavioural aspects of an object or system. If we view an interactive narrative as a simulation, we can see that these works are laboratories for experimentation with the potential for modelling many aspects of the real world, including the activity of storytelling. The following chapter analyses Manovich's *database narrative* as a simulation of storytelling.

Simulations provide a *nonlinear* experience for the video game player. The nonlinearity of video games is intended to give the player freedom of choice, since, according to video game scholars, freedom is a vital feature of gameplay. Nevertheless, the freedom of choice provided by video games is often illusory. Although the player can make choices in a video game, these choices do not alter the sequence of events (that is, the story) of the video game. In many video games there are only two outcomes: the player either wins or loses. In all other respects, the story events of the game are fixed. Manovich proposes an alternative model for nonlinear storytelling, the database narrative. In this model a narrative is fragmented into self-contained records and stored in a database. Manovich does not tell us how the fragments of a narrative can be reconstructed from a database. Indeed, he casts doubt on the whole enterprise, claiming that the database "refuses to order" its records (2001, p. 199). Nevertheless, the forms of spatial storytelling examined in this chapter may provide an interface to a database narrative. This interface may convey both the significance of the database records and the ways in which they can be connected.

Juul and Jenkins agree that video games are a spatial medium. They disagree, however, about whether the elaborate and detailed spaces found in video games are compatible with storytelling. Juul, a ludologist, believes that video games and traditional narratives represent space in fundamentally different and opposing ways. In contrast, Jenkins, a narrativist, suggests that narratives can be reconceptualised as spatial rather than linear structures. He believes that 3D space, rather than a linear timeline, can be used as the organising framework of a narrative. In this model, the narrative is distributed throughout the space in different ways, and the user is free to explore the narrative in the order of her

choosing. Jenkins' concept of spatial narrative may provide one mechanism whereby Manovich's database narrative may be reconstructed.

The next chapter examines the principles of new media storytelling proposed by Manovich. Manovich is neither a ludologist nor a narrativist. In order to understand the unique characteristics of new media, Manovich takes an approach that is informed by a wide range of theoretical schools, ranging from semiotics, cinema and fine art theory to computer science. As William Warner, a literary scholar, notes, "Like many raised in the former Soviet Union, Manovich seems inoculated against any explicit aesthetic, conceptual, or political ideology" (2002, para. 2). As noted in the introduction to this exegesis, storytellers working in a variety of fields need a theory of interactive storytelling that can describe and explain the work that they do. In the next chapter we will examine Manovich's extensive and innovative analysis of new media because it provides the basis for such a theory.

Chapter Two: Manovich's Principles of New Media in the Interactive Narrative

Introduction

In *The Language of New Media* (2001), Manovich proposes a set of principles that summarise "the key differences between old and new media" (2001, p. 49). Manovich uses two strategies to identify these principles. One strategy is to position new media forms "within the history of modern visual and media cultures" in order to see how they continue the conventions of older cultural forms and how they break with them (2001, p. 34). The other strategy is to compare all new media forms with one another in order to see what distinguishing features they all share. Manovich builds his theory from the ground up, by observing the structures and operations of "Web sites, virtual worlds, virtual reality (VR), multimedia, computer games, interactive installations, computer animation, digital video, cinema, and human-computer interfaces" (2001, p. 35). Using this broad methodology, Manovich identifies five principles that are present in new media forms but absent in traditional media forms. These principles are numerical representation, modularity, automation, variability and transcoding.

In order to understand how *interactive narrative* is part of this theory, this chapter focuses on Manovich's concept of the *database narrative*. As Manovich points out, in computer science the term database simply means "a structured collection of data" (2001, p. 194). In computer science, however, the term also implies that the database is designed so that its records are easy to manage (that is, create, search, sort and update), and so it can return useful subsets of information (such as how many customers live in a particular location, or how many of them have children). Manovich's use of the term is much looser, and encompasses nearly all new media works. As he puts it, "Some media objects explicitly

follow database logic in their structure while others do not; but behind the surface practically all of them are databases" (2001, p. 200).

Manovich writes that from a user's point-of-view, almost all new media works are a form of database. They are databases in the basic sense that they are, "collections of items on which the user can perform various operations: view, navigate, search" (2001, p. 194). For instance, a website is a database in the sense that it is a collection of items: "text blocks, images, digital video clips, and links to other pages" (2001, p.195). The user searches for these items using a browser, and retrieves them by clicking on links. In this sense, even a Word document is a database if it contains items such as text, images, video clips, or web links. Similarly, for Manovich, a video game is a collection of items such as sounds, movies, 3D models and coded behaviours. The video game player has to execute a number of pre-defined tasks in order to retrieve and display these elements from the video game database.

Although Manovich coined the term database narrative, other theorists have adopted and redefined the term. The new media theorist Marsha Kinder defines database narrative as "narratives whose structure exposes or thematizes the dual processes of selection and combination that lie at the heart of all stories" (2003, p. 6). She sees such narratives "throughout the entire history of cinema, from the early cinema of attractions to the present" (2003, p. 4). Some of the films she terms database narratives are *Ground Hog Day* (1993), *Pulp Fiction* (1994), *Memento* (2000), and *Run Lola Run* (1998). To this list the media theorist Jim Bizzocchi adds *Rashomon* (1950), *Timecode* (2000), and the BBC adaptation of *The Norman Conquests* (1977). Whilst Manovich calls some films database cinema works (most notably Vertov's *Man With a Movie Camera* (1929)) he defines the database narrative as "a narrative which fully utilizes many features of database organisation of data" (2001, p. 267). According to this definition, a database narrative must be a new media work, since old media

cannot fully simulate the features of a database.

To better understand Manovich's conception of database narrative, we can look at the series of video art installations he produced with media artist Andreas Kratky, entitled *Soft Cinema* (2002 − 2004). This work primarily consists of three database-driven films: *Mission to Earth* (2003-04)*, Texas* (2002) and *Absences* (2004). Manovich describes *Soft Cinema* as "a dynamic media installation constructed from a large media database and custom software" (2002a, p. 1). Essentially, each film is driven by a software algorithm that selects and displays movie clips according to their 'content' ("geographical location, presence of people in the scene, etc."), or their 'formal' properties ("i.e., dominant color, dominant line orientation, contrast, camera movement") (Manovich 2002a, p. 5). Manovich calls these films database narratives because they are constructed from databases of film clips, and because they tell stories. The narrative coherence of the films is achieved through the use of voice-over narration that remains the same in each version of the film. Although these films are non-linear or variable, in the sense that their imagery can be reconfigured in a multitude of different ways, these reconfigurations are achieved through software algorithms rather than audience interaction. For this reason these films are only partially relevant to the main concern of this exegesis, which is the relationship of Manovich's principles to the practice of interactive storytelling.

In *The Language of New Media* Manovich does not provide a detailed analysis of how his principles manifest themselves in a database narrative; however, he does refer to database and narrative frequently throughout the book. From an examination of this work we can form a picture of how the principles of new media may appear in a database narrative and how these principles may affect storytelling. This chapter describes Manovich's five principles of new media and how, according to Manovich, they appear in the database narrative. This

examination informs the case studies in chapters three and four, which both provide a practical evaluation of Manovich's five principles within interactive narratives.

2.1 Manovich's Principle of Numerical representation

Manovich's first principle states that new media objects are composed entirely of *digital code* (that is, they are *numerical representations*) (2001, p. 49). He notes that this principle has two key consequences: new media objects are programmable; and new media objects can be described mathematically. For Manovich, the first consequence is the most crucial (2001, p. 68). As we shall see further on, the *programmability* of new media underpins all of his other principles of new media. Nevertheless, it is worth pausing to consider the second consequence of Manovich's principle of numerical representation, which is that new media objects are composed entirely of "digital code". As is often the case, Manovich does not clarify what he means by "digital code", assuming that "most readers understand the difference between analog and digital media" (2001, p. 49). For those readers that are not familiar with the concept of digital code, it is explained here.

Digital code is the prime ingredient of all digital media. Digital code is composed entirely of binary digits, that is, ones and zeros. These ones and zeros are stored in the form of positive or negative magnetic fields on a microscopic region of a hard drive. When an image is digitised it is analysed by an image scanner and broken up into a number of discrete *picture elements* (pixels). In an image that is composed of only pure black or pure white pixels, the colour of each pixel is stored as a *single bit* (a zero or a one). In an image composed of 256 colours, the colour of each pixel is stored as *eight bits* (for instance, 00111010). Most images contain 16.7 million colours. In these images, the colour of each pixel is stored as *32 bits*. From this simple introduction, we can see that the sequence of binary digits needed to describe a simple photographic image will be extremely long. Fortunately even an ordinary computer hard drive can store billions of these binary digits.

All the basic components of digital media (such as pixels, numbers, letters, points, polygons and audio samples) exist within the computer as *binary digits* (that is, bits, or ones and zeros). Thus all new media objects are stored and manipulated by the computer as numbers (zeros and ones). The numerical representation of all new media has profound implications for the new media practitioner. As Manovich notes, old media "is being *liberated* from its traditional physical storage media — paper, film, stone, glass, magnetic tape" (2001, p. 83). In other words, when traditional media are digitised, they are released from their previous forms and reinvented as digital code. Manovich suggests this ability to combine different media makes it relatively easy, and commonplace, for the storyteller to assimilate two or more traditional media types within the one database narrative.

For Manovich, the form that came naturally to pre-digital cinema was temporal montage, where images appear in a sequence, each image replacing the previous one. In cinema, images replace one another sequentially, because "Traditional film and video technology were designed to completely fill a screen with a single image". Manovich claims that pre-digital filmmakers "were already combining moving images, sound and text (be it intertitles of the silent era or the title sequences of the later period) for a whole century"; however, he also notes that to combine two or more images within the one frame, filmmakers had to "work "against" the technology" (2001, p. 271). In other words, pre-digital filmmakers could combine live action, animation and text within the one image, but only with great difficulty.

The ease with which new media filmmakers and animators can now combine images, animations, text and video files, has resulted in what Manovich calls *spatial montage* (2001, p. 271). He defines spatial montage as "a number of images, potentially of different sizes and proportions, appearing on the screen at the same time" (2001, p. 270). Manovich believes that while the technological characteristics of cinema gave rise to *temporal montage*, modern

technology has made *spatial montage* a defining feature of new media. We will observe the aesthetic qualities of the spatial montage in the case studies of chapters three and four.

In the next section we will observe how Manovich's first principle of *numerical representation* forms the basis for his second principle of new media, *modularity*. We will also see how the authors of database narratives can employ modularity to maximise the flexibility of their work.

2.2 Manovich's Principle of Modularity

As seen in the previous section, digital code is grouped together to define the basic components of new media, such as "pixels, polygons, voxels, characters" and "scripts" (2001, p. 51). New media practitioners then use these basic components to create larger-scale objects, such as "images, sounds, shapes, or [programmed] behaviors" (2001, p. 51). These objects, in turn, can be combined into even larger objects. For instance, a multimedia project "may consist from hundreds of still images, QuickTime movies, and sounds which are all stored separately and are loaded at run time" (2001, p. 51). For Manovich, all these elements maintain their separate identities and can be accessed, modified, or substituted without affecting the overall integrity of the work (2001, p. 51). The self-contained and separate nature of the elements of a new media work are an expression of *modularity*, the second of Manovich's five principles of new media.

Manovich calls modularity the "fractal structure of new media" (2001, p. 52). Unfortunately, his use of the term *fractal* as a metaphor for *modularity* is quite misleading. The mathematician Benoit Mandelbrot defines a fractal as "a rough or fragmented geometric shape that can be subdivided in parts, each of which is (at least approximately) a reduced-size copy of the whole" (1982, p. 468). It is difficult to see how a new media work has this kind of "fractal structure". Although we can subdivide a web page into parts, such as images, movies, sounds and text, these parts are not "reduced-size copies of the whole". We can further divide an image into pixels, but again, an individual pixel is not an approximation of the image.

Further dividing a pixel gives us binary digits or magnetic fields on a hard drive. In fact, on every level of magnification, the structures of a web page are quite distinct from one another. There is no 'self-similarity' between the components of a web page, or indeed, any type of new media work. As noted in the introduction to this exegesis, Manovich occasionally uses analogies from computer science that are less than helpful for explaining his theory.

Manovich's concept of modularity may be better illustrated by looking at traditional artworks that are *not* modular. For instance, oil paints are independent of one another (that is, they are modular) until they are mixed together on a canvas. Once they are applied to the canvas they become part of the painting and they can no longer be independently altered. Similarly, grains of sand are modular until they are fused together in a glass-making kiln, and strands of wool are modular until they are woven into a tapestry. Since the elements that make up these traditional artworks do not maintain their modularity once they are combined, trying to alter any of them can damage or destroy the work.

It is too simplistic, however, to divide traditional and new media works into the binary categories of 'modular' and 'non-modular'. For instance, it is possible for traditional designers to make their works modular, at least on a more superficial level (think jigsaw puzzles, matryoshka dolls, triptychs and three-piece suits). In addition, as Manovich himself notes, the traditional art form of film is modular in the sense that it is made up of *samples*: "Cinema sampled time twenty four times a second" (2001, p. 66). The very reason Manovich uses cinema as an analogy for new media is because of its modularity and variability, which "prepared us for new media" (2001, p. 66). According to Manovich, the modularity and variability of cinema helped audiences and artists transition from traditional media to new media.

In addition, by stating that new media works are modular in nature, Manovich ignores the fact that it is the author of a new media work who decides how modular it should be. For instance, a new media designer places pictorial elements on different 'layers' of a Photoshop

file. These elements can be moved around independently, thus making the image more flexible. The modularity of a new media work comes at a cost. For instance, the more layers a Photoshop file has, the bigger and more complex it is. For this reason, when the designer has arranged the image to her satisfaction she will often 'flatten' its layers. Flattening an image merges its layers into a continuous image, and it is then only modular on the pixel layer. In fact, there are many processes, such as file conversion, compression or rendering that can reduce the modularity of a new media file.

Increasing the modularity of a work also makes it harder to reconstruct. The problems associated with increasing the modularity of a work can be illustrated with one of Manovich's analogies. He states that "as the relative physical size of the blocks [modules] in relation to the finished object get smaller, the number of different objects which can be built increases: think IKEA modular bookcase versus a Lego set" (Manovich 2005, p. 9). Although increased modularity leads to increased variability, this comes at a cost. What Manovich fails to mention in his analogy is that it is much harder to build a bookshelf from Lego than from IKEA parts. In addition, there is more potential for error in the process of reconstruction.

The author of the work must decide how modular it can be, without it becoming impossible to reconstruct. We will observe the different choices authors make about the level of modularity of their work in the case studies of chapters three and four. In the next section we will observe how, according to Manovich, the *numerical code* and *modular* structure of a new media object (principles one and two) allow many operations involved in their creation, modification and access to be *automated.* In other words, we will see how the first and second principles of new media lay the foundations for Manovich's third principle of automation. We will also observe how the database storyteller can use *automation* to simulate a number of storytelling processes.

2.3 Manovich's Principle of Automation

According to Manovich, automation in new media works can be classified as either *low-level* or *high-level*. Low-level automation is the creation, modification or access of a media file using a relatively simple algorithm (an algorithm is a step-by-step procedure for carrying out a task or solving a problem). Examples of low-level automation would include: the automatic alteration of an image using a Photoshop filter; the automated movement or rotation of an image (Manovich 2001); and the automation of perspectival imaging in three dimensional (3D) modelling and animation (Manovich 1996).

Manovich defines high-level automation as a form of artificial intelligence (AI), "which requires a computer to understand, to a certain degree, the meanings embedded in the objects being generated" (2001, p. 53). In other words, the computer must *simulate* an awareness or understanding of how to meaningfully reconstruct the modular elements of a new media. An example of high-level automation would be a program in an Internet chat room that can convincingly simulate human conversation (known as a *bot*), or a software program that can write competent works of fiction. As noted in the first chapter of this exegesis, as far as Manovich is concerned, the kind of AI needed to produce high-level automation is still in its infancy.

Manovich notes that the AI engine of a video game is a modest but well-known example of high-level automation. This engine is the program that controls the behaviour of automated game characters, for example "the enemy forces in a strategy game such as *Command and Conquer*" or "the single enemies which keep attacking the user in first-person shooters such as *Quake*" (2001, p. 54). Manovich explains that these AI-controlled characters can perform and respond in a limited number of ways, such as "run forward, shoot, pick up an object" (2001, p. 54). Whether or not these characters are really intelligent is a matter for philosophical debate, since Manovich points out that their actions and responses are very limited. For Manovich, these characters are only convincing because the player's interaction

with them is highly codified and bound by a strict rule system. In other words, automated characters can sustain the *illusion* of intelligence and skill "only because the programs put severe limits on our possible interactions with them." (2001, p. 54). For example, we can shoot at an automated sniper but we can't engage in a meaningful conversation with him.

Many of the examples of automation discussed in this section can also be thought of as simulations, because they model some aspect of an object or system. In many of these examples, the computer accomplishes a task that was traditionally performed by a painter, animator or draftsman. As Manovich says, when a work is automated, "human intentionality can be removed from the creative process, at least in part" (2001, p. 53). Similarly, for Frasca, when the author of a simulation transfers some of her creative processes to the computer, she takes an "authorial risk" by giving up some of her control over the simulation (2003a, para. 18). By this he means that the author of a simulation can never be entirely sure what the final outcome of her work will be.

In chapter one, we observe how, according to Frasca's definition of simulation, a database narrative can be seen as a simulation of storytelling. For instance, a database narrative simulates a task traditionally done by the storyteller, namely, selecting and ordering narrative elements. Since the input of a human user is essential for the operation of a simulation, the author's creative control over her work is transferred not only to the software but also to the user of the software. Thus, in a database narrative, the user and the software collaborate to select and order the narrative elements into a sequence.

In the case studies of chapters three and four we will look at situations where the storyteller hands over parts of their creative process to this collaboration between user and software, and what impact this has on the storyteller's work. In the next section we will observe how the collaboration between a human user and a database narrative can produce a number of variable outputs. In other words, we will see how Manovich's third principle of *automation* leads to his fourth principle of *variability*. We will also observe how the

variability of a database narrative makes it difficult for a database storyteller to convey a coherent sequence of events (a narrative).

2.4 Manovich's Principle of Variability

Manovich states that a new media object can be reconfigured in multiple ways: "A new media object is not something fixed once and for all, but something that can exist in different, potentially infinite versions." (2001, p. 56). He calls this attribute of new media works *variability*. Variability is synonymous with the concept of nonlinearity discussed by video game theorists in the first chapter of this exegesis. According to Manovich's theory, the *variability* of a database narrative is only possible because of its *modularity*. In other words, because the narrative modules are not *hard-wired* together they can be arranged into many different sequences. It is the user, in collaboration with the automated software, who performs this arrangement of narrative modules into a variety of sequences. Thus, as Manovich points out, "the principle of variability is closely connected to automation" (2001, p. 56).

To describe how the variability of a database narrative works, Manovich offers the following analogy of a film editor who creates a narrative from a database of film footage. Usually the editor is working under the instruction of the film's director, so both are responsible for the narrative of the film. Manovich writes, "During editing the editor constructs a film narrative out of this database, creating a unique trajectory through the conceptual space of all possible films which could have been constructed" (2001, p. 208). Similarly, the user of a database narrative constructs a sequence from its database of narrative modules. In doing so, the user performs one of the tasks traditionally performed by the storyteller, namely, re-ordering narrative elements into a sequence.

To illustrate the relationship between database and narrative, Manovich utilises the semiological structures of *syntagm* and *paradigm*. He appropriates this model from Ferdinand de Saussure who uses it to describe natural languages such as English (2001, p. 203). According to this theory, linguistic signs (words or word fragments) can be organised either

associatively (*paradigmatically*) or sequentially (*syntagmatically*). These dimensions are often presented as axes (see figure 1). In this diagram, the *paradigmatic* axis is the vertical one where signs are organised into groups of associated elements. The *syntagmatic* axis, on the other hand, is the horizontal one, where signs are strung together in a linear sequence.
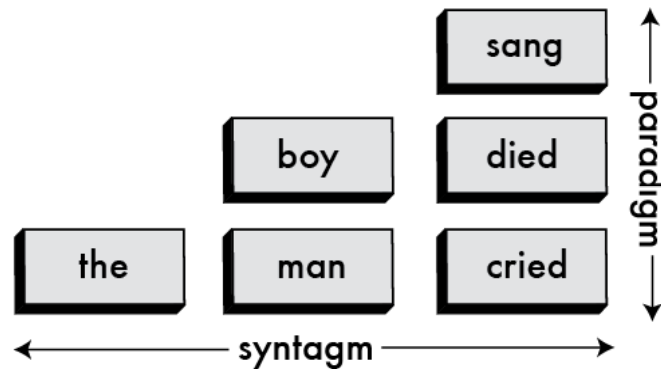

Figure 1: Paradigm and Syntagm (Chandler 2001)

The model of syntagm and paradigm illustrates why, according to Manovich, the narrative and database forms are difficult to combine. He writes that narrative represents the world as a cause-and-effect trajectory of events (syntagm) whilst the database represents the world as a records grouped by association (paradigm) (2001, pp. 194-199). For Manovich, these highly divergent characteristics make narrative and database "natural enemies" (2001, p. 4). Manovich asserts that the "refusal" of a database to order its records into a sequence may result in the user retrieving records in a random order. In this case, he writes, "there is no reason to assume that these elements will form a narrative at all" (2001, p. 201). In other words, although the user may be able to produce a number of variable sequences from a database narrative, she may not experience these sequences as a coherent sequence of events.

For both Manovich and Ryan, the key challenge for a database storyteller is to ensure that the output generated by her work is not only *variable,* but also that it *tells a coherent story.* In defining the term narrative, Manovich quotes the cultural theorist Mieke Bal, whose primary requirement for a narrative work is that it should depict "a series of connected events caused or experienced by actors." (Bal quoted in Manovich 2001, p. 201). According to

Manovich, the author of a database narrative must "control the semantics of the elements and the logic of their connection so that the resulting object will meet the criteria of narrative" (2001, p. 201). In other words, he believes that the author must optimise the meaning of each module and clearly and logically communicate the relationships between the modules. In this manner the database narrative will be able to represent "a series of connected events caused or experienced by actors" (2001, p. 201).

In her critique of Manovich's database narrative model, Ryan seems more confident than Manovich that the database and narrative forms can be reconciled. Like Manovich, however, Ryan writes that to reconcile database and narrative, the author of the work must appropriately design and structure the database and its contents. For Ryan, the author can reconcile database and narrative by creating "a database design and a linking philosophy sufficiently transparent to enable the readers to aim with precision at the elements of the story that they want to expand" (Ryan 2006). For Ryan, if the content of a database narrative and its interface are constructed appropriately, "the unpredictable probes and always incomplete exploration of the reader will not prevent the emergence of narrative meaning" (Ryan 2006, p. 149). Methods for making a database narrative clear, logical and coherent will be examined in the case studies of chapters three and four.

For Manovich, the principle of variability is strongly related to the concept of customisation. He writes that the logic of new media corresponds to the logic of post-industrial society where "every citizen can construct her own custom lifestyle and "select" her ideology from a large (but not infinite) number of choices" (2001, p. 60). For instance, Manovich writes that the user of a hypertext can produce her own version of the work "by selecting a particular path through it" (2001, p. 61). For Manovich the variable work is an improvement on the one-size fits all model of traditional media. He writes, "new media technology acts as the most perfect realization of the utopia of an ideal society composed from unique individuals" (2001, p. 61). Frasca, also believes that variability is a positive

feature because it allows a simulation to communicate many aspects and possibilities of a world. The communicative potential of variability is explored further in the case studies of chapters three and four.

The final of Manovich's five principles, *transcoding*, is the conversion process that allows a human user to understand and utilise Manovich's four principles in a new media work. A user can only utilise a *numerically coded*, *modular*, *automated* and *variable* work if it is translated into words, images and sounds that she can understand. For Manovich, *transcoding* is evident when a designer translates a computer representation into a cultural representation. This translation of computer 'language' into human 'language' occurs at the point of interaction between the human user and the computer, that is, the visual interface. In the next section we will observe *transcoding* in the new media interface, specifically in the way this interface combines elements of traditional cultural interfaces with elements of the human-computer interface. We will also consider a number of design strategies that a database storyteller can apply to a *transcoded* visual interface, and how these strategies can facilitate storytelling.

2.5 Manovich's Principle of Transcoding

Manovich calls *transcoding* (the final of his five new media principles) the most substantial consequence of the digitisation of media (2001, p. 63). To transcode something means to translate it into another format. Manovich observes that from the 1990s a growing number of "books and video tapes, photographs and audio recordings" were *transcoded* into a digital format (2001, p. 198). In other words, they were transcoded to become modular, automated, variable, and numerical representations.

For Manovich, transcoding is not limited to the physical process of digitisation. He believes that the most important aspect of transcoding is the "conceptual transfer" between old and new media (2001, p. 65). He notes that when cultural works are created on the computer, they are shaped by the ontology of the computer; in other words, they are shaped

by the way the computer "models the world, represents data and allows us to operate on it" (2001, p. 64). According to Manovich, transcoding creates a composite of computer and cultural layers and thus creates a new computer culture. The database narrative is one example of a transcoded new media form; the cultural interface is another.

Transcoding, which is essentially the blending of old and new media forms, is visible in what Manovich terms the *cultural interface*. The cultural interface is essentially a visual interface to cultural material, such as movies, novels, music and so on. Manovich states that cultural interfaces are largely constructed from the interfaces of already familiar media forms (such as cinema and the printed word) and the human-computer interface (HCI) (2001, p. 81). For instance, a newspaper website is a cultural interface that combines traditional newspaper interface elements (headlines, blocks of copy, graphics and photographs) with human-computer interface elements (hyperlinks, radio buttons, pull-down menus and a search field) (2001, p. 81). For Manovich, this transcoding (or blending) of traditional and computer interfaces exemplifies the principle of remediation proposed by the media theorists, Jay David Bolter and Richard Grusin (2000). This principle observes that "all media work by *remediating*, i.e. translating, refashioning, and reforming other media, both on the levels of content and form" (Manovich 2001, p. 95).

In their book *Remediation* (2000), Bolter and Grusin state that new media interfaces often display the visual strategy of *immediacy*, or *transparency*. This is a strategy often found in Renaissance painting, photography, television and cinema. Transparency is a "style of visual representation whose goal is to make the viewer forget the presence of the medium (canvas, photographic film, cinema, and so on) and believe that he is in the presence of the objects of representation" (2000, pp. 272-273). Manovich would agree with Bolter and Grusin, observing that the spatial illusionism (or simulation) of traditional interfaces is a dominant feature of new media interfaces. As noted in chapter one, Manovich believes that before computerisation, simulations of space were primarily visual, for example in

Renaissance paintings and in the cinematic film. As in the "famous formulation of Leon-Battista Alberti", the rectangular frame of a painting, a photo, or a film acts as "a window opening up into a virtual 3D space" (Manovich 2001, p. 83). For example, in the video game *DOOM*, the player looks through a 'window' into the virtual world of the Martian base.

According to Manovich, however, the interface designers of the 1990s did not always find it easy to combine the illusionism of traditional interfaces with the interactivity of the human-computer interface. In other words, they found it difficult to design interfaces that were both spatial illusions and "something the user actively goes into, zooming in or clicking on" (2001, p. 167). One method they used to reconcile illusion and interactivity in the interface was to make the interactive controls *invisible* (Manovich 2001, p. 163). For instance, Robyn Miller, a video game designer, explains his adoption of an invisible interface in *Myst* (1993): "The real world is the best user interface there is. And it's an invisible interface … we tried to make something that was as close to the real world as possible, and that meant the absence of any kind of computer interface, like buttons and things like that" (Miller quoted in Milano & Aikin 1995, p. 42). For Manovich, however, the invisible or transparent interface is problematic because it offers "neither a true psychological 'immersion' nor easy navigation since the user has to search for hyperlinks" (2001, p. 192).

In his more recent writing about the interface, Manovich observes that the invisible interface is being replaced by a *visible* interface. Interaction is now treated "as an event - as opposed to 'non-event', as in the previous 'invisible interface' paradigm" (2007, p. 1). As an example of a *visible* interface he cites the interface to Apple's OS X operating system, *Aqua*. For Manovich, this interface is a radical departure from the restrained interfaces that preceded it: "Aqua's icons, buttons, windows, cursor and other interface elements were colorful and three-dimensional. They used shadows and transparency. The programs animated when started. The icons in Dock playfully increased in size as the user moved a cursor over them" (2007, p. 2). According to Manovich *Aqua* "aesthetized" the interface (2007, p. 3). Rather

than trying to efface the interface and make it disappear into the background, *Aqua* celebrates the interface by making it colourful, three-dimensional and playful.

The trend that Manovich observes towards a visible interface seems to confirm Bolter and Grusin's theory that *transparency* leads to *opacity* (2000, p. 19). If transparency is a style that tries to make the viewer forget about the medium of representation, opacity is a "style of visual representation whose goal is to remind the viewer of the medium" (2000, p. 272). An example of opacity in the interface can be seen in the "multiplicity of media that may appear in windows on a computer screen or in the fragmented elements of a collage or photomontage" (2000, p. 81). Bolter and Grusin contend that initially "each medium promises to reform its predecessors by offering a more immediate or authentic experience" (2000, p. 19). They observe that over time, however, transparency gives way to opacity. They believe that as a medium matures, designers begin to explore the aesthetics of the medium in more self-conscious ways, leading to a mature medium that oscillates between the visual strategies of transparency and opacity.

Manovich doesn't believe that the oscillation between illusion (transparency) and control (opacity) should pose a problem for designers. He compares the oscillation between illusion and control to "the shot / counter-shot structure in cinema, perhaps as a new kind of suturing mechanism" (2001, p. 187). In other words, Manovich sees the way the user oscillates between being immersed in an illusion, and controlling a medium, as typical of the cognitive multi-tasking of the modern computer user. He writes, "The user analyses the quantitative data; next she is using a search engine; next she starts a new application; next she navigates through space in a video game; next she may go back to using a search engine; and so on" (2001, p. 189). In fact, he proposes that by participating in the text in this periodic way, the subject becomes more fully involved in the illusion: "The user invests into illusion precisely because she is given control over it" (2001, p. 188).

According to the principle of *transcoding*, the database narrative is a blend of cultural and computer conventions. In other words, the database narrative is numerically represented, modular, automated, variable and transcoded, as well as being a narrated sequence of events. For Manovich, these computer and cultural conventions are most visible in the cultural interface, which started to develop in the 1990s. The cultural interface exhibits a combination of the conventions of cinema, the printed word and the human-computer interface.

Manovich describes how the first-generation of cultural interfaces featured the visual strategies of illusionism. Manovich also notes that many first-generation cultural interfaces display a tension between illusionism and functionality. Many of these interfaces hide their controls beneath a 3D image. Nevertheless, he also notes that this tendency is changing, and that many designers now highlight and celebrate the interactive controls in their interfaces. This new celebration of interactive control may be due to the fact that contemporary computer users have become more adept at multi-tasking, alternating with ease between being immersed in a medium and controlling it. The competing visual interface strategies of transparency and opacity, invisibility and visibility, and illusion and control are observed in the case studies of chapters three and four.

2.6 Conclusion

Manovich's five principles of new media summarise the characteristics that make new media works unique. The principles of new media are what make the database such a powerful form of communication. The numerical coding of the database means that it can store all kinds of traditional media as binary digits. The modularity, automation and variability of the database enable it to rapidly respond to the user, who can use it to search, manipulate, and recombine vast amounts of data. The transcoding of the database narrative allows its visual interface to act as a bridge between human and computer cultures.

Nevertheless, as Manovich points out, whilst a database *can* generate a narrative, it does not naturally lend itself to such an application. He states, "a database can support

narrative, but there is nothing in the logic of the medium itself which would foster its generation" (2001, p. 201). In the next chapter, we will observe Manovich's five key principles of new media in *The Whale Hunt,* by Jonathan Harris. This chapter examines how these principles facilitate storytelling in *The Whale Hunt*.

Manovich's five principles of new media summarise the characteristics that make new media works unique. The principles of new media are what make the database such a powerful form of communication. Manovich borrows the term *database* from computer science, and uses it as a metaphor to communicate the *numerical coding*, *modularity*, *automation*, *variability*, and *transcoding* apparent in new media works. Databases and new media works both employ *numerical coding* to store all kinds of media files as binary digits. They are both *modular*, in the sense that they are made up of separate, self-contained files. They are both *automated* in the sense that they can be created, managed and operated using software. They are both *variable* in the sense that they can be reconfigured to provide a vast number of different outputs. Finally, following the principle of *transcoding*, new media works are increasingly exhibiting the database traits listed above. Simultaneously, the *transcoding* of the audiovisual interface (that is, its incorporation of the old media interfaces) allows it to act as a bridge between human and computer cultures.

The modularity, automation and variability of the database enable new media works to rapidly respond to the user, who can use them to search, manipulate, and recombine collections of media files. These 'recombinations' of data are, however, difficult to reconcile with a coherent cause-and-effect trajectory of narrative. As Manovich points out, whilst a database *can* generate a narrative, it does not naturally lend itself to such an application. He states, "a database can support narrative, but there is nothing in the logic of the medium itself which would foster its generation" (2001, p. 201). In the next chapter, we will observe

Manovich's five key principles of new media in *The Whale Hunt,* by Jonathan Harris. This

chapter examines how these principles facilitate storytelling in *The Whale Hunt*.

Chapter Three: Manovich's Theory of New Media in *The Whale Hunt*, by Jonathan Harris

Introduction

The Whale Hunt (2007) is a documentary work describing real events. In the words of the documentary filmmaker, John Grierson, *The Whale Hunt* is a "creative treatment of actuality" (1933, p. 8). It presents a photographic documentary about a group of Inupiat whale hunters in Barrow, Alaska (the Inupiat are indigenous to Alaska's northern regions). Harris spent nine days living with an Inupiat family and participating in their annual whale hunt. Harris documented his experience, including the journey from New York to Barrow, by taking over 3000 photographs. The sequence of images begins with the taxi ride to Newark airport and ends with the butchering of two whales. The website tells the story of a whale hunt, but more importantly it tells us about the Inupiat people and their way of life.

The Whale Hunt is, to use Manovich's terminology, a database narrative. In other words, it is a collection of data that recounts a sequence of events. Since *The Whale Hunt* is a new media work, it provides a good case study by which to observe Manovich's five principles of new media. This chapter observes if, and how, Manovich's principles are apparent in *The Whale Hunt*. It also analyses the work through those principles. This analysis reveals design strategies that can be usefully applied to other database narratives.

3.1 Numerical Representation in *The Whale Hunt*

The principle of numerical representation entails that all new media objects are composed entirely of digital code (2001, p. 49). One consequence of this is that media are liberated from their traditional forms of physical storage (2001, p. 83). According to Manovich, the *numerical representation* of new media means that filmmaker and animators

no longer have to work against the technology to combine moving images. In other words, they can combine different media with relative ease.

Manovich calls the combination of a number of different visual sequences within the one frame a *spatial montage* (2001, p. 271). An example of a spatial montage can be observed in the main interface of *The Whale Hunt* (figure 2). The interface of the work is a collection of interactive icons that can be visually separated onto two distinct 'layers'. The large colour photos form the underlying image layer whilst the interface elements float above on the control layer. The interactive controls form a separate visual layer because they are all rendered in delicate white line-work; this allows the interactive controls to sit above the photographs without obscuring them. The layering effect is further emphasised by the way the interface elements cast subtle shadows on the photos below them.

Figure 2: *The Whale Hunt*, main interface (Harris 2007)

Although numerical representation makes it easy to assimilate all types of media within the one screen, it is not so easy to make this assimilation visually successful. When combining so many different visual elements there is always a danger that the screen will

become too busy and chaotic. Nevertheless, Harris's interface design is elegant and orderly. It is possible to 'shift focus' between the two layers, depending on whether one wishes to *view* or *control* the sequence of photographs. Harris successfully designs and positions the elements of his spatial montage so that they co-exist harmoniously within the one frame.

In the following section we will observe how the numerical representation of *The Whale Hunt* discussed in this section, underpins the *modularity* of the work. Modularity is the second of Manovich's five principles of new media, and it follows directly from his first principle, numerical representation.

3.2 Modularity in *The Whale Hunt*

Manovich's principle of *modularity* entails that a new media object is composed of independent elements that can each be accessed, modified, or substituted without affecting its overall structure (2001, p. 51). *The Whale Hunt* is numerically represented by digital code. This code is combined within the basic components of the work: pixels, points, characters and programming code. Harris has combined these basic components into larger-scale objects: images, shapes, text and programmed behaviours. He combines these components, in turn, into even larger objects, principally the self-contained narrative modules of *The Whale Hunt*. These modules are Harris's photographic images and their associated captions. There are 3214 photographs in the database, and each one has a short descriptive caption, such as 'Newark Airport', 'On the Arctic Ocean', or 'Watching for Whales'. In accordance with Manovich's principle of modularity, each of these image/caption modules is separate from the others and can be viewed in any order.

Harris describes his creation of *The Whale Hunt*'s photo/caption modules as "incessant automated data collection" (Harris 2007, Statement). At the start of his seven-day journey he decided to take a photo of his experiences at least once every five minutes. During periods of greater activity, he would take more photos. For instance, when the first whale was being cut up he took 37 photos of the scene in five minutes. In quieter moments he would take

photos of anything in his immediate vicinity: plane cabins, toilet doors, supermarket shelves and so on. Before Harris fell asleep each day, he mounted his camera on a tripod and connected a chronometer to take a photo every five minutes. Harris's use of a chronometer to take photos at night explains why the work contains 254 images of him sleeping.

Some of the modules of *The Whale Hunt* are poignant and beautiful, and are suggestive of the work's narrative themes. For instance, the photo with the title 'Barrow Playground' (figure 3) conveys one theme of the work, that is, the harsh and challenging environment of Barrow. Other modules represent narrative events, such as the prayers before the hunt (figure 3). This module also represents a cultural belief of the hunters: that praying will increase the likelihood of a successful hunting expedition.
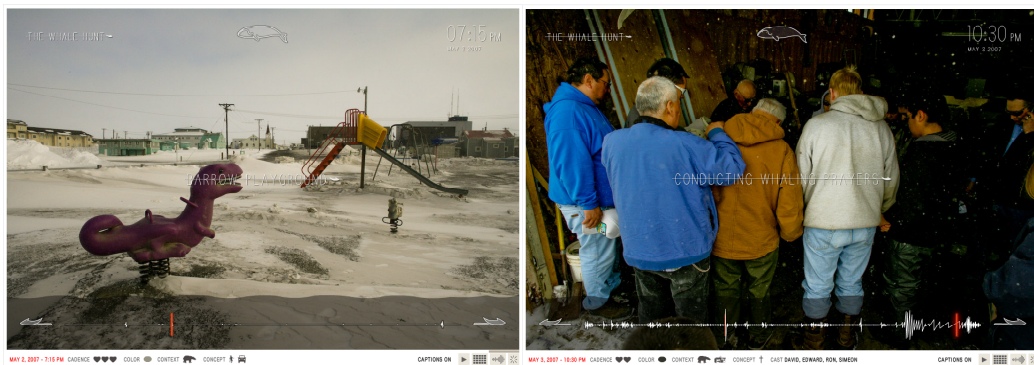

Figure 3: 'Barrow Playground' & 'Prayers Before the Hunt' (Harris 2007)

The significance of other modules is less apparent. Sometimes the captions fail to provide a context or adequate explanation for a photo. For instance, in one image (figure 4) a boy is looking at some soft porn on his father's computer. The shot is entitled 'Samuel at the Computer'. What are we to make of this image? What is its significance in the context of the narrative? In another photo that comes at the end of the narrative (figure 4) a whale hunter listens to the news that another whaling camp has caught a whale. By this stage this hunter and his friends have spent days preparing for the whale hunt and camping out, waiting for a whale to appear. The hunter stands expressionless, his arms folded. Is he frustrated or angry that another group of hunters has beaten them in capturing a whale? The caption does not enlighten us, stating simply 'News that the Ahkivgaq camp has landed a whale'. Thus the

significance of some of the modules is hard to decipher because of the brevity of their descriptive captions. From this we may conclude that the smaller the modules of a database narrative, the less likely each individual module will be able to convey a coherent meaning.

Figure 4. 'Samuel at the computer' & 'News that the Ahkivgaq camp has landed a whale' (Harris 2007)

The Whale Hunt is highly modular, with 3214 individual story modules. The user must, therefore, rely on automated functions to locate and access each individual module. According to Manovich, the first and second of his five principles, *numerical coding* and *modularity*, lead to his third principle, the *automation* of "many operations involved in media creation, manipulation and access" (2001, p. 53). The manner in which Harris automates the creation, manipulation and access to the modules of *The Whale Hunt* is described in the next section.

3.3 Automation in *The Whale Hunt*

Manovich states that the numerical code and modular structure of database narratives allow many operations involved in their creation, modification and access to be *automated. The Whale Hunt* exhibits what Manovich would term *low-level automation*.

For Manovich, low-level automation is the creation, modification or access of a media file using a relatively simple algorithm (2001, p. 53). This kind of automation is used in the procedural animations of *The Whale Hunt* interface. In procedural animation movement is not pre-recorded, but generated according to procedures (or rules). An animator doesn't handcraft the animation; rather, a programmer creates it by writing computer code. For instance, a

programmer could write a piece of code that moves the image of a ball across the screen, one pixel at a time. Written in English, this procedure would read something like: 'add one pixel to the horizontal co-ordinate of the ball image'. By looping this procedure, the ball image would move slowly across the screen, one pixel at a time. Procedural animations are small because the procedures are stored as code rather than as a long sequence of images. Thus they are very useful in web-based works because complex animations can be downloaded as very small files.

Harris's automated animations do not have any obvious real-world referents. The mosaic interface, for instance, is a screen with tiny photos scattered across it. When it first appears, the photos rapidly position themselves into an orderly pattern. The way these photos animate suggests they are active icons, and indeed, when the cursor moves over them, they enlarge slightly, whilst the photos around them recede, giving the impression that the cursor is a magnifying glass. The hundreds of tiny images on a white background, the way they slide around, and the magnifying effect of the cursor suggest that this is a *simulation* of a lightbox for viewing photographs. Like a photographer with a magnifying glass, the user can locate and view a single image at full resolution by clicking on it. This observation suggests that Frasca is correct when he states that the meaning of a simulation is revealed through the user's experimentation with it (2003a).
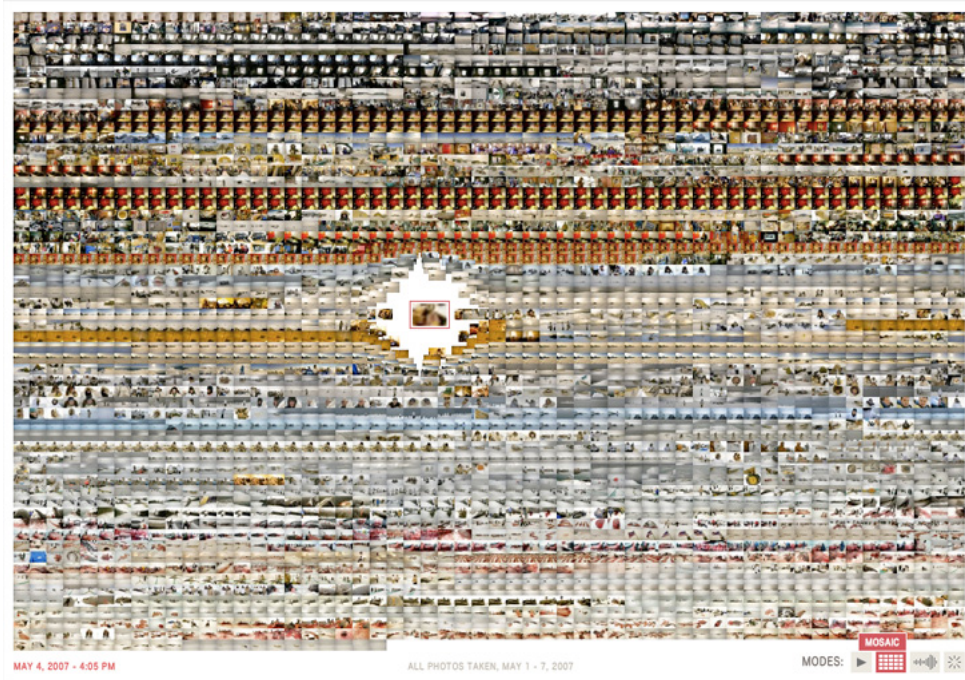
Figure 5. *The Whale Hunt*, mosaic screen (Harris 2007)

Manovich's principle of automation can also be observed in two other interfaces – the *pinwheel* and the *timeline*. The pinwheel is a collection of tiny dots arranged in a circle. The timeline arranges the same dots on a horizontal line. As the cursor runs over these dots, they enlarge somewhat, in a similar manner to the mosaic simulation. Each of the dots represents one of the modules of Harris's database. The movement of these tiny dots is mesmerising, like watching the flight of a flock of birds. Indeed, these animations are suggestive of natural phenomena, such as birds, fish, water or snowflakes, and because of this they successfully echo the environmental themes of the work. Again, the user can click on one of these squares to call up the full resolution version of the image.

Figure 6. *The Whale Hunt*, pinwheel and timeline interfaces. (Harris 2007)

Whilst the mosaic, timeline and pinwheel simulations are engaging, it is impossible to make out the images within them, even when they are enlarged beneath t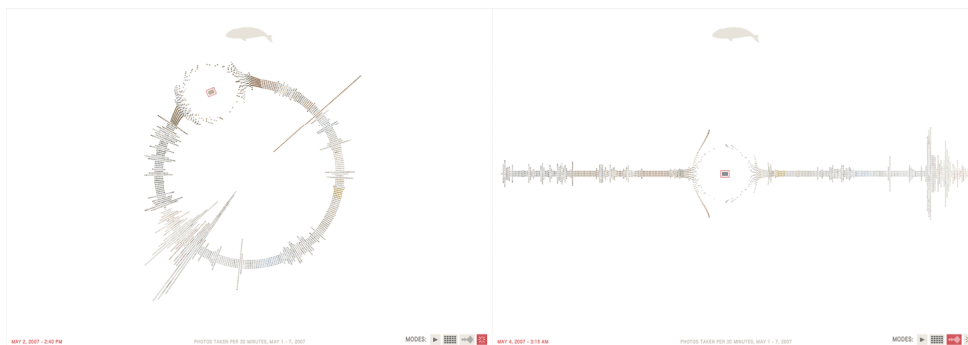he cursor. Choosing one of the photos from these interfaces is, therefore, a random choice. In this sense, the simulation of a photographic lightbox by the mosaic interface is only partially successful.

Manovich writes that according to the principle of *automation*, "human intentionality can be removed from the creative process, at least in part" (2001, p. 53). For Manovich, when an author automates part of her work, she also surrenders some of her creative control over it. As seen in the previous section, Harris surrenders some of his creative control over *The Whale Hunt* when he uses an automated process to capture some of its photographs, for instance the many photographs of Harris sleeping. Harris's creative process in *The Whale Hunt* works against the way a narrative is traditionally constructed. As noted by Juul in the first chapter, traditional narratives skip over uninteresting spaces and compress or delete uninteresting time sequences (1999); in contrast, in *The Whale Hunt*, uninteresting spaces and times are as faithfully reproduced as the interesting ones. Thus Harris's use of an automated process in the creation of *The Whale Hunt* can be seen as being detrimental to its narrative.

According to Manovich, the creation of *variable* outputs from a database can also be *automated*. In other words, the third of his five principles, automation, is closely connected to his fourth principle, variability. In the next section we will see how a number of automated processes help the user to produce variable outputs from the database narrative, *The Whale Hunt*.

3.4 Variability in *The Whale Hunt*

Manovich's principle of variability entails that a new media object can be reconfigured in multiple and potentially infinite ways (2001, p. 56). The semiological theory of *syntagm* and *paradigm* can be used to illustrate the potential for variability in *The Whale Hunt* (figure 7). According to Manovich, the syntagmatic axis is the cause and event sequence of the narrative. As illustrated in the following diagram, the syntagmatic axis of *The Whale*

Hunt is a loosely connected chronology of events, which can be summed up as 'Jonathan travels from New York to Barrow, gets to know an Inupiat family, and goes on a whale hunt with them'.
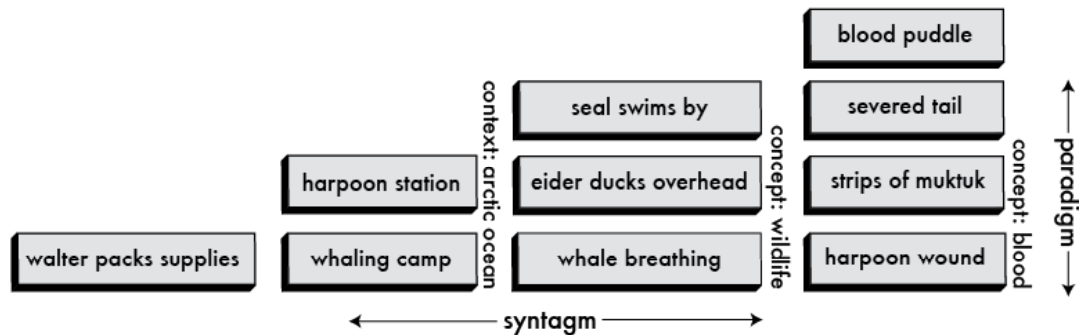

Figure 7. Paradigm and syntagm in *The Whale Hunt*

For Manovich, the paradigmatic axis of a database is where modules are grouped together in categories of association. There are many associative categories in *The Whale Hunt* such as the ones shown in figure 7: 'Arctic Ocean', 'Wildlife' and 'Blood'. In theory, each user can access the modules of *The Whale Hunt* either as a chronological sequence or in groups of images associated by themes, by locations, or by the image's excitement rating. In this way each user can create a unique version of the work.

According to Manovich, new media works reverse the traditional dominance of syntagm over paradigm. He observes that in literary and cinematic narrative, the syntagmatic axis is dominant, that is, the syntagm has *material existence* in contrast to the paradigms, which "only exist in the viewer's imagination" (2001, p. 203). In new media works, this established dominance is reversed: "Database (the paradigm) is given material existence, while narrative (the syntagm) is de-materialised" (2001, p. 203). In *The Whale Hunt* we can observe the dominance of *paradigm* (classification) over *syntagm* (sequence).

Users can isolate different paradigms (thematic or spatial groups of images) from *The Whale Hunt* using the metadata that Harris has assigned to each image. According to Manovich, "Metadata is what allows computers to 'see' and retrieve data, move it from place to place, compress it and expand it, connect data with other data, and so on" (Manovich 2002,

p. 1). The user utilises the metadata of the work by clicking on the 'change constraints' button and opening the *constraints panel* (figure 8). This panel allows the user to find particular image groupings within the thousands of images contained in the work. The constraints are organised into four categories: 'cast', 'concept', 'context' and 'cadence'. Clicking on these constraints will progressively narrow the number of images available on the main screen.
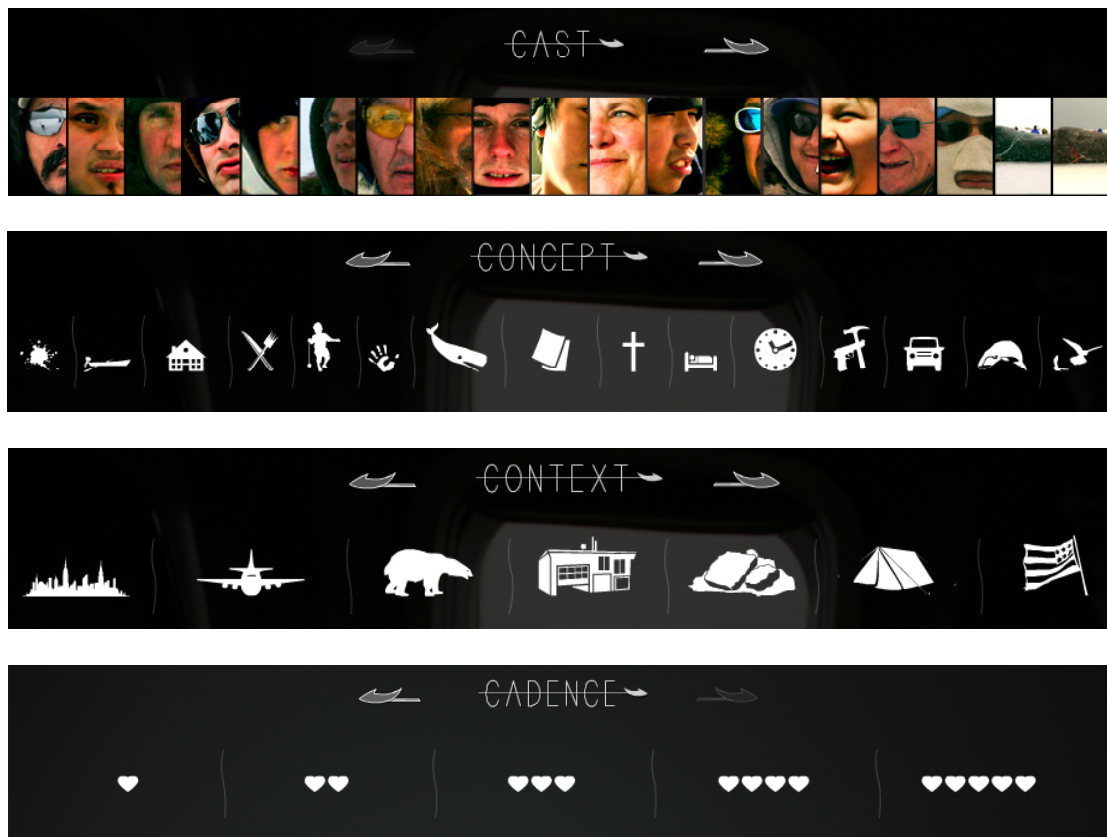
Figure 8. *The Whale Hunt*, the constraint sets (Harris 2007)

The constraints work by filtering photos according to their metadata. For instance, if the user chooses 'Joe' from the 'Cast' constraints, only the images with the metadata tag 'Joe' will be available on the main screen. If, in addition, the user chooses the concept 'food', only the images with the metadata tags 'Joe' and 'food' will be available. As the user selects each constraint, the photos without that tag disappear from the main screen. The constraints can be progressively chosen until the number of available photos decreases to zero.

According to Harris, the metadata of *The Whale Hunt* include "the date and time the photo was taken", "the cadence of the photo (what was the level of excitement at that moment), its average color, its context (where it was taken), its concepts (what ideas are represented in the photo), and its cast (who is pictured in the photo)" (Harris 2007, Statement). For instance, the following image lists the metadata attached to a photo of Rony, one of the whale hunters. The metadata of this photo are its date and time, its cadence ('slow'), its average colour ('grey'), its context ('the arctic ocean' and 'the Patkatok camp'), its concept ('vehicles') and its cast ('Rony').

MAY 6, 2007 - 9:20 PM CADENCE ♥ COLOR ● CONTEXT 🌊 ⛺ CONCEPT 🚗 CAST RONY

Figure 9. *The Whale Hunt*, the metadata for a photo of Rony (Harris 2007)

The constraints that produce the most interesting image sets from *The Whale Hunt* are 'context' (the location of each shot) and 'concept' (the themes of the work such as blood, food, games, kids, prayer, and wildlife). For instance, choosing 'games' and 'tools' reveals some images of two young boys playing with their father's shotgun. Combining the constraints 'kids' and 'arctic ocean' reveals several photos of hunters butchering a whale whilst their sons play on top of the carcass. These image sets are interesting because they combine incongruous themes and because they illuminate the lifestyle and the culture of the Inupiat community. These image sets do not, however, seem to fit the definition of narrative provided by Manovich. These image sets depict a number of unconnected events, not "a series of connected events caused or experienced by actors" (Bal quoted in Manovich 2001, p. 201).

Although the work is called *The Whale Hunt*, the user never actually sees the hunting and killing of a whale, since no whales turn up at the camp. When the hunters eventually pull a whale from the water it is one that has been killed by another group of hunters. In fact, *The Whale Hunt* is more about the Inupiats and their environment, than it is about the hunt itself. Instead of a dramatic confrontation between the hunters and a whale, the work depicts the hunters preparing for their journey, travelling to the whaling camp, and waiting there for three

days. In this depiction, the user glimpses echoes of the traditional Inupiat way of life, in their prayers before the hunt, in the food they eat, and in the clothes they wear. The work also dwells on the rugged beauty of the environment and its wildlife. Rather than a linear sequence of events we glimpse the cyclical nature of the Inupiats' lives, their relationships, their history and their environment. For this reason it would have been more accurate to call the work *The Whale Hunters*, since it is more about the hunters and their world than it is about the hunt itself.

As noted in the previous chapter, both Manovich and Ryan believe that the key challenge for a database storyteller is to ensure that the output generated by her work is not only *variable,* but also that it *tells a coherent story.* Manovich believes that the author must optimise the meaning of each module and clearly and logically communicate the relationships between the modules. Ryan believes that the linking philosophy of the database narrative must be transparent to the user (Ryan 2006).

The modules of *The Whale Hunt* and their relationship with one another can be interrogated by using the *heartbeat timeline*. The *heartbeat timeline* of *The Whale Hunt* is the primary interface element used to access the *variable* sequences of the work. Harris describes the timeline as a "medical heartbeat graph". He says that, "The position of the presently visible photograph is indicated by a glowing red bar. Moving the cursor along the timeline causes the bars to spread and contract organically, allowing the viewer more easily to isolate a single moment in time" (Harris 2007, Statement). The heartbeat timeline is the closest thing to the syntagmatic or narrative axis of a traditional narrative, since it presents the photos chronologically. Unlike a conventional narrative, however, the heartbeat timeline doesn't skip over uninteresting spaces or time sequences (See Juul's discussion of conventional narrative in chapter one). Like real life, the heartbeat timeline is full of digressions, diversions, and repetition. If *The Whale Hunt* contains a sequence of causally connected events, they are

obscured by images of people sleeping, waiting, fooling around, and generally performing the mundane activities of day-to-day life.

Figure 10. *The Whale Hunt*, the heartbeat timeline (Harris 2007)

Although Harris states that the spikes on the heartbeat timeline reveal "the level of excitement" at each moment of his journey (Harris 2007, Statement), it really only indicates moments of increased photographic frequency. The timeline works by indicating the location of photos that have high 'cadence' values. The values of the 'cadence' tag are 'slow', 'relaxed', 'fast', 'frantic' or 'racing'. Although Harris states that these values refer to "the level of excitement" of each photo, they actually only reveal how frequently photos were being taken at any given moment. To illustrate this point we can look at the largest spike on the heartbeat timeline. Since this is a large peak we can expect it to contain some exciting or dramatic images; however, it actually shows a time-lapse sequence of Harris getting dressed. Because this sequence contains several photos taken in quick succession, it appears as a spike in the heartbeat timeline; however, this dressing sequence is far from dramatic. It is a plodding sequence where Harris very slowly puts on his boxer shorts, his shell necklace, his thermal underwear, his socks, his fleece top, his snow pants, his snow boots and so on.

The 'cadence' tag is misapplied to photos taken in quick succession rather than to photos that are genuinely exciting. For this reason the heartbeat timeline does not work as Harris proposes. However, this is far from an unsurmountable problem. In fact, Harris could reassign higher 'cadence' values to images that really are exciting, such as when a whale is sighted from the whaling camp, or when a whale is pulled from the water. If the work were recalibrated in this way, Harris's model would enable the user "to aim with precision at the elements of the story that they want to expand" (Ryan 2006, p. 149). For this reason, *The Whale Hunt* shows promise as a model for other database narratives.

The user of *The Whale Hunt* can reconfigure the work in multiple ways to achieve *variable* outputs. The variability of the work, the fourth of Manovich's five principles, is premised on the preceding three: *numerical coding*, *modularity* and *automation*. The final of his five principles, *transcoding*, enables a human user to understand and utilise a new media work. Manovich's first four principles of new media, numerical coding, modularity, automation and variability are made available to the user of *The Whale Hunt* through its visual interface. Transcoding is evident in this interface because it combines aspects of traditional cultural interfaces with aspects of the human-computer interface.

3.5 Transcoding in *The Whale Hunt*

For Manovich, the most important aspect of transcoding is the "conceptual transfer" between old and new media (2001, p. 65). As he predicts, the interface of *The Whale Hunt* exhibits a mingling of the conventions of the printed word, cinema and the work-related human-computer interface (HCI). A familiar convention from the modern book (or codex) is the ability to flip through the photos as if they are pages. By clicking on the arrows in the lower corners of *The Whale Hunt* interface, the user can go right (forward) or left (backward). Another convention from the printed word evident in the work is the placement of the metadata text for each image at the bottom of the screen, like explanatory footnotes. Conventions borrowed from standard HCI design are the date and time pull-down menus and the menu bar at the top of *The Whale Hunt* constraints screen. A convention appropriated from cinema is the rectangular framing of each image, which acts as a window into a virtual world. In addition, at the bottom of the interface there is a play/pause button reminiscent of those found on a VCR machine. Interestingly, the most dominant interface device, the heartbeat timeline, is not derived from either cinema or the printed word, but from an ECG machine.

The interface of *The Whale Hunt* also exhibits the visual strategies of both transparency and opacity. Its large, vivid images take the user into the heart of the experience,

as if trying to situate her in the world of the narrative. In contrast, the combination of buttons, menus and interactive controls on the screen highlight the multiple media nature of the work and its high level of interactivity. On the one hand, the interface is an unmediated illusory space, and on the other hand it is a highly mediated and interactive control panel.

The website opens with a photo of the sea from an icy shoreline (a window into a virtual world). To the right of the photo in capital letters are listed the user's options (the controls), the most prominent being "BEGIN THE WHALEHUNT".

The Whale Hunt - Jonathan Harris, 2007
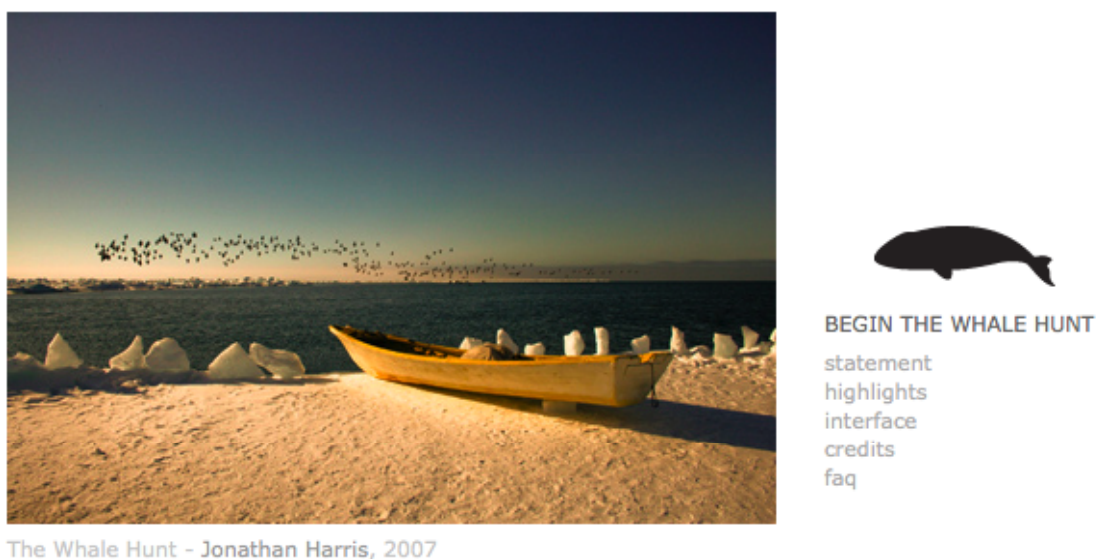
Figure 11. *The Whale Hunt*, the opening screen (Harris 2007)

When the user chooses to 'begin the whale hunt' she is taken to the mosaic screen. On this screen the visual strategies of opacity and control are dominant. The mosaic screen is not an illusionistic space, but a conceptual space, where the user begins to understand the structure and functionality of the work. Clicking on one of the photos from the mosaic screen immediately plunges the user into an illusory world. The clarity and colour of the images is visually confronting, like emerging from a dark tunnel into the light. The large vivid photos of Barrow, Alaska reveal themselves and rapidly transition from one to the other. Rather than feeling immersed in these images, the user is more likely to experience a mild panic. To halt the rapid and ceaseless progression of images, the user must find the pause button. Once the images are paused, the user can then learn how to use the interface of the work.

Above the photographic layer of transparent illusionism is the layer of interactive control. Using this control layer shatters any illusion of space/time continuity. The user can fast-forward time as well as reversing it. She can travel from place to place in an instant. She can compress and erase time by using the constraints to hide many of the photos. Whilst learning to control the work the user also learns about its purpose. Understanding the metadata of the database is crucial in allowing the user to construct a mental model of the author's intentions. Understanding how the work is constructed and how it can be manipulated reveals the meanings inherent in the work. As Frasca suggests (2003a), both the functionality and the purpose of a simulation can only be understood through experimentation.

Once the user understands the functionality and purpose of the work, she can return to the photographs and press 'play', re-assured that she can pause and re-arrange the images at any time. As Manovich notes, the modern computer user is adept at the oscillation between illusion and control (2001, p. 187). In addition, as Manovich observes, the modern computer user must learn how to control the illusion in order to become more fully involved in it.

3.6 Conclusion

This chapter demonstrates how Manovich's principles of new media may be useful for analysing database narratives, such as *The Whale Hunt*. It also demonstrates that applying Manovich's theory of new media to this work illuminates the ways in which its designer tells a story.

The *modularity* of *The Whale Hunt* can be observed in its 3000+ photo/caption combinations. Some of these modules depict themes such as loneliness, isolation, abandonment, the bonds of community and family, resourcefulness, cultural identity and decay, and the harsh beauty of the environment. Other modules seem to have little or no meaning in the context of the narrative; these are the photos taken to satisfy Harris's "incessant automated data collection" (Harris 2007, Statement).

At times Harris becomes a human chronometer, taking photos to maintain his self-imposed photographic heartbeat. At other times, when Harris is asleep, the chronometer itself takes the photos. Harris adopts this method of documentation because he wants to "try to see things from a computer's perspective". This identification with the computer is also apparent in the way Harris captions the photos, commenting only on their material content and ignoring their emotional, social and cultural significance. In this way, automation itself becomes a theme of the work. Nevertheless, the absence of meaning in the automated photos may make the user question the significance of all the other photos in the work, and ultimately this may undermine the user's experience of the work.

Low-level *automation* is used successfully in the work, in the form of procedural animation. These animations imitate the simply described movements of large numbers of elements, and are suggestive of the movement of natural phenomena such as birds or snow. They do what a computer excels at; they perform simple calculations on a vast scale. Low-level automation is less successfully applied to the photographic process. As Manovich says, when the creation of a work is automated, the author's intentions are removed from the creative process.

One of Harris's stated aims in adopting this method was to subject himself "to the same sort of incessant automated data collection process that I usually write computer programs to conduct" (Harris 2007, Statement). His rationale for this photo-taking regime is to achieve a degree of empathy with the "constant thankless helper in my work", his computer (Harris 2007, Statement). Unfortunately, Harris's attempt to incorporate the perspective of the computer into the work is detrimental to the user's understanding of its narrative. The user's belief that each element of the narrative is meaningful may be undermined when it becomes clear that an automated process is responsible for generating at least some of

the images. Thus for the user of *The Whale Hunt* it may never be entirely clear which modules are meaningful in the context of the narrative and which are there only to 'fill in time'.

The *variability* of *The Whale Hunt* is achieved through its heartbeat timeline and its use of constraints. Using the heartbeat timeline, the user can skip forward or backward in time. Using the constraints, the user can isolate many of the database's paradigmatic categories, such as 'Arctic, 'Wildlife' and 'Blood'. Combining these constraints allows the user to further refine her search criteria, thus isolating some intriguing themes and sequences. Nevertheless, the overarching narrative of the whale hunt may be obscured by Harris's "plodding sequence of 3,214 photographs" (Harris 2007, Statement). In this sense, the syntagm or sequence of the narrative axis is de-materialised and what is left is a fragmented portrait of the whale hunters, their environment, and their way of life.

Transcoding can be observed in the way *The Whale Hunt* exhibits both the characteristics of a database (numerical coding, modularity, automation, variability) and the characteristics of a narrative (a chronological sequence of events). *The Whale Hunt* also exhibits transcoding in its interface, through its combination of traditional interface design (derived from the printed word and cinema) with human-computer interface design.

The Whale Hunt is a database narrative that tells us about the Inupiat Eskimos and their way of life. All of Manovich's principles of new media are observable in *The Whale Hunt*. The *numerical coding* of the work enables it to be *modular* and *automated*. The *modularity* and *automation* of the work allow it to be *variable*. The principles of *numerical coding*, *modularity*, *automation* and *variability* are all evidence that this is a *transcoded* narrative. In other words, to use Manovich's terms, Harris's work is a combination of cultural and computer forms.

In many ways, *The Whale Hunt* is a beautiful but flawed experiment. The subject matter is inherently interesting, and the best of its photographs are epic and beautiful. The interface of the work is striking and highly functional. The use of automation in the interface

makes reference to information devices such as an ECG machine and a photographic lightbox. These metaphors help to illustrate the way the database works. The work also demonstrates that it is possible to elegantly combine illusion and control within the one interface.

In spite of this elegant design, this chapter suggests the work may be marred by the many superfluous images included in its database. With a more careful and considered approach to the creation of the modules and their metadata, the principal interface controls of the work (the heartbeat timeline and its constraints) could have functioned in a much more logical way. With more development, *The Whale Hunt* could usefully be adapted to tell other stories. Analysing the work through the lens of Manovich's theory allows us to see where *The Whale Hunt* succeeds and where it fails; thus, the analysis informs the new media storyteller about the art of new media storytelling.

The next chapter examines *Remembering Bogle Chandler* and observes if and how Manovich's five principles manifest themselves in the work. It also considers how helpful these principles are for understanding the design of the work.

Chapter Four: Manovich's Theory of New Media in *Remembering Bogle Chandler*, by Rebecca Young

Introduction

Remembering Bogle Chandler (2008) is a database narrative in the sense that it is a *collection of data whose operation recounts an event or sequence of events*. The user's interaction with the interface retrieves and plays movie clips (data records) from the project's digital library (media database). The *data* is in the form of photographic images, animations, text and sound. This data is combined into 104 separate movie clips. The user views these clips by *operating* a *graphical user interface*. This interface is both an image illustrating the connections between these movie clips, and an instrument for controlling them. The work was created using Adobe Flash and Photoshop software.

Remembering Bogle Chandler is a documentary work describing real events. The events in question are the murders of Gib Bogle and Margaret Chandler on the banks of the Lane Cove River in Sydney 1963. Gib Bogle was a gifted scientist working at the CSIRO (Commonwealth Scientific and Industrial Research Organisation), and the father of four young children. He was about to take up a position at Bell laboratories in the US. Margaret Chandler was a nurse and the mother of two young boys. The pair first met at a Christmas barbeque, where they began their flirtation. The second time they met was at a New Year's Eve party, where they continued their liaison. At the end of the party Margaret accepted Gib's offer of a lift home. On the way to Margaret's house they stopped the car and were violently ill. Gib died quickly, and Margaret died a few hours later. Tragically, the young families they left behind never found out how they died, since their deaths are still unsolved (Silk 1963).

According to Manovich's definition, *Remembering Bogle Chandler* is a new media work, since it is recorded, stored, created and distributed on a computer (2001: 43). For this reason it can be expected to exhibit Manovich's five principles of new media. This chapter

examines whether Manovich's principles can be observed in *Remembering Bogle Chandler,* and how Manovich's theory might be useful in understanding database narratives in general and this work in particular.

4.1 Numerical Representation in *Remembering Bogle Chandler*

According to Manovich, one consequence of the principle of *numerical representation* is that media are liberated from their traditional forms of physical storage (2001, p. 83). For Manovich, his has resulted in *spatial montage* becoming a defining feature of new media. He writes that the *temporal* and the *spatial* montage each convey a different type of experience:

> spatial montage can accumulate events and images as it progresses through its
> narrative. In contrast to cinema's screen, which primarily functioned as a
> record of perception, here the computer screen functions as a record of
> memory (2001, p. 272).

For Manovich, the temporal montage of cinema aims to create the illusion that the viewer is present in the world of the film, in other words, to create "a sense of presence in a virtual space" (2001, p. 140). In contrast, for Manovich, the spatial montage of the computer screen looks less like the immediate perception of an event, and more like a recollection of past events. In the temporal montage of cinema, each frame replaces and erases the last. In contrast, within a spatial montage each image is added to, and co-exists with, the images that have come before. Manovich compares the way images accumulate within a spatial montage, to the way our memories accumulate as we live our lives.

The animations of *Remembering Bogle Chandler* are primarily spatial montages. Manovich defines spatial montage as "a number of images, potentially of different sizes and proportions, appearing on the screen at the same time" (2001, p. 270). Spatial montage is especially suited to *Remembering Bogle Chandler* because one of the main themes of the work is memory. As Manovich predicts, these montages appear like memories, gradually building and accumulating as the user interacts with the work. These montages are composed

of the memories of different characters; memories formed at the same moment in time. Sometimes these diverse memories amplify one another, and other times they conflict. Some remain on screen, forming a backdrop for other memories, whilst others fade after a few seconds. These visual memories are layered on top of one another to create new narrative combinations.

The spatial montages of *Remembering Bogle Chandler* help to convey one theme of the work, which is that memories are fluid, sometimes unreliable, and subject to decay. Manovich's first principle, numerical representation, makes these spatial montages possible because it liberates photos, animations, video and text from their traditional forms of physical storage (2001, p. 83). The spatial montages of the work are just some of the elements in which numerical representation can be observed. Since numerical representation makes new media *programmable*, it is also the basis of many other aspects of the work, as we shall now discover.

Figure 12. *Remembering Bogle Chandler*, an example of spatial montage (Young 2008)

4.2 Modularity in *Remembering Bogle Chandler*

According to Manovich, a new media object is modular because it is composed of independent *modules* that can each be accessed, modified, or substituted without affecting the integrity of the work (2001, p. 51). The self-sufficient parts, or modules, of *Remembering Bogle Chandler* are the different memories that each character has of the events that lead up

to the deaths of Bogle and Chandler. These memories are represented as different combinations of photographic images, animation, sounds and text. In accordance with Manovich's principle of modularity, each of the modules of *Remembering Bogle Chandler* is separate and self-contained and thus can be accessed in any sequence.

The modules of the work vary in length and complexity. The shortest and simplest modules are the newspaper excerpts, many of which consist of nothing more than a paragraph of text on a fragment of newsprint. The longest modules occur during the investigation of the murder scene. For instance, the images in figure 13 are taken from an animation where tattered cardboard boxes dissolve to reveal the body of a woman. This sequence illustrates the discovery of Margaret Chandler's body on the riverbank. Accompanying this sequence is a series of written quotes from Sergeant Andrews who discovered Margaret's body: "I saw a depression in the ground covered by a number of flattened out beer cartons . . . I lifted a piece of cardboard and saw the head and shoulders of a woman" (Young 2008).

Figure 13. *Remembering Bogle Chandler*, the discovery of Margaret's body (Young 2008)

The modules of *Remembering Bogle Chandler* each perform a certain function in the narrative. Some modules function as memories of an event, a person, a place or an object. For instance, the first module of the story describes a character and an event in her life. In this module Margaret's dull life as a stay-at-home mother prompts Geoffrey to bring her to the CSIRO Christmas barbeque. Another module describes the spark of attraction between Gib and Margaret, and how they act on this attraction by disappearing into the bushes together.

While some modules depict small self-contained memories, others also raise questions about what will happen next. For instance, one module describes a car journey during which

Margaret confesses to her husband that she wants to sleep with Gib Bogle. Margaret's confession raises the question of whether she will follow through on this desire. There are also modules that connect to the wider themes of the work (such as betrayal and loss), and modules that refer to historical information about the period (such as the Cold War, the Sydney libertarian movement, and the deep conservatism of post-war Australia).

In designing the work I was particularly aiming for modules that would provide contradictions within the narrative. Such contradictions were easy to find. Media reports put forward several possible theories about the murders, that it was a crime of passion, a sex drug overdose, a practical joke gone horribly wrong, a satanic sacrifice, or a cold-war assassination. The eyewitness accounts and media reports also contradicted one another. The tabloids told of a wild debauched New Year's Eve party, whereas the people at the party described it as restrained, and even dull. Where the host of the party describes his guests singing 'Auld Lang Syne', a tabloid suggests that party guest performed a satanic black mass together. The contradictions between some of the modules are intended to raise questions in the user's mind, and to inspire them to further explore the work in order to resolve these contradictions.

Remembering Bogle Chandler is modular, both on the level of the story elements as well as on the level of pixels, characters, points, and code. Since the work is both numerically coded and modular, it can be programmed. Thus Manovich's second principle, *modularity*, leads to his third principle, *automation*. This principle entails that many aspects of *Remembering Bogle Chandler's* creation and access can be automated, as we shall see in the next section.

4.3 Automation in Remembering Bogle Chandler

For Manovich the numerical code and modular structure of database narratives allow many operations involved in their creation, modification and access to be *automated*.

Automated processes, in the form of Photoshop filters, were used to process some of

the photographic images within *Remembering Bogle Chandler*. These filters were used to smooth, sharpen, lighten, darken and increase the contrast of the archival photos. Photoshop filters automate many of the photographic processes traditionally done by hand. For instance, in traditional photography, a darkroom technician would increase or decrease the contrast of a photographic print with the use of various filters and a photographic enlarger. Using Photoshop software, a designer can increase or decrease the contrast of a digital image using a simple menu command. Indeed, software programmers have automated almost all the darkroom processes performed by traditional photographers.

There are some traditional imaging processes, however, that cannot be automated because they can't be *mathematically described*. A human painter or animator must still perform those imaging processes that are not reducable to a mathematical formula. For instance, many of the photos used in *Remembering Bogle Chandler* were scanned from old newspapers and were of such poor quality that they had to be repainted by hand. A computer couldn't be used to eliminate the scratches and printing dots inherent in these newsprint images, since there is no way of telling a computer the difference between a smudge and a facial feature. In addition, a computer can't fill in the general loss of detail apparent in an old newsprint image, since there is no way for a computer to calculate what details might be missing.

Another automated process, known as in-betweening (or tweening), was used to create some of the animations in *Remembering Bogle Chandler*. Tweening is where the animator defines the beginning and end point of an animation, and the computer creates all the frames in between. Tweening is used in the project to make images grow, shrink, rotate, squash, stretch, fade up or down, and move across the screen.

Although some of the animations in *Remembering Bogle Chandler* were automated using tweening, most of the animations were automated using procedural animation. As explained in the last chapter, in procedural animation movement is not pre-recorded, but

generated according to procedures (or rules). In *Remembering Bogle Chandler*, procedural animation controls the fading on and off of the images, their celluloid flickering and static disruptions, the animation of geometric lines and the flashing of random colours, the falling of rain drops, the rippling of water, the falling of leaves, the movement of clouds and fog, the swarming of insects, the flashing of light bulbs, the typing of words on the screen, the drawing of images onto the screen and the disintegration of those images.

The interface elements of *Remembering Bogle Chandler* are automated to respond to the user in certain ways. When the user moves her mouse over one of the interface buttons, several visual changes occur to indicate that the button is 'clickable'. In addition, the button will display information about its function, usually in the form of a small pop-up window that indicates what animation it will play. Some of the buttons also 'remember' that they have been clicked and remain greyed out. In this way, interface elements can 'remind' the user which modules she has already viewed, and this frees up her memory to concentrate on other tasks. Since all the interface elements discussed above respond to user input according to a set of pre-defined behaviours, they are simulations as defined by Frasca (2001a, p. 23).

In a broader sense, *Remembering Bogle Chandler* can also be seen as a simulation of storytelling. In this simulation the user and the database narrative collaborate in the telling of a story. Understanding *Remembering Bogle Chandler* as a simulation is useful because it illustrates how the database narrative alters the traditional roles of storyteller and audience. By repeatedly testing the work, the user produces several versions of the narrative. In this way the user is better able to appreciate the complexity and the mystery of the narrative. These ideas will be further explored in the next section on Manovich's fourth principle of new media, *variability*.

4.4 Variability in *Remembering Bogle Chandler*

Variability is the property of new media works that enables them to be reconfigured in multiple and potentially infinite ways (Manovich 2001, p. 56). *Remembering Bogle Chandler*

allows the user to generate many different narratives by choosing a different sequence of animations. The potential for variability in *Remembering Bogle Chandler* can be illustrated using the semiological theory of *syntagm* and *paradigm*. The diagram below shows how the first scene of the story is mapped out on a vertical (associative and paradigmatic) axis and a horizontal (sequential and syntagmatic) axis.
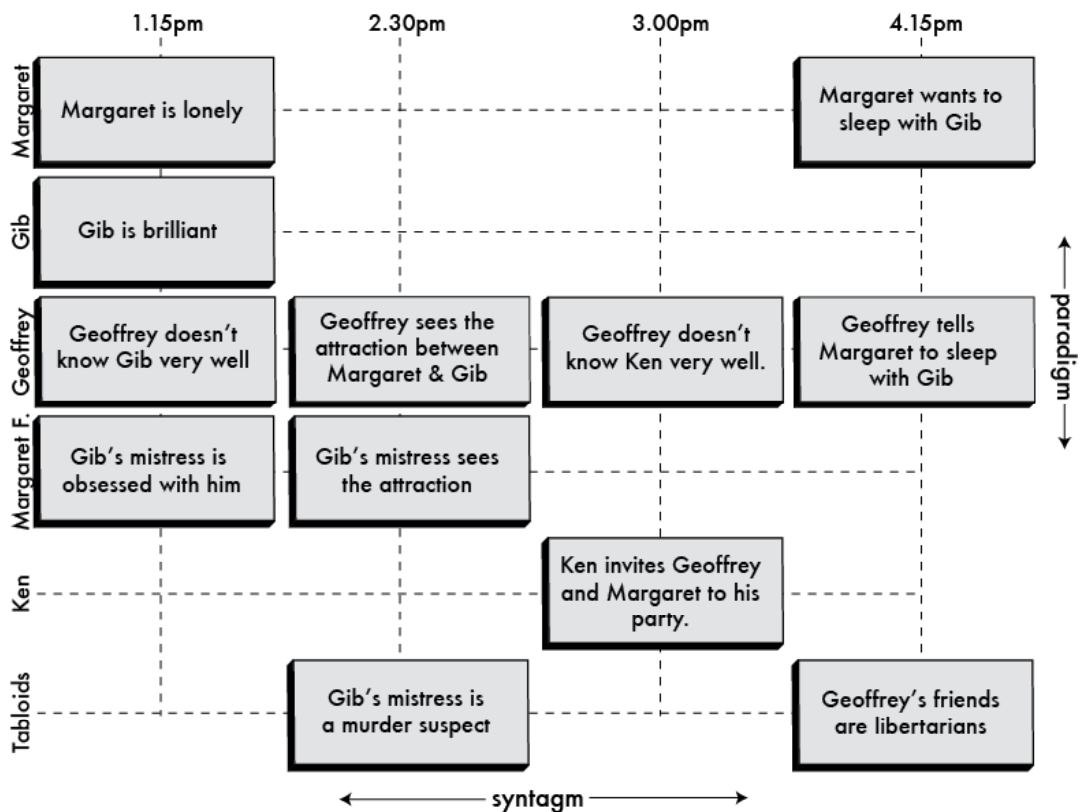
Figure 14. Paradigm and syntagm in *Remembering Bogle Chandler*

According to Manovich, the syntagmatic dimension of a database narrative is where signs are strung together in a linear sequence as "a series of connected events caused or experienced by actors" (2001, p. 201). In *Remembering Bogle Chandler*, there are multiple syntagmatic sequences on the horizontal axis (see diagram). Each syntagmatic sequence contains events that are told from one character's point-of-view. It is not possible to follow a single chronological path from the beginning of the narrative to its end, since many of its modules occur simultaneously.

Manovich's theory holds that the paradigmatic dimension of a database narrative is where modules are organised into associated groups. In *Remembering Bogle Chandler,* modules are grouped according to the moment in time when they occurred, or to which they relate. As evident in the diagram above, there is no clear path to follow through the narrative. The user must choose whether to access the modules from top to bottom or from left to right. Alternatively, the user can access the story modules in a more stochastic manner. No matter which path the user chooses, it is a unique one deriving from the variability of the database narrative.

The key challenge for a database storyteller is to ensure that the variability of her work does not prevent her from telling a coherent narrative. Both Manovich and Ryan agree that variability can prevent a database narrative from coherently conveying a sequence of events. Manovich suggests that if a user creates a variable sequence from a string of randomly chosen elements, "there is no reason to assume that these elements will form a narrative at all" (2001, p. 201). As discussed in the previous chapter, Manovich believes that the author must make the relationship between the story elements clear and logical so that the user can combine them in a meaningful way. Like Manovich, Ryan believes that coherence can be achieved in a database narrative by ensuring that its linking philosophy is transparent enough for the reader to identify those elements that they want to examine in more detail (Ryan 2006).

In designing *Remembering Bogle Chandler* I tried to make the connections between the narrative modules *clear*, *logical* and *transparent*, in the manner advocated by Manovich and Ryan. As previously explained, the interface of *Remembering Bogle Chandler* is intended both as an illustration of the connections between story modules, and as an instrument for controlling the playback of those modules. As illustrated in figure 15, the user can access any story module in *Remembering Bogle Chandler* by clicking on its corresponding circular icon in the time graph. The user can also activate the *same story module* by clicking on its corresponding character icon from the 3D map (see figure 16).
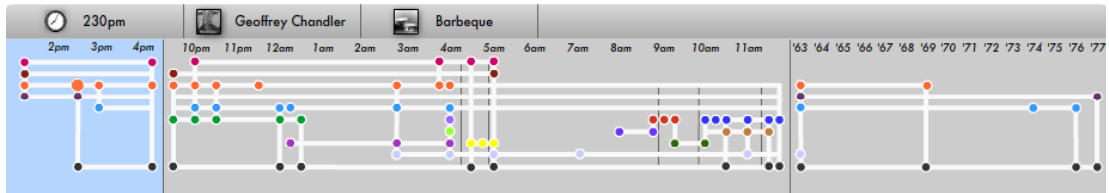
Figure 15. *Remembering Bogle Chandler*, the time graph (Young 2008)
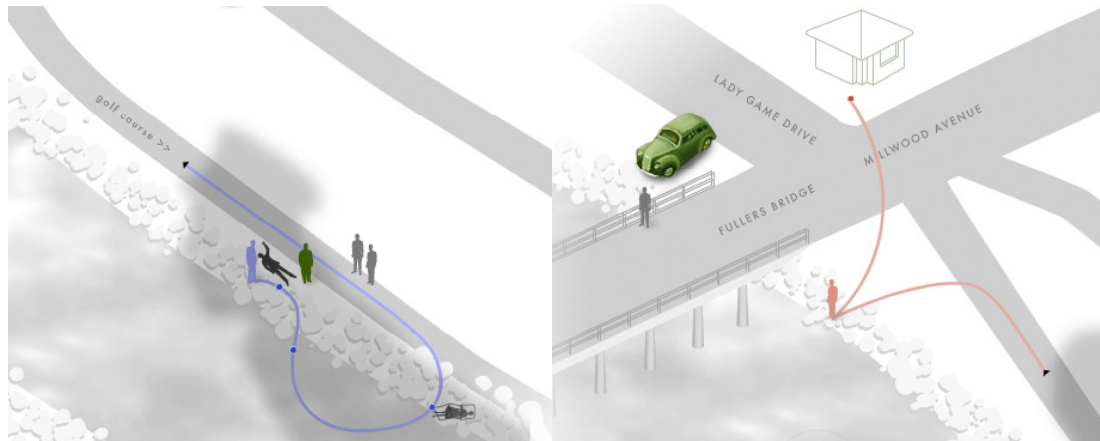
Figure 16. *Remembering Bogle Chandler*, the 3D maps of the riverbank and the bridge (Young 2008)

In effect, the time graph and the 3D map of *Remembering Bogle Chandler* are *different interfaces to the same database* of narrative modules. Manovich would view the fact that the work has more than one interface to the same content as another consequence of the variability principle. Because new media works are modular "It becomes possible to separate the levels of "content" (data) and interface". Consequently "A number of different interfaces can be created to the same data" (2001, p. 57).

Having two interface devices to the same database of story material, allows the user to choose whether she wishes to explore the narrative along the dimension of time (utilising the time graph) or space (utilising the 3D maps). The time graph (figure 15) represents the entire timeline of the story and gives the user absolute freedom over where to travel next. It gives the user an overview of the structure and the pacing of the story. The horizontal axis of the time graph represents the chronological axis of the story, whereas the vertical axis represents the point-of-view axis. In other words, by selecting story modules on the vertical axis of the

time graph, the user can compare and contrast the memories of different characters from the same moment in time.

Each 3D map (figure 16) represents the spatial configuration of a particular scene from the narrative. The 3D maps allow the user to explore the spatial environments and to trace each character's physical movement through space. The spatial environments are Murraybank (the setting for the Christmas barbeque), the house in Waratah St (the setting for the party), Fullers Bridge (where Bogle stopped his car), and the riverbank to the south of Fullers' bridge (where the bodies of Gib and Margaret were found). The final scene takes place in a psychological space entitled 'Post Mortem', where the characters suffer the aftermath of the murders. This space is represented by the coroner's court where the inquest took place.

The 3D maps reveal crucial spatial information that is hard to visualise from the text. For instance, the map of the riverbank indicates that Bogle and Chandler walked a long way from their car before they died. This information is crucial for appreciating the mystery of their deaths. If they were poisoned, why did they walk such a long way? And if they were healthy when they started walking, when and how were they poisoned? In another animation from this scene, an eyewitness drives along the bush track towards the golf course and sees a strange man running towards the river. By exploring the map further, the user will find that the running man was headed toward the stretch of riverbank where Margaret's body was later found. Did the running man cover the bodies, or was he the murderer? While a detailed study of all the original eyewitness testimony could have revealed these connections, the spatial map of the scene makes them immediately apparent. Thus the *variability* of the work allows it to be interrogated in a number of different ways, and this helps the user to understand the complexity of the material presented.

Manovich and Ryan both agree that the connections between the modules of a database narrative should be conveyed clearly, logically and transparently. According to

Ryan, providing a summary of the plot at the beginning of a database narrative is another way to ensure that it is coherent. Manovich would see this kind of overview as an example of *scalability*, one of the most basic implementations of the *variability* principle. For Manovich, scalability entails that "different versions of the same media object can be generated at various sizes or levels of detail" (2001, p. 58). By summarising the plot of a database narrative at the beginning of the work, the designer can provide the user with a general understanding of it. In this way the user will gain an overview of the work that will allow her to examine it in more detail.

In *Remembering Bogle Chandler*, the first sequence the user sees is the introductory animation. This animation conveys, in a very general way, the plot of the narrative. The animation begins with a quote from a policeman who recalls the "strange and sinister case" of Bogle and Chandler. Some fireworks explode on the screen, followed by the appearance of what are possibly two tree branches. The following words appear: "New Year's Day, 1963, on a lonely stretch of riverbank, the bodies of a man and a woman". The tree branches are revealed to be the blood vessels of a hand and a heart, followed by the words "Who killed them and why? To this day no one knows. All we know is this…". Finally, the words "their hearts stopped beating, they stopped breathing" rotate around the hand and the heart which are then connected to the inert body of a woman. The eerie music, underscored by a beating heart, reinforces the mysterious atmosphere. This animation conveys the central event of the narrative. Since the user now knows that this narrative concerns a murder, and that it belongs to the crime genre, she can examine the work in more detail.

The foreshadowing of a murder at the beginning of a murder mystery is not unusual in the crime genre; however it does alter the way suspense can operate within the narrative. Bal calls the foreshadowing of future events in a narrative, an *anticipation*. When the outcome of a narrative is anticipated, Bal states that the suspense generated by the question "How is it going to end?" disappears. We already know how it is going to end. According to Bal,

however, another kind of suspense takes its place, generated by questions such as "How could it have happened like this?" The rest of the story explains how the outcome came about (Bal 1997, p. 95).

The foreshadowing of the murder at the beginning of *Remembering Bogle Chandler* means that the user already knows *what* will happen. For this reason, the overriding question that propels the user forward is '*How* were they murdered?' This question can be broken down into a series of smaller questions prompted by the contradictions and questions posed by the narrative modules. For instance, 'Will Margaret sleep with Bogle before she dies?' and 'Was the chicken salad poisoned?' The user is able to explore the events leading up to the murder, and the aftermath of those events. Despite this, the question of 'How were they murdered' is never definitively resolved.

Most crime narratives provide an ending that answers the question 'How did it happen?' by naming the murderer and his or her method. In *Remembering Bogle Chandler* there is no solution to the story, and thus no narrative closure. Jane Yellowlees Douglas, a researcher in the fields of hypertext and interactive fiction, suggests that the ending of a hypertext occurs when the reader believes the mystery has been solved. She writes, "Reading is, more than anything, an act of faith, belief that, by the time we reach the ending, everything we have witnessed will at last make perfect sense" (Douglas 2001, p. 90). For Douglas, "readers of interactive narratives can enjoy this newfound liberty to make choices and decide what deserves to become an "ending"" (Douglas 2001, p. 36). The ending of *Remembering Bogle Chandler* can be considered as the moment when the user gets tired of the story, or when she believes she has solved the mystery.

Manovich suggests that the variability of a database narrative grants one important advantage to the storyteller. This advantage, he says, is *customisation*. For Manovich, the database narrative acts as a "perfect realization of the utopia of an ideal society composed from unique individuals" (2001, p. 61). The user doesn't receive a 'one-size fits all' narrative.

Instead, she is able to construct her own unique narrative and thus, she is re-assured that she, too, is unique. For the author of a database narrative, however, convincing a user that she is 'unique' may seem rather a hollow achievement. Manovich's suggestion that customisation is the ultimate advantage of the database narrative form seems a poor consolation prize for the author who has grappled with the difficulty of this format. The narrative customisation proposed by Manovich, does not tell us how a variable narrative, constructed in a matter of minutes, might be a genuine improvement on one constructed by a skilled storyteller over months or years.

Frasca, in his discussion of simulation, provides a more substantial argument in favour of variability in the database narrative. He says that in contrast to a traditional narrative that can only present one "fixed sequence of events", a *simulation* can provide a multiplicity of sequences (2003a, para. 13). The purpose of a database narrative then, is not to create one narrative sequence that is uniquely customised for the user. Rather, the database narrative allows the user to generate *many* unique sequences, which combine to form a very different experience of the narrative. This experience is defined not by the passive reception of a narrative, but by the active experimentation with, and interrogation of, a database of narrative material. As Frasca says, "knowledge and interpretation of simulations requires repetition" (2003a, para. 16). If we view *Remembering Bogle Chandler* as a simulation of narrative, then according to Frasca, the user must repeatedly test the work in order to understand it.

Remembering Bogle Chandler can be situated within a group of artworks that share what the art curator Ralph Rugoff terms a "forensic aesthetic" (1997). Works that exhibit this forensic aesthetic position the audience within the aftermath of an unseen, invisible history that has occurred 'off screen'. In these works, the picture plane becomes "an arena of evidence", placing us, the audience, "in a position akin to that of the forensic anthropologist or scientist, forcing us to speculatively piece together histories that remain largely invisible to the eye" (Rugoff 1997, p. 62). In this arena, every detail, no matter how mundane, becomes a

potential clue. Every detail is a "contradictory fragment", part of a "patchwork fabric of a 'reality' in which pieces of the puzzle are consistently missing or seem to radically change meaning when viewed from another angle" (Rugoff 1997, p. 104). As viewers, we must divine the meaning of these clues by placing them within a larger symbolic structure.

Rugoff identifies this forensic aesthetic in a diverse range of works, including conceptual art and installation, from the 1960s on. It is also a strong thread in interactive works, such as video games and interactive installations. In the video game *Myst* (1993), for instance, the user finds herself on a deserted island where she must uncover clues about which son, Sirrus or Achenar, murdered his father, Atrus. The interactive installations of *Life After Wartime* (1997-) by Ross Gibson and Kate Richards, combine archival crime scene photos from Sydney, 1945-60, with evocative texts and sounds that hint at the crimes that might have occurred 'off camera'. In the interactive installation *Pentimento* (2002), by Dennis Del Favero, a body is discovered on the fringes of Sydney, and the user has to interpret the events leading up to the murder from the points of view of a brother, a sister, a father. Rugoff's description of the forensic aesthetic has strong parallels with the *embedded narrative* described by Jenkins as a space where the user uncovers the narrative information embedded in its mis-en-scene, such as the clues needed to solve a crime.

We can observe how *Remembering Bogle Chandler* requires experimentation and repeated interrogation from the user. We can observe a similar forensic aesthetic in *Remembering Bogle Chandler*. The project requires experimentation and repeated interrogation from the user as she attempts to uncover the 'unseen history' at the heart of the narrative. The events leading up to the murders of Bogle and Chandler are presented through multiple perspectives. To appreciate how these sequences confirm and contradict one another, the user must view them both sequentially and associatively. For instance, when we compare the accounts of Bogle before he left the party, some eyewitnesses claim he looked ill and

tired, while others said he was bright and cheerful. These contradictions provoke questions, not only about the events themselves, but also about the reliability of human perception, the veracity of human memory, and how human beings deceive themselves and others. In constructing these sequences of comparison and contradiction, the user experiences the complexity of the story, and, more generally, the complexity of human experience.

In his discussion of narrative and database Manovich does, at one point, seem to agree with Frasca's view of the way a simulation creates a multiplicity of sequences for the user. Manovich states that in comparison to a traditional narrative, which is one trajectory through a database of story material, a database narrative is "the sum of multiple trajectories through a database" (2001, p. 200). Here Manovich provides a better understanding of the user's experience of a database narrative, implying that the user can only fully experience the database narrative by creating *multiple* trajectories through it.

The user of *Remembering Bogle Chandler* can operate the visual interface of the work to reconfigure it in multiple ways. Thus the principle of *variability* ensures that the work can provide the user with multiple trajectories through its database of narrative modules. The visual interface of the work translates the database attributes of *modularity*, *automation* and *variability* into the narrative attributes of *time*, *space* and *point-of-view*. The interface of the work also combines the representational conventions of traditional media with those of new media. According to Manovich, this combination of computer and cultural conventions in the interface of the work is one manifestation of his fifth principle of new media, *transcoding*.

4.5 Transcoding in *Remembering Bogle Chandler*

For Manovich, transcoding means both the translation of cultural material into computer data, and the translation of computer data into cultural material. In this process of translation the conventions and operations of traditional media are combined with those of new media. This combination of old and new, of cultural material and computer data, is

particularly evident in the visual interfaces of new media works. The interface is the point at which the computer and the user communicate with one another.

Remembering Bogle Chandler can be seen as an illustration of the principle of transcoding. The underlying database of the work is structured according to *computer* conventions, yet it represents *cultural* material. The media elements of the database exist as *numerical code*, and this allows some aspects of their production and access to be *automated*. The media elements are then combined into self-contained *modules* from which *variable* combinations can be constructed. Since human users cannot easily comprehend the computer structures of the work's cultural material, the interface of the work translates these into interface 'maps' that are structured according to time, space and point-of-view.

Organising the interface of the work in terms of time, space and point-of-view "makes sense to its human users" (Manovich 2001, p. 63) because traditional media are also organised in these ways. Most traditional narratives, for instance, are sequenced primarily according to time, or chronology. A smaller group of traditional narratives are sequenced primarily in terms of point-of-view, where a story is retold from the perspective of two or more characters (for instance, the film *Rashomon* (1950)). Narratives that are organised primarily in terms of space are rare, but they do exist. Manovich describes a spatial narrative as the representation of "a multitude of separate events within a single space" (2001, p. 270). In these narratives, multiple events that have occurred in a single space are depicted as separate images, "but all of them can be viewed together in a single glance". Manovich sees examples of spatial narrative in fresco cycles from the Middle Ages and in comics.

For Manovich, transcoding also describes the way the *representational* conventions of traditional media are being combined with those of new media. For instance, the interface of *Remembering Bogle Chandler* exhibits the influence of the written word, in that the time graph flows from left to right, following the western writing system. The interface also exhibits the influence of traditional work-related human-computer interface (HCI), in that its

buttons change their appearance when the user interacts with them. In addition, many of the animations exhibit the visual influence of print (in the columns of text of the newspaper clippings), celluloid film (in the grain, dust, and gate weave of the party animations) and old television broadcasts (in the 'snow', noise and rolling 'hum' bars of the riverbank animations).

Although the interface of *Remembering Bogle Chandler* displays some influence from popular traditional interfaces (such as newspapers, cinema, television and HCI), it also exhibits the influence of more obscure visual forms. For instance, the 3D maps are reminiscent of the *diorama*. The diorama, a model of a 3D scene, is a minor narrative form primarily found in museums. The time graph, with its abstract representation of connected points, looks like a scientific visualisation. In the previous chapter, we saw that the main interface device of *The Whale Hunt*, the heartbeat timeline, was derived from an ECG machine. From these observations we can conclude that, in contrast to the designers of the *first-generation* of cultural interfaces, contemporary interface designers are now appropriating visual metaphors, not only from films, books, television and the standard HCI, but also from information devices, scientific visualisations, dioramas, and video games.

Manovich recognises that the *interface* of a database narrative determines the user's experience of the work because it includes "a particular configuration of space, time, and surface articulated in the work" as well as "a particular sequence of user's activities over time to interact with the work". For this reason, to change the interface is to "dramatically change the work" (2001, p. 78). The interface of *Remembering Bogle Chandler* is a collection of abstracted image ('maps' and montages) that allow the user a high degree of control over the work. The visual style of the interface does not attempt to make the viewer forget she is in the presence of a medium, or that she is in the presence of the objects and people represented. In fact, the interface of *Remembering Bogle Chandler* actively works against an *illusion* of a separate believable space, which makes it not *transparent* but *opaque*.

As explained at the start of this chapter, the images and text of *Remembering Bogle Chandler* are presented as spatial montages, rather than the temporal montage of cinema. These spatial montages combine a variety of images, text and animation within the one screen. The spatial montages of *Remembering Bogle Chandler* eschew the rectangular frame that for Manovich acts as "a window opening up into a virtual 3D space" (2001, p. 83). There is no attempt to maintain the illusion that we are looking through a window onto an alternate reality. Rather, the spatial montages of *Remembering Bogle Chandler* are reminiscent of memories of different spaces and times that can be collaged together. Together with the interactive interface 'maps', they remind the viewer that they are watching a highly mediated narrative.

Early screen designs for *Remembering Bogle Chandler* explored many configurations of space for the project, starting with illusory space. Initially I intended to use a VR window to visualise the events of the narrative. The user would activate each character to view the narrative from their first-person perspective. This illusionistic approach did not, however, provide enough information or control for the user. There was no way to provide additional information about characters and locations. In addition, there was no 'map' to tell the user where she was located within the narrative. Most importantly, the illusionistic approach meant that the time and space of the narrative could not be interrupted. As Clarke and Mitchell point out, the illusory interface popularised by video games such as *DOOM* prevents the designer from using "filmic techniques that break up the continuity of time, space and action for narrative ends" (2001a).

For the reasons outlined above, I opted not to represent the narrative from a first-person perspective. Instead, I decided to represent each scene using a third-person omniscient perspective, as seen in strategic life simulations such as *Sim City* (1989) or *The Sims* (2000). This representation provided the user with a bird's eye view of each scene, allowing her to manipulate and watch multiple characters simultaneously. In addition, I used isometric rather

than linear perspective in the interface. One advantage of isometric perspective is that it simplifies image creation. The image has no vanishing point, so no matter where an object is in the image 'space', it retains its original measurements. Because objects do not change size as they move about the visual field, there is no need for the designer to scale objects or to distort them in order to simulate linear perspective. The main advantage of using isometric perspective, however, was that it enabled me to treat the whole representation in a more abstract way. Each spatial representation could serve as an illustration, a map and a set of controls. In addition, I was able to integrate the point-of-view of the tabloids and the coroner into the story space, and to provide a timeline and information about each character and location.

The principle of *transcoding* entails that there are a many visual choices available to the designer of a database narrative. Visual styles, strategies, perspectives and metaphors can be drawn from a vast number of traditional media interfaces, as well as from traditional human-computer interfaces. However, as Manovich points out, these visual choices should not be made lightly, as they can dramatically alter the narrative. He states that the interface design determines how time and space are configured in the narrative, as well as what actions the user can perform. As Rouse says, when a designer "sets out to create a game, they must consider what their artistic goals are in the creation of the game, and weigh all that is being lost and gained depending on the type of perspective they decide to use" (1999). From these observations we can deduce that the database storyteller must choose her interface carefully, to ensure it can accommodate the story she wants to tell.

4.6 Conclusion

This chapter demonstrates that all Manovich's five key principles of new media are observable in *Remembering Bogle Chandler*. It also demonstrates how these principles are useful for understanding the work.

This chapter describes how *numerical representation* facilitates the design of a spatial montage, where many images are composited together on the one screen. The spatial montages of *Remembering Bogle Chandler* convey an impression of memories being recalled one after the other, each memory adding to or altering the significance of the one before. The spatial montages are the self-contained *modules* of the work. Independently, these modules are significant because they depict actions, raise questions, characterise a person, place or object, introduce themes or refer to wider social knowledge. The modules may also add to, or contradict, the meaning of other modules in the work. Thus each module has an individual meaning and a meaning in the context of the narrative. These meanings are not necessarily the same. Indeed, the multiple meanings of the modules adds to the richness and complexity of the work.

Automation is used in a variety of ways within *Remembering Bogle Chandler*. For instance, some of the imaging and animation processes in the work are automated. Automation can also be seen in the procedural animations that define simple movements repeated on a large scale, such as the falling of raindrops or the swarming of insects. In addition, interactive interface elements convey their functionality to the user via automated behaviours. The interface elements work individually as simulations, in Frasca's sense of that word. Seen from a broader perspective, the entire work is a simulation of storytelling that the user manipulates to re-order narrative elements into a sequence.

This chapter demonstrates that in order for the user to create *variable* narratives from a database, the database modules must be presented via an interface that makes sense to its human users. The linking philosophy of *Remembering Bogle Chandler* is made available in two ways, as a time graph and as a 3D map. The user can utilise these interface devices to explore the work through the dimensions of time, space, or character point-of-view. Although there is a timeline in the work, the user can't view the whole work chronologically, since many modules occur simultaneously. When the user views the modules that occur

simultaneously, they can compare and contrast evidence and opinions about the case. When the user views the work spatially she can better understand the physical location of witnesses and victims. When the user views the work according to different points-of-view she can better understand the role of each character in the story, and question their guilt or innocence.

To ensure that the *variable* narratives generated from a database are coherent, a summary animation can be used to introduce the plot to the user. A summary animation gives the user an understanding of the entire plot so that she can understand the work when she examines it in more detail; however, it also means that suspense generated by the question 'what will happen?' is replaced by the question 'how did it happen?' In *Remembering Bogle Chandler*, the question 'how did it happen?' is never fully resolved, since the actual case is still unsolved. Although the work does not provide a resolution to the story, the user is invited to draw her own conclusions about the mystery and post them on the website.

Transcoding is evident in the interface of *Remembering Bogle Chandler* since it displays some influences from the traditional interfaces of the printed word and work-related human-computer interfaces (HCI). Its interface design also displays a diversity of other influences, such as the diorama, scientific visualisations, and video games. This diversity of influence is also evident in the interface design of *The Whale Hunt*. From this we can conclude that interface designers are now appropriating interfaces from a much wider variety of cultural forms than when Manovich described the principle of transcoding in 2001.

The interface of *Remembering Bogle Chandler* employs a non-illusionistic approach to spatial representation because this approach provides more information and control for the user. A comparison between the communicative potential of a transparent or invisible interface, versus an opaque or visible one, highlights how important interface design is to a work. As Manovich notes, the interface determines the user's experience of the work, and thus, an interface can also facilitate or frustrate the creative goals of a new media storyteller.

The individual interface elements in *Remembering Bogle Chandler* are *simulations*, according to Frasca's definition. Seen as an integrated system, these interface elements can also be considered as a simulation of *storytelling*. In this simulation, the user experiments with the interface in order to understand it. The user also employs her pre-existing understanding of chronological, spatial and point-of-view narrative structures to piece the narrative together. As Frasca points out, "knowledge and interpretation of simulations requires repetition" (2003a, para. 16). The user of *Remembering Bogle Chandler* is required to piece together not one, but several, narrative sequences, in order to understand the narrative in all its dimensions. To understand the narrative of *Remembering Bogle Chandler*, the user must repeatedly test and interrogate the database of narrative modules. By comparing its modules along the different axes of space, time and point-of-view, the user gains a more complete understanding of it.

This exegesis demonstrates that Manovich's five key principles can be observed in both *Remembering Bogle Chandler* and *The Whale Hunt*. The case studies of these two database narratives both demonstrate the practical implications of Manovich's principles. The case studies also showcase the challenges and the storytelling potential of Manovich's five principles of new media.

Chapter Five: Conclusion

5.1 The Principles of New Media

Chapters one and two of this exegesis establish the flexibility and comprehensiveness of Manovich's theory in the following way. Chapter one outlines the distinguishing characteristics of video games and the impact of these characteristics on storytelling. Chapter two of this exegesis demonstrates how these characteristics can be seen as specific examples of Manovich's broader principles of new media. The fact that the unique characteristics of video games can be integrated within Manovich's principles of new media demonstrates the flexibility and range of Manovich's theory.

Chapter two of this exegesis describes how, according to Manovich's theory, these principles manifest themselves in a database narrative. Manovich's principles of new media are expressed in a database narrative in the following ways. The database narrative is *represented numerically* as digital code, it has *modular* records, *automated* functions, and *variable* outputs, and its cultural and computer attributes are *transcoded*, or blended together.

Chapters three and four of this exegesis provide in-depth case studies that analyse Manovich's five principles in two database narratives, *The Whale Hunt* and *Remembering Bogle Chandler*. As demonstrated in these case studies, the principles of new media are not only readily apparent in both works, they also accurately characterise the structures and operations of these works. Thus this exegesis demonstrates the accuracy and descriptive power of Manovich's theory. The case studies also illustrate the practical ways in which the principles of new media function and how they alter the traditional practice of storytelling. As a result, the exegesis provides an assessment of a variety of strategies for database narrative design.

Harris calls *The Whale Hunt* "a storytelling experiment" (Harris 2007, Statement). In this work Harris experiments with the principles of new media, with varying success. Harris's

primary innovation is his use of *automation* in the work. As described in the case study of chapter three, some of the modules of *The Whale Hunt* are created using an automated process; thus, some of the modules have little or no meaning in the context of the narrative. This drawback may ultimately undermine the user's experience of the work, suggesting that automation is inappropriately applied in this instance.

Conversely, Harris's use of automation in the interface of *The Whale Hunt* is more promising. The procedural animations in Harris's work simulate the database processes of sorting and selection. Harris's animations are suggestive of the way a database rapidly responds to human input, tirelessly selecting and reorganising its vast number of records. Simulations such as these may help to communicate the automated processes that occur behind the scenes of a database narrative. Thus, simulations of database processes, such as sorting and selecting, may be used to clarify the functionality of the database and the user's role in the work.

Like *The Whale Hunt*, *Remembering Bogle Chandler* is a *database* in the sense that the user's interaction with the interface retrieves and plays movie clips from the project's digital library. In this broad sense, the user's interaction calls up records from a database. Both works are also *interactive*, or *playable*, because the user interacts and experiments with them as she formulates her own goals within the context of the narrative. The work is both a *database* of story events and a *type of game* where the user can play out different connections between the events. Although both works are designed as stand-alone websites they could also be situated in museums or art galleries. Indeed, *Remembering Bogle Chandler* has been exhibited in galleries and festivals in Melbourne, Newcastle, New York, Cologne and Rosario, Argentina.

Remembering Bogle Chandler is also an experimental narrative. One result of its case study in chapter four is the suggestion that meaning may be created in a database narrative through the design of its modules. In contrast to *The Whale Hunt,* the modules of the work are

created to maximise the meaning of the work. Each module potentially has two meanings, an individual, self-contained meaning as well as a wider meaning within the context of the overall work. An individual module may describe an action, a person, a place, an object, or a theme; it may also raise a question or refer to a wider system of knowledge. When an individual module is compared and contrasted with other modules, its individual significance may be emphasised, altered or reversed.

Whereas a traditional narrative can be thought of as a linear path connecting a sequence of modules, a database narrative can be thought of as a puzzle, with each narrative module connecting to several other modules. In *Remembering Bogle Chandler* the user finds herself situated in a narrative environment with an 'unseen history' at its heart. The user must employ her pre-existing understanding of chronological, spatial and point-of-view narrative structures to piece the narrative together. She does this by operating a non-illusionistic spatial interface that provides her with greater information and control over the work. The user is required to piece together several narrative sequences in order to understand the narrative in all its dimensions. Like many works that exhibit a "forensic aesthetic", the user must become a "forensic anthropologist or scientist" who must "speculatively piece together histories that remain largely invisible to the eye" (Rugoff 1997, p. 62). The case study of *Remembering Bogle Chandler* suggests that the user's curiosity about the circumstances surrounding the murder may motivate her to keep viewing all the pieces of the puzzle.

Manovich's five key principles of new media are observable in the key video game characteristics discussed by the ludologists and narrativists in chapter one. The work of the ludologists and narrativists shows how the principles are used in video game storytelling. The five key principles of new media are also observable in the case studies of *The Whale Hunt* and *Remembering Bogle Chandler* in chapters three and four. These case studies illustrate the practical implications of the five principles, and how these principles can be utilised by the new media storyteller. Manovich's principles of new media allow us to focus on what makes

new media new and to see connections between the apparently unrelated aspects of new media works. The principles of new media pose many challenges for the new media storyteller but they also promise to help us tell stories that are "different from the narratives we saw or read before" (2001, p.208).

5.2 The New Media Storyteller

This exegesis establishes the importance of Manovich's theory of new media for the new media storyteller. It demonstrates that knowledge of hardware and software is not enough; the new media storyteller must also understand the language of new media, "the emergent conventions, the recurrent design patterns, and the key forms of new media" (Manovich 2001, p. 38). Manovich's work educates practitioners about the essential principles that underpin the design conventions of new media, in other words, its language.

Manovich's theory places new media into a larger historical perspective so we can "see the long trajectories which lead to new media in its present state; and we can extrapolate these trajectories into the future" (2001, p. 36). According to Manovich, his work provides the practitioner with an "archeology which will connect new computer-based techniques of media creation with previous techniques of representation" (2001, p. 34). Thus, for those storytellers with traditional skills and knowledge, Manovich translates traditional practices and conventions into new media terms.

Manovich's theory is also "a record and a theory of the present" (2001, p. 33). Manovich examines current new media works, in order to document and describe them. Manovich provides the new media storyteller with a terminology and a set of ideas with which they can work. These conceptual tools enhance our thinking about new media and provide us with "a grid for practical experimentation" (2001, p. 36).

While Manovich's work "does not speculate about the future, it does contain an implicit theory of how new media will develop" (2001, p. 36). Furthermore, Manovich states that the future trajectories of new media implicit in his work can be *altered*. As he says "we

don't have to blindly accept these trends". For Manovich, by understanding the trends that are shaping new media we can alter them. For this reason, he has devised a theory of new media that assists the new media practitioner who wishes to "offer alternatives to the existing language of computer media" (2001, p. 36).

This exegesis illustrates how, in a relatively short space of time, new media practitioners can devise and adopt alternatives to the existing language of new media. In chapter four, Manovich describes the visual conventions of illusionism and transparency at work in the first-generation of cultural interfaces. In addition, he notes that these interfaces "are being shaped by three cultural traditions: print, cinema and human-computer interface" (2001, p. 36). Nevertheless, he also recognises that these visual strategies are subject to change. He writes, "By describing the elements of these traditions which are already used in new media, this analysis points towards other elements and their combinations which are still waiting to be experimented with". A few years later, Manovich observes that interfaces have become much more 'visible', foregrounding and celebrating the interaction between the computer and the user (2007, p. 1). This celebration of interactivity can be seen in the interface to Apple's OS X operating system, *Aqua* (2007, p. 1), as well as in the interfaces of *The Whale Hunt* and *Remembering Bogle Chandler*. It is also clear from the interfaces of these two latter works, that interface designers are increasingly taking inspiration from traditions beyond those of print, cinema and the human-computer interface.

The significance of Manovich's theory for the new media storyteller is that it helps her to recognise the underlying structures and operations of new media works. By demonstrating the way the principles of new media work in two database narratives, this exegesis illustrates the language of new media so that the new media storyteller can utilise and experiment with this language in her own work.

5.3 Implications for Further Research

The Language of New Media is a descriptive rather than a prescriptive text. It describes the principles of new media, but it does not provide a practical approach to new media art or design. This exegesis applies Manovich's theory to two case studies. From this limited sample it is not possible to conclude a comprehensive set of guidelines or approaches for the new media storyteller. Nevertheless, by examining a larger set of narratives from advertising, journalism, forensics, education and entertainment, it would be possible to develop Manovich's principles of new media into a practical manual of pre-production planning strategies and production techniques for database narratives.

The exegesis shows how Manovich's theory illuminates the characteristics and conventions of new media storytelling. While this exegesis focuses primarily on database narratives, it is clear that the reach of Manovich's theory extends beyond this form. The breadth of Manovich's theory provides further possibilities for research into video game design, new media art, and website design. Manovich's theory, and his five key principles of new media, could be profitably applied to the analysis and design of any or all of these new media forms.

To allow many people to share *Remembering Bogle Chandler*, I made it freely available over the Internet; this started many useful email conversations with the users about the design and the content of the project. In addition I commenced a preliminary survey of users concerning the useability of the work's interface (see Appendix A). This survey indicated that whilst some users found the interface challenging to begin with, the majority were able to learn and use it effectively. Overall, fifty-one percent found the interface easy to use, thirty-six percent found it fairly easy to use once they learnt how, and thirteen percent found it difficult to use. These results remained remarkably consistent over all age groups, from seventeen to seventy-five plus, indicating that difficulty with the interface of this work may result from an individual's learning style rather than their age. Documenting and

analysing user feedback and surveys about the work would provide an area of further

research. This research may illuminate how users experience Manovich's principles within a

database narrative, and thus assist storytellers to utilise the language of new media.

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Appendix A

Age	Gender	Familiarity with story	Did you find this website informative?	Did you find this website easy to use?	Other Comments
35-44	Female	Fairly familiar	Yes.	Yes.	Interesting work.
18-24	Male	Unfamiliar	Yes	Yes	Awesome
45-54	Female	Unfamiliar	yes	yes	a lot of fun, very interesting form
25-34	Female	Unfamiliar	yes	yes, took me a few seconds to get my head round it I reckon	
25-34	Female	Unfamiliar	Yes!	Yes... and VERY interesting.	This was just fantastic. It reminds me of a high-tech version of the wonderful, informative websites that you could find on the internet long ago, before it all became about money.
35-44	Male	Unfamiliar	yes	yes	the text loaded slowly
35-44	Male	Unfamiliar	yes	yes. I love the multiple ways to work through the story	Beautifully done - great reveals, music, visuals. I wish there was more... and maybe a solution.
25-34	Female	Unfamiliar	YES	YES	
18-24	Female	Unfamiliar	yes	mostly yes, perhaps a little bit of direction as to how to move about the site.	
18-24	Female	Unfamiliar	yes	yes	
45-54	Female	Unfamiliar	yes, compelling!	yes though some frames disappear too quickly, this adds to the elusiveness of the story's facts	I am interested in narrative forms on the web, I like the use of the time line and the way you can dip in and out of the story either here or by clicking on iconic visuals Will this website be updated? How long will it stay online? Do you keep in touch with commentators? What is the purpose of this site?
18-24	Female	Unfamiliar	Yes	Yes	

Age	Gender	Familiarity	Interesting?	Easy to use?	Comments
45-54	Male	Unfamiliar	yes	yes	Exeedingly well composed and designed
25-34	Male	Unfamiliar	I found it interesting and captivating and it exposed me to an event I wasn't aware of.	I really enjoyed poking about and finding new bit of information. The format is at first a bit confusing but is appropriate to a "mystery" and enjoyable to collect the "evidence" a bit at a time using the interface.	
45-54	Male	Unfamiliar	yes, but I found myself wanting to know more before filling out the survey.	yes	
55-64	Male	Unfamiliar	Intriguing glimpse of previously unfamiliar story	Yes, navigation was unfamiliar, but easy to figure out. An effective way to allow nonlinear exposition of a story.	t h e w a y m e d i a t e x t w a s d i s p l a y e d v...e....r...y...s...l...o...w...l...y was an *extremely annoying* affectation. Where's the speed control? News teletypes weren't *that* slow!
25-34	Female	Unfamiliar	Very informative...great work done here!	Very easy	
35-44	Male	Unfamiliar	Very!	Not only was it easy to use, but quite enjoyable as well.	
45-54	Female	Unfamiliar	Yes	Yes	
55-64	Male	Unfamiliar	yes	yes	
35-44	Male	Unfamiliar	yes, quite.	very.	
55-64	Female	Unfamiliar	Very intresting.	Yes	
35-44	Male	Unfamiliar	very	yes	

25-34	Female	Very familiar	Fabulous!	yes	
35-44	Male	Unfamiliar	Yes	Yes	
55-64	Male	Unfamiliar	yes very much	yes and much better than expected	i have book marked this on firefox and please recommend other work by you and your friends to me at... wearejuneandmichael@rocketmail.com
45-54	Male	Fairly familiar	Yes	Yes - excellent	
35-44	Female	Unfamiliar	yes	yes	
25-34	Female	Fairly familiar	Yes	Yes	Yes
75+	Male	Very familiar	Extremely.	It was most enjoyable.	Beautifully presented and the music was great.
45-54	Female	Unfamiliar	yes, very	yes	
14-17	Female	Unfamiliar	yes	yes	what an amazing and interesting case! just like Agatha Christie's novels! I would like so much to know how they died...
14-17	Male	Fairly familiar	YES.	Yes.	No.
35-44	Female	Unfamiliar	Very! I'm now going to have to read all I can get my hands on about this case. I live in the US, and our "news" doesn't seem to think the rest of the world exists!	Very--and its incredibly well done.	This is the first time I've come across something like this, and I loved it. I'm a true crime buff, read all day long, and this was a really effective way to process the information of the crime in a tangible way. Great work!
45-54	Female	Fairly familiar	yes	yes	
25-34	Female	Unfamiliar	Some what. It was more interesting then informative.	very. the design really pulled you into the story.	Will you do anymore of these type of stories? You really should. It could almost be like a weekly show.

45-54	Male	Very familiar	Not really. I know all of this.	Yes.	Your depiction of the location of the kiosk that the boys went to on finding the bodies I do not believe is correct. I lived in the area in 1963 and I am sure that the kiosk was located on the south-western side of the river. The building that you have depicted was an open unmanned pavilion used for shelter by picnicers that was located on the north-western side of the river. It had no walls and had a Greco-Roman appearance. It had wooden pillars that were carved like Dorian columns and were painted blue. (Very heavy) I think it was demolished in the 1990s. The actual kiosk was also demolished in the 1990s, though I used to go there from 1963-the 1970s. I remember at one time that they had a German Shepherd tied up in the back yard. (Vicious!) This kiosk was one where the proprieter lived on the premises. This kiosk mainly catered to patrons visiting Lane Cove National Park and they made most of their money selling ice creams and soft drinks along with meat pies.
25-34	Male	Unfamiliar		yes	Enthralling. And totally terrifying - I've never seen anything like it on the web.
35-44	Female	Unfamiliar	Yes	Mostly. Hard to find a 'direct' story path - more lots of snippets - like a detective. I was looking for the quick exit/answer	Congrats on your AToM award - great work!
35-44	Male	Fairly familiar	Yes.	Somewhat. The lack of instructions gives it a 'trial and error' feel.	Beautifully laid out.
55-64	Male	Unfamiliar	Very.	Not at first. At first I was a little frustrated by it, but I pressed on. Once I got in to it it was very easy, and rather amazing, to use.	Thanks for an incredible experience. Besides the obvious graphic excellence, I also liked the sound design. Bravo! (If that's appropriate considering the subject.)
35-44	Female	Unfamiliar	yes	mostly	fun also
25-34	Female	Unfamiliar	yes	mostly	
65-74	Male	Unfamiliar	yes	would have been easier if given brief explanation of how to use timelines for quicker read	Lots of fun. Thanks.
35-44	Female	Unfamiliar	yes	somewhat	

25-34	Female	Unfamiliar	Yes, fascinating!	A little tough.. I am 30 and was thinking I am getting old trying to read the tiny writing on my screen. It took me a few seconds to figure it out, but once I did, I really enjoyed the format.	I have already read some more on the cases and find it an excellent (though tragic) story. You can easily see why it has captivated so many for years after. Thanks! harriet_quimby@hotmail.com
65-74	Male	Unfamiliar	Interesting premise and presentation	Interesting to use which is better than easy in this case	I lived in North Sydney suburbs in late 70's. I loved Australia and the people but was very unimpressed with Sydney police in the disappearance and later homicide of one of my employees under mysterious circumstances...name of Des Rooney.
45-54	Female	Unfamiliar	yes	somewhat - I was expecting to hear audio	I hope they find the guilty parties.
18-24	Male	Unfamiliar	Yes,very much....I think you cannot ask for anything better.	Could have been better.At times it can be a little confusing.	
45-54	Male	Unfamiliar	yes	OK but I wanted to go from one scenario to the next, not back each time.	A/A
25-34	Male	Unfamiliar	Yes - an excellent way of looking at a factual event that may have passed people by	Bit confusing at first but then got used to it. Some of the pop up text boxes went off quickly meaning you had to re-click into them	Excellent website - just wish we knew what actually happened!
25-34	Male	Unfamiliar	very!	reasonably	very interesting
35-44	Male	Unfamiliar	Yes and entertaining	Not at first but got there. I had some confusion over people with same christian names	
45-54	Male	Unfamiliar	wonderfully so	labarynthine	beautiful but deeply disturbing
55-64	Male	Fairly familiar	yes very	its ok,if you are good with a computer	

55-64	Female	Fairly familiar	yes	after awhile, yes	
35-44	Female	Unfamiliar	Yes. Interesting.	Relatively. Sometimes it wasn't clear what the sequence was from the maps but the timeline was very clear. Relating the two and viewing the other graphics made for an interesting experience.	I'm still not sure what the point is but it may become clear if I explore the site more fully.
25-34	Female	Unfamiliar	Yes, although I wish there was SOME kind of conclusion. I know the deaths are unsolved, but the narrative just…stops.	Yes. It took some getting used to, but it was intuitive and interesting.	
25-34	Female	Unfamiliar	It was informative, but mysterious.	It took me a while to figure out how the navigation works	Brilliant interactive narrative! Gave me a thrill.. Well done!
25-34	Female	Unfamiliar	Yes	Somewhat	
45-54	Male	Unfamiliar	Quite	Fairly	
75	Male	Unfamiliar	maybe	maybe	maybe
45-54	Male	Very familiar	ok	ok	

25-34	Female	Unfamiliar	The information provided were not very informative , it would have been more helpful had it contained first investigative offier's report , eye witness interview , newspaper clippings .	A little confusing to begin with but once got the hang of it , it was easily managable	
45-54	Female	Unfamiliar		needs a bit of experience to get familiar with, then it's ok.	
35-44	Female	Unfamiliar	yes	no, the first line or two of the text seems to have been chopped off. I think I missed a lot of the information.	
55-64	Male	Unfamiliar	yes	no	
25-34	Female	Unfamiliar	Yes.	No. But it was fun.	
25-34	Male	Unfamiliar	Yes, it's very informative and interesting that the whole story/investigation was incorporated into a flash movie.	No. I had a hard time looking for the movie but when my cursor went over to the title in the synopsis page, I tried clicking it and I was able to see the movie.	The homepage is not arranged and not that interesting to look at, but the movie was great and very informative.
45-54	Male	Unfamiliar	yes	no... dialogue fades out before you finish reading and it is difficult to return the dialogue to conclude.	
35-44	Female	Very familiar	YES, A LITTLE HARD TO FOLLOW THOUGH.	NO	

75	Male	Unfamiliar	yes	not realy	i would like to die doing love!!
25-34	Female	Unfamiliar		text too small and not scaleable	
35-44	Male	Unfamiliar	yes		
55-64	Female	Unfamiliar	yes		
25-34	Male	Unfamiliar	yes		fun and addictive!