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Where have all the games gone?

An exploratory study of digital game preservation

by

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A Doctoral Thesis

Submitted in partial fulfilment of the requirements for the award of the
degree of

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CERTIFICATE OF ORIGINALITY

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Abstract

It is 50 years since the development of the first computer game and digital games now have an unprecedented influence on our culture. An increasingly popular leisure activity, digital games are also permeating other aspects of society. They continue to influence computer technology through graphics, animation and social networking; an influence which is also being felt in other media, in particular film and television. They are a new art form and they are seen to be influential on children's learning and development. However, despite their pervasiveness and apparent importance within our society and culture, they are still largely ignored as part of our cultural heritage. Dismissed as disposable, entertainment products, they have not specifically been addressed in most of the academic literature on digital preservation which represents a serious omission in past research. This was justification for an exploratory study into the preservation of digital games and the aim of this study has been to explore the value of digital games, their significance in our culture, and the current status of their preservation. Investigating the relationship of games to culture; reviewing current preservation activities and drawing conclusions about the value of digital games and the significance of their preservation were the study's objectives. These have been achieved through interviews with key stakeholders – the academic community, as potential users of collections; memory institutions, as potential keepers of collections; fan-based game preservation experts; and representatives from the games industry. In addition to this, case studies of key game preservation activities were explored. Through this research, a clearer picture of attitudes towards digital games and opinions on the need for preservation of these cultural products has been established. It has become apparent that there is a need for more coherent and collaborative efforts to ensure the longevity of these important aspects of digital heritage.

Keywords: preservation / digital preservation / games / computer games / digital games / video games / cultural heritage / value

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Chapter 1: Introduction

Chapter 1: Introduction

Over 50 years have passed since the invention of the first computer game, *Tennis for Two* (1958). This game was the inspiration for the first truly successful digital game, *Pong*; versions of which provided the platform for development of the commercial digital game industry in the 1970s. In the 50 years since *Tennis for Two*, digital games have become an increasingly visible and popular leisure activity. They are part of many people's everyday lives: they are an entertainment; a way to relax; something to share between friends (virtual and physical) and family. For many, especially a generation which grew up in the 1980s or later, digital games have been part of their childhood; they are part of their present and will be there in their future.

Traditionally associated with socially inept teenage boys, statistics now reveal that the average gamer is 35; 26% of gamers are over 50 and there are more adult female players than boys under 17 (Entertainment Software Association, 2008). Year-on-year increases of software sales also suggest a rise in popularity of gaming; and in 2007, an average of nine games was sold every second of every day (Entertainment Software Association, 2008). With this growth in sales, the games industry has become a significant force in the creative industry sector. Valued at \$5.1 billion in 1997, the industry has expanded considerably and is estimated now to be worth \$22 billion (ESA, 2009). Furthermore, the games company, *Nintendo* is currently Japan's third most valuable company (Lewis 2007) and in the UK digital games represent 30% of all media exports (UK Trade and Investment 2007).

Games are also challenging the popularity of other forms of entertainment. According to statistics by the Entertainment Software Association, "Halo 3, the best-selling title of 2007, took in more revenue in its first day of sales than the biggest opening weekend ever for a movie ("Spider-Man 3") and the final "Harry Potter" book's first day sales" (ESA 2008). This record has now been challenged by *Grand Theft Auto IV*, which "racked up first-week sales of \$500 million" (Richtel 2008). In recent years, with the successful launch of products designed to appeal to a wider audience, such as the *Nintendo Wii* in 2006, digital games have now become a mainstream form of entertainment.

Alongside this obvious increase in popularity, there is a “growing scholarly interest in the study of games and related interactive media” (Lowood 2004, p.1). There are now a growing number of academic departments, journals and conferences dedicated to the discipline of game studies. Game studies has had distinctive periods of intensity and received interest from a wide range of disciplines. The latest revival of interest can be closely linked to the rise in popularity of digital games. Early games theorists, such as Caillois, saw games as highly worthy of study because they reflect the culture from which they stem. He argues that games “necessarily reflect [society’s] culture patterns and provide useful indications to the preferences, weaknesses and strength of a society at a particular stage of its evolution” (Caillois 1962, p.83). Digital games theorists also see value in games for this reason. Aarseth views digital games as “the most fascinating cultural material to appear in a very long time” (2001) and Kucklich affirms that digital games are “cultural products with deep roots in the culture [from which] they stem” (2006, p.104). In other words, digital games are a “living mirror of any given society” (Massonet in Lauwaert et al 2007, p.91).

Yet, despite this proliferation of digital games in our society and academic awareness of their cultural significance, digital games seem to be shrouded by negativity. They are a ‘poor relation’ in terms of their perceived cultural value in comparison to other cultural industries, such as music and film. With regards to preservation, there has been little consideration of their relationship to cultural heritage. There is an undeniable nostalgia for retro-games. Sites, such as the *World of Spectrum*, are dedicated to maintaining access to classic games for people longing to recreate the memories of their childhood. But are there any coherent efforts beyond this nostalgic reverie? To date, digital games have received little acknowledgement in the academic literature on digital preservation though it is true that the preservation of digital games is beginning to receive attention in some circles. The Library of Congress funded project, ‘Preserving Virtual Worlds’ (2007); the KEEP project (2009) and other similar activities are evidence of this. However, despite the importance of these initiatives, their focus has been on the technical issues of game preservation. But, are these the biggest barriers? Digital games are not generally considered to be an important part of our cultural or digital heritage yet there has been no research into perceptions towards digital games and how these might influence preservation decisions. Understanding these cultural influences has been the key focus of this research.

One of the main reasons that games have remained sidelined from our cultural heritage and their preservation has been overlooked is the nature of the digital games industry. As a cultural industry, it relies on the sale of new releases and it has endorsed the disposability of older titles. Earlier versions are considered inferior as the new titles have new characters, new settings and improved graphics. Therefore, in an increasingly disposable society, is there any real value in the preservation of these objects? This is an important question in relation to this study: are digital games worth preserving? Chaplin suggests that “[the] notion that video games were something with a history worth preserving and a culture worth studying has gone from absurd to worthy of consideration by the Library of Congress” (Chaplin 2007). But, to what extent has digital game preservation become ‘worthy of consideration’? Has the absurdity of games being ‘something with a history worth preserving’ been completely dissolved? These questions relate to the status and significance of digital game preservation.

1.1 Aims and objectives

This research was started in 2007 with the very broad research aim of investigating the cultural and technical issues of digital game preservation. At this stage, digital games had not specifically been addressed in most of the academic literature on digital preservation and represented a serious omission in past research. This was highlighted by Gieske (2002) and was emphasised by the results of bibliographic searching; for example, a basic search on the database LISA, returned 338 hits for the term ‘digital preservation’ but only 1 hit for the terms ‘digital preservation’ AND ‘games’: broader searches also retrieved limited results. There was some interest in the mass media, with the aforementioned article published in *New York Times* in March 2007 (Chaplin 2007), followed two days later by an article in *Der Spiegel* (Stöcker 2007) and an article in *The Guardian* in July 2007 (Stuart 2007). Then, in August 2007, a particularly significant collaborative project between various institutions in the United States was announced – the ‘Preserving Virtual Worlds’ project. This project was focussing on the technical issues of digital game preservation which influenced the decision to concentrate this research on the social and cultural issues. This decision was further strengthened by the announcement of the KEEP project in 2009 and the publishing of the International Game Developers Association (IGDA) Special Interest Group on Preservation’s White Paper, also in 2009. These initiatives were also focussing on the technical issues of game preservation and it was felt that research into the social and cultural significance of games would complement these.

In 2008, the author attended, and presented a paper at the Documentation and Conservation of the Media Arts Heritage (DOCAM) conference, *Media in Motion: The Challenge of Preservation in the Digital Age*, at McGill University, Montreal. The paper, titled “*The barriers to the preservation of digital games*” (Barwick, Dearnley and Muir 2008), was a discussion of institutional problems with the acceptance of digital game preservation as part of their preservation responsibilities. The response to the paper was surprising as the author had assumed a level of interest in, and recognition of the importance of, digital games: audience members questioned the value and significance of digital game preservation, particularly in light of unofficial, fan-based preservation activities. This highlighted the importance of exploring these issues and suggested a need to consider the roles and responsibilities of different stakeholders.

This research is being undertaken within the field of Information Science and its focus is the issues of preservation and whether those responsible are ignoring, or overlooking, the significance of digital games. These factors led to the development of specific research questions, such as: *Are digital games worth preserving and, why? To what extent is game preservation being undertaken and, by whom? Who are the stakeholders in digital game preservation? What are their perceptions of digital games? How do these perceptions influence preservation decisions? Who should be responsible for the preservation of new digital forms, such as digital games? What are the barriers to this happening?* These research questions resulted in the formulation of the aims and objectives of this research.

The overall aims of this research have been to explore the significance of digital games and the status, and significance, of their preservation. The specific objectives were:

1. To explore the social and cultural significance of digital games;
2. To investigate perceptions of this significance;
3. To review current preservation activities;
4. To assess attitudes towards the preservation of digital games;
5. To identify the key stakeholders and their roles and responsibilities in the preservation of games;
6. To identify any potential barriers to the preservation of digital games;
7. To make recommendations for future digital game preservation activity and research.

The first two objectives relate to the question of the significance of digital games. In Chaplin's article in 2007, she suggested that "[the] notion that video games were something with a history worth preserving and a culture worth studying has gone from absurd to worthy of consideration by the Library of Congress". *But to what extent was this true?* Preservation decisions are based on the perceived worth of objects; thus, it was essential to have an understanding of the social and cultural value of games and perceptions of this value. These objectives have been explored through the literature review and interviews with key stakeholders. In the literature review, the cultural and historical development of digital games was reviewed and perceptions towards games examined. This included consideration of how significance and value is measured and the relationship of games to cultural heritage. The interviews explored how different stakeholder groups perceived this value as it was obvious that there was not a consensus between the groups.

It was clear from the beginning of this research that in order to investigate the status of digital game preservation, it was necessary to review current preservation activities (objective 3). This would provide a clear view of the present situation which would enable further understanding of the extent of the problems and give focus to the efforts to find solutions. The Library of Congress' involvement in the preservation of digital games was certainly an important milestone but was this interest from national preservation organisations evident in the UK? *Who was considering these issues and to what extent?* In this study, the current status of game preservation has been explored through a comprehensive literature review and case studies of significant institutions involved with digital game preservation. The literature review explored the questions of what is being preserved and by whom; how this is being achieved and for what purposes. As the research progressed, various new projects, such as the National Videogame Archive, were identified and these were incorporated into the study. The case studies were used to obtain an in-depth insight into preservation activities, including institutional policies and strategies; and the challenges that digital game preservation presents. Originally the focus of this objective was the UK but it became clear that there was limited activity on a domestic level and getting an international perspective of the issues would be more useful.

Original research aims and objectives for this study focussed on people's perceptions, with early examples of research aims such as: "to assess whether the cultural perceptions of UK institutions are a major barrier to digital game preservation". However, this made the research extremely narrow. By merely concentrating on the perceptions of a

limited group, the research did not present “symmetry of potential outcomes” (Phillips and Pugh 2005, p. 84); in other words, by focussing on the perceptions of UK institutions, the success of the research relied on particular responses from participants. In order to address this problem, the research questions were broadened to include other themes which had been identified in the literature. Rather than the overall aim of the study, assessing perceptions of the social and cultural significance of games and attitudes towards their preservation became two of the key objectives. Instead of a narrow focus on institutions, the emphasis was on key stakeholder groups.

Identifying the stakeholder groups was a key objective throughout the research. This was achieved through the literature review process and interviews were held with representatives from these groups, which were: memory institutions; games enthusiasts; academics and the games industry. Initially the stakeholders were seen as academics, as potential users of collections, and memory institutions, as keepers of collections. However, this was widened to include representatives from the games industry because as creators of the material, their attitudes were an important factor in this study. In addition, various preservation groups had been identified in the literature review but there had been no intention to include them in the study. This was an oversight by the researcher: the work being done by these groups is an essential part of current game preservation activity and highly relevant to the research’s aims and objectives. It also became clear, after comments at the *Media in Motion* Symposium that it was necessary to consider the roles and responsibilities of these groups in relation to the research question: *Who should be responsible for the preservation of new digital forms, such as digital games?*

These objectives provided a clear framework for the study and through these, it has been possible to identify potential barriers to the preservation of digital games and make recommendations about areas which need further research. In the context of other technical-focussed research projects and initiatives, this research provides significant insight into the social and cultural factors of digital game preservation.

1.2 Significance of the research

The limited research into the preservation of digital games was justification for an exploratory study and it has proven to be timely. The launch of the ‘National Videogame

Archive' in 2008 and the publication of a White Paper on game preservation by one of the International Game Developers Association's Special Interest Groups (Lowood 2009a) are evidence of a growing interest in this area. The JISC have recently announced funding into digital media preservation (2010) and the Executive Director of the Digital Preservation Coalition has stated an interest in further research into game preservation over the next few years (announced at the first UK summit on game preservation, June 2010). The British Film Institute is undertaking a review of their collection policies, including making decisions about the significance of games. In addition, the government has set up an All-Party Parliamentary Group on Computer Games and the Digital Britain report promises a review of copyright in relation to archival material (DCMS and DBIS 2009). These factors are extremely significant to the future of game preservation.

As an exploratory study, this research provides a better understanding of the current cultural significance and status of digital games. It also provides evidence of recent attitudes towards digital game preservation. This will be useful for further research and for those making decisions about the future of game history. This is because it enlightens policy makers "to the dynamics of behaviours in comparable situations in order that those behaviours can be understood and attended to in a more appropriate way" (Hart and Open University 1998, p. 46) (Objective 7). In 2009, the researcher was part a panel on digital game preservation at the Digital Games Research Association (DiGRA) conference and gave a paper on her research (Barwick, Dearnley and Muir 2009). In 2010, she was invited to participate in the UK's first game preservation summit, organised by the National Media Museum. In addition, an article has been accepted for publication in the journal, *Games and Culture* (Barwick, Dearnley and Muir 2010). These have been important opportunities to share the findings of this study.

1.3 Structure of thesis

This chapter has presented an introduction to, and an overview of, the background to this research. Chapters Two and Three present the literature review which has been carried out. The focus of Chapter Two is digital games: their special characteristics; how they relate to culture; their historical development and the business and economics of the industry. In Chapter Three, the focus is preservation: the concepts of culture, heritage and preservation, with particular reference to the problems of the selection of material; the specific issues of digital preservation; and a review of current digital game preservation activities. The

methodology and methods used, and their implications to this research, are discussed in Chapter Four. Chapter Five is the results chapter in which data from the interviews and case studies is presented. This chapter includes the discussion and interpretation of these results. The conclusions from this research are presented in Chapter Seven. This chapter includes, in the final section, recommendations for further research.

Chapter 2: Digital games

Chapter 2: Digital games

In this chapter, the literature on digital games will be considered in relation to five main themes: games and game studies; the historical development of digital games; the business and economics of the games industry; their impact and influence and the special characteristics of digital games. These themes are useful for gaining an understanding of some of the issues that affect perceptions of the significance of digital games and the question of their preservation.

In section 2.1, the concept of 'game' is examined in relation to various definitions and the classification of games and digital games is introduced. The discipline of game studies is discussed in relation to its history and development, as well as the key forms of analysis.

In section 2.2, the history of digital games is reviewed, with reference to the origins and context of the first games; the three 'entrepreneurial paths' and the growth of online gaming.

In section 2.3, the business and economics of the industry are considered. This consists of a discussion of the industry's business models and games as a 'cultural industry'. The legal issues around Intellectual Property Rights and piracy are also introduced.

In section 2.4, the impact and influence of digital games are discussed. This includes an examination of the negative image of digital games, as well as a discussion of their growing popularity and their influence on culture and society.

In the final section of this chapter, the special characteristics of digital games are considered. This includes consideration of the interactive nature of digital games and the relationship between players and game culture.

2.1 Games and Game Studies

Digital games are games. Therefore, in order to study them, it is useful to start with an understanding of their relationship to traditional games and how these have previously been studied. This helps to situate digital games within the context of the relevant themes in games research. But, *what is a game?* It is first necessary to identify what are the common features: what makes something a 'game'? In addition to their commonalities, it is also important to recognise the differences between the objects and activities which are classed as games. In this section, these objectives will be achieved by an analysis of different game definitions; examination of the term 'digital game' and consideration of the debates on the structure and classification of games. This will lead into a discussion of the development of the discipline, *game studies*. The study of games has had distinctive periods of intensity and received interest from a wide range of academic disciplines, such as anthropology, information science and psychology. In this section, the evolution from the study of games, as explored in landmark texts by Huizinga, Caillois and Sutton-Smith, to 'Game Studies' will be examined. All of these factors are important in relation to consideration of the cultural significance and preservation of digital games.

Firstly, it is necessary to recognise that digital games are part of the broader genre of games and in order to study them, it is useful to start with an investigation of what the term 'game' signifies and to recognise the common features in seemingly different artefacts or behaviours. In the article, *The Structural elements of games*, Avedon poses the question:

“Are there certain structural elements that are common to all games, regardless of the differences in games or the purposes for which the games are used, or the culture in which they are used?” (Avedon in Avedon and Sutton-Smith 1971, p.420)

She goes on to identify 9 structural elements which form her basis for answering the question of commonality: 1) purpose; 2) procedures; 3) rules; 4) number of players; 5) roles; 6) interaction patterns; 7) results; 8) abilities required; 9) physical setting. Avedon admits that these elements can only be considered as “a preliminary excursion into the structure of games” (1971, p.426) but this analysis is a useful reference for the consideration of the specific characteristics of digital games and leads into a discussion of definitions.

Definitions are difficult. They are necessary because they provide “a frame of reference” (Avedon and Sutton-Smith, 1971) but this framework is biased towards the

creator's viewpoint, both theoretically and historically. However, in order to provide the 'frame of reference' for this study, a clear definition of terms is essential. It is necessary to understand what elements make up a game in order to be able to consider fully the implications of preservation. At the most basic level, the Oxford English Dictionary defines a 'game' as:

“a diversion of the nature of a contest, played according to rules, and displaying in the result the superiority either in skill, strength or good fortune of the winner or winners.” (OED online)

This definition seems extremely narrow as the focus is the element of competition – the 'contest', the rule systems and outcomes. These are common elements within game definitions but there are others which are also important.

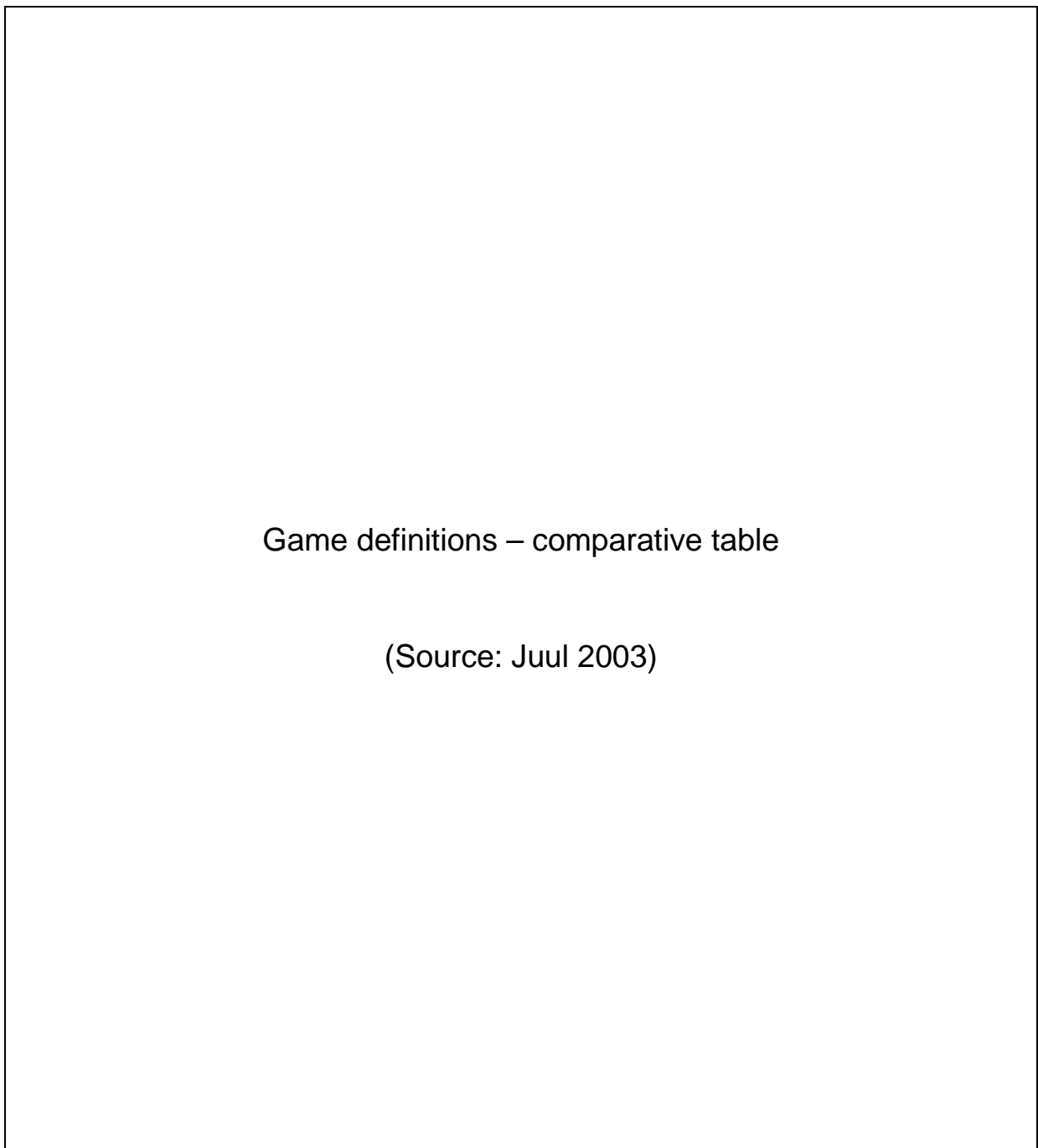
Despite criticisms of different theorists' definitions, they share common features: the differences are the language which is used and the theorist's particular emphasis. The emphasis of Huizinga's definition of play is on the boundaries of the game, where a game exists “standing quite consciously outside 'ordinary life'” (1970, p. 23). Yet, his definition encompasses other significant features. Games are played “according to fixed rules”; participants are involved in a “free activity” and through the interactivity of play, there is the establishment of new “social groupings” (Huizinga 1970, p.32). Caillois accuses Huizinga's definition of being “both too broad and too narrow” (Caillois 1962, p. 4). He questions Huizinga's exclusion of games of chance and his statement that play has “no material interest” (Huizinga 1970, p.32), citing the example of the lottery. However, Caillois' definition also emphasises the participant's freedom of choice; the rules of the game and its outcomes. Similarly, Sutton-Smith's definition focuses on goals and outcomes; rules and interaction but it is considered too narrow by some. Juul, for example, remarks, “the play definition is very loose and somehow less than useful” (Juul 2001a).

In the chapter, *Video games and the classic game model*, Juul presents a useful deconstruction of game definitions in order to present his new “classic game model” (2005, p.27). In order for a definition to be useful, it is necessary to ask for what it is being used. For Juul, his definition is a means to “understand the properties of the games themselves” (Juul 2005, p.27). He identifies three key components of a good definition:

“1) the system set up by the rules of a game, 2) the relation between the game and the player of the game, and 3) the relation between the playing of the game and the rest of the world” (Juul 2005, p. 28)

It is clear to see that the previous definitions address these aspects in part. Juul demonstrates this by the use of a comparative table (see **Figure 1**), which highlights their similarities (Juul 2005, p.32). However, it is also clear that in relation to these elements, the definitions are either too broad or too narrow.

Figure 1: Game definitions





Juul's definition, or "classic game model", is developed with these elements as its focus:

"A game is a rule-based system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome and the consequences of the activity are negotiable." (Juul 2005, p.36)

It is for this reason that the definition provides a useful 'frame of reference' for this study or, as Juul (2003) states:

"I hope to have indicated that games *do* have something in common, that we *can* talk about the borders between games and what is not games, and that it makes sense to look at computer games as being the latest development in a history of games that spans millennia." (Juul 2003, p.43)

As Juul states, computer games are 'the latest development of games' but they have their own unique characteristics. It is therefore necessary to consider how the term 'computer game' can be defined. The Oxford English Dictionary defines a 'computer game' as:

"a game played on a computer, especially one involving graphics and operating in real-time, also a software package for such a game."

A 'video game' is defined as:

“a game played by electronically manipulating images displayed on a TV screen.”

(*OED online*)

The important difference between these definitions is the emphasis on the specific equipment used. 'Computer games' are played on a computer and 'video games' are played with consoles through a television set. In the previous analysis of non-digital games, traditional games were often classified in relation to the equipment used, for example 'dice' games or 'board' games, and this was closely linked to the standpoint of the theorist. In digital game studies, authors use the different terms for their own reasons.

The terms 'computer games' and 'video games' are often used interchangeably to refer to the phenomenon of digital games. Juul, in his book *Half-Real* (2005), uses 'video game' but in earlier papers, for example in Juul (2001b), he uses 'computer game'. In his online dictionary of video game theory, Juul defines a computer game as:

“[a] game played using computer power. Sometimes used to mean games played on a personal computer as opposed to on consoles.”

'Video game' is seen as the broader term, defined as:

“generally speaking, a game played using computer power and a video display. Can be computer, cell phone, or console game. Sometimes used to describe console-based games only.”

(Juul, *Half-Real: A Dictionary of Video Game Theory*)

However, in *Computer games: text, narrative and play*, Buckingham states that 'computer games' is used as “it is a more inclusive term” (Buckingham in Carr 2006, p. 4). In Aarseth's editorial for the first issue of *Game Studies*, he refers to “Year One of Computer Game Studies” (Aarseth 2001) but in Poole's book, *Trigger Happy* (2000), the subtitle of the work is “the inner life of videogames”. There is obvious disagreement between authors about which term is more inclusive and in Kline et al (2003), Kline prefers the phrase “computer and video games”. 'Digital games' is the preferred term in Kerr (2006, p.3) as it is seen “to embrace arcade, computer, console and mobile games in all their diversity”. Salen and Zimmerman (2003) also choose to use the term 'digital games'. They state dismissively that this is for “simplicity's sake” (Salen and Zimmerman 2003, p. 86) but the reasoning is much more significant than this. In fact, the use of the term 'digital games' highlights the very important point that digital games are more than physical artefacts. 'Digital games' is a non-

medium specific term for a phenomenon of complex components. These games are more than the sum elements of a PC and computer disc; as Salen and Zimmerman state:

“The physical medium of the computer is one element that makes up the system of the game, but it does not represent the entire game. The computer hardware and software are merely the materials of which are game are composed.” (Salen and Zimmerman 2003, p. 86)

It is for this reason that ‘digital games’ is the preferred term in this study. It is an all-inclusive term; non-media specific and introduces the full complexity of its subject. These aspects underline the need for further consideration of the unique characteristics of digital games in relation to how these affect their preservation.

In addition to recognising the commonalities between the objects and activities that are referred to as games or digital games, it is also necessary to consider the differences. It is conceded that *Chess*, *Hopscotch* and *Poker* are all games and that *Tetris*, *DOOM* and *World of Warcraft* are all digital games, despite their numerous differences. This introduces the concepts of categorisation or classification which are concerned with managing these differences. In *The Study of Games* (Avedon and Sutton-Smith, 1971), the complexity of classification is discussed in relation to taxonomies developed by different types of researcher. Historians focus on events or artefacts: Murray’s classification is based on the activity involved, for example the ‘hunting’ game or the ‘racing’ game; Bell’s classification focuses on the equipment used in a game, so in the above examples, *Chess* would be described as a board game; *Hopscotch* as a playground game; *Poker* as a card game (Avedon and Sutton-Smith 1971, p.402). Social scientists are interested in interaction and their classifications involve the number of players and the outcomes of games. In these differences, the multi-disciplinary nature of games is apparent. It is more evidence of the conclusion that “the meaning of games is...a function of the ideas of those who think about them” (Avedon and Sutton-Smith 1971, p.438).

Classification is particularly important in the theory of games as a reflection of culture. According to Caillois, Huizinga “deliberately omits, as obvious, the description and classification of games themselves, since they all respond to the same needs and reflect, without qualification, the same psychological attitude” (Caillois 1962, p.4). In other words, Huizinga assumes that all games are the same. However, Caillois views the classification of games as vital because any analysis of the type of games played within a society relies on having an understanding of the differences between them. Caillois’ classification groups are

based on “the most meaningful and comprehensive term possible” (1962, p.13): these terms are recognisable in part from Huizinga’s analysis of the language of play. Breaking games into categories, Caillois identifies four divisions: these are ‘agôn’ or competition, which includes sports and board games; ‘alea’ – games of chance, including dice games and the lottery; ‘mimicry’ or simulation, which encompasses the make-believe element of ‘dressing-up’ games; and ‘ilinx’ – vertigo, citing fairground rides as an example (Caillois 1962, p.12). Developing this theory further, he highlights that these categories are not exclusive and that some games may be a mix of elements, with six possible combinations. The second facet of his classification is the introduction of the extremes of paidia, “the spontaneous manifestations of the play instinct” (Caillois 1962, p.28) and ludus, the introduction of systems of rules. These categories form the basis for an analysis of culture:

“The destinies of cultures can be read in their games. The preference for agôn, alea, mimicry or ilinx helps decide the future of a civilisation.” (Caillois 1962, p.35)

Although there is value in Caillois’ work on classification, there are criticisms of his method. Juul observes that they are “extraordinarily problematic” (2003) in relation to digital games and, despite recognising that Caillois’ game classification is “very useful” (2007, p. 93), Lauwaert et al highlight its limitations. Caillois, writing in 1961, could not have imagined the potential of digital games. Firstly, digital games can be a synthesis of simulation, competition, chance and vertigo; presenting combinations of elements which Caillois had “denoted as forbidden or contingent” (Lauwaert et al 2007, p. 93). In addition, according to Lauwaert et al, digital games also introduce two new dimensions, “repens”, or surprise, whereby games rely on “unknown or unexpected events” and “repositio”, or retry (2007, p. 95). These elements relate to the issue of ‘gameplay’ or, the immersive and interactive qualities of digital games, which are discussed in more detail in section 2.5.

Digital games can be broken down in two different ways: by form and by genre; these are not without their own issues. There are a variety of forms of digital games: arcade, console, handheld, PC, online and mobile games. Arcade games are coin-operated machines, located in public spaces such as pubs and amusement arcades. The first arcade game – *Computer Space* – was launched in 1970 and the height of their popularity was the late 1970s and early 1980s. Each machine is programmed with one game and players have to pay each time they want to play the game. Popular arcade games include: *Pong* (1972); *Space Invaders* (1978); *Pac-Man* (1980); *Street Fighter* (1987): many arcade games have also been released on other platforms but, the game experience is not the same:

“Playing with a special arcade machine, in a noisy and crowded games arcade, surrounded by other gamers, is a different kind of experience from that of a solitary play session on the home PC.” (Mayra 2008, p. 53)

Console games were launched in 1972, with the development of the Magnavox Odyssey. Since then, the market has seen a large variety of games consoles released by different companies including the *Nintendo Entertainment System* (1986), *Sony Playstation* (1995) and *Microsoft Xbox* (2001). Games were initially produced on cartridges which shifted to CD-ROMs in the late 1990s. Handheld games, such as *Gameboy* (1996) and *Nintendo DS* (2004), were developed from earlier handheld devices such as Nintendo’s *Game & Watch* series, and have become very popular. Games for handheld devices are traditionally produced on game cartridges or game cards. PC games were popularised by the growth of home computing in the early 1980s, with systems such as the *Sinclair Spectrum* and *Commodore 64*. Originally produced on tapes or floppy disks, games are now produced on CD-ROM or distributed via the Internet.

Online gaming is a growing phenomenon which itself can be broken down into “various sub-categories and historical phases” (Mayra 2008, p. 120), including casual gaming, Multi-User Dungeons (MUDs) and Massively-Multiplayer Online Role Playing Games (MMORPG). Casual games are usually free to play with simple rules and accessed using *Adobe Flash* or *Shockwave*: hence why they are often referred to as Flash games. These types of games are increasingly available for free via social network sites, such as *Facebook*. MUDs were text-based adventures and the precursors of MMORPGs. MMORPGs, such as *Everquest* (1994) and *World of Warcraft* (2004), are virtual worlds and in recent years, “developer interest [in these types of games] has skyrocketed” with 170 examples in existence in 2008 (Egenfeldt-Nielsen et al 2008, p. 92). All of these different types of games will have their own unique issues in relation to preservation.

Genres are another important factor in the categorisation of digital games and there are a variety of different genre listings. On the *Killer List of Videogames (KLOV)*, there are 24 different genres and each game is assigned to one particular genre. The genres are: adventure, ball and paddle, baseball, fighting, gambling, golf, labyrinth/maze, mah-jong, platform, puzzle, racing, scrolling fighter, scrolling shooter, shootemup, shooter, simulator, skill, soccer, space, sports, trivia/quiz, unknown and video pinball (KLOV). *Gamespot*, the online game news and review website, lists over 30 different types of game. On *Mobygames*, there are only 11 genres: sports, anime, fighting, medieval/fantasy, real-time,

shooter, arcade, managerial, puzzle-solving, sci-fi/futuristic, turn-based (*Mobygames*): games can be a combination of any of these genres. For example, *Tetris* is a real-time, puzzle-solving strategy game on *Mobygames*; on *KLOV* and *Gamespot*, it is simply a puzzle game. These differences highlight various complexities, as discussed below.

In a similar way to traditional games, the classification of digital games has been a “function of the ideas of those who think about them” (Avedon and Sutton-Smith 1971, p.438) or, as Egenfeldt-Nielsen et al state:

“Philosophically speaking, the large number of genre systems exists because there is no objective way to measure the differences between two things.” (Egenfeldt-Nielsen et al 2008, p. 40)

There has been much debate in game studies about game genre and the most appropriate way to measure the ‘difference between two things’. Wolf has suggested that genre should be based on interactivity or the game’s goals (Wolf 2001). Egenfeldt-Nielsen et al outline four genres: action, adventure, strategy and process-orientated; which are based on “a game’s criteria for success” (Egenfeldt-Nielsen 2008, p. 44). Aarseth has worked extensively on game genre and, in a recent study with Dahlskog and Kamstrup, has argued that traditional genres are out-of-date and has also highlighted 4 main clusters of importance: strategy games, first-person shooters, progression and exploration games; and perfect information games (Dahlskog et al 2009, p.5). These clusters are based on functional categories. The debates on categorising games highlight the complexity of digital games: this complexity is explored further in the section on the special characteristics of digital games. They also highlight the different debates within game studies.

This chapter started with a reference to the highs and lows of interest in the study of games. This is a topic which is relevant throughout this study. In a period, defined as “the third wave of games studies” (Juul 2001a, p.4), researchers, such as Juul, have become interested in how questions and theories within early work on games by theorists, such as Huizinga, Caillois and Sutton-Smith, can help in the understanding of the structure and development of digital games. These texts are important because they consider theories of play; they demonstrate how games are frequently perceived as insignificant; and they are a useful starting point for consideration of the important subject of the relationship of games to culture. For these reasons, these texts must be a launching pad for considering the

literature on digital games, despite the fact that the earliest of them predates the first computer game by nearly thirty years.

In 1938, Johan Huizinga published his text, *Homo Ludens*: this work can be identified as a general reference point for many games theorists who followed. It is referenced by both Caillois and Sutton-Smith, but also by digital games theorists such as Poole (2000); Salen and Zimmerman (2003) and Juul (2005). The work, which has been described as “a groundbreaking study” (Rodriguez, 2006), is mainly concerned with the concept of play and the occurrence of the playful in culture. Huizinga takes an anti-functional view of play and introduces his definitions in relation to the ‘magic circle’, which distinguishes between the world of the game and the real world. This has become “short-hand for the idea of a special place in time and space created by a game” (Salen and Zimmerman 2003, p.95). His work has been much criticised; in particular for his methodology, ranging from linguistic analysis to the descriptive, which Huizinga (1970, p.18) himself admits has “not sufficiently been explored”. But, despite these criticisms, *Homo Ludens* remains a study worthy of attention because it asks the pertinent questions: ‘*what are games*’ and ‘*why do we play?*’

Although Roger Caillois’ 1962 text, *Man, Play and Games*, starts with an acknowledgement of the important work of Huizinga, it is clear that he is critical of many of Huizinga’s conclusions. The primary focus of Caillois’ work is the relationship between games and culture. He criticises those who dismiss the significance of games as Huizinga had, but his thesis is somewhat different. For Caillois, games represent an image of society in which “games and toys are historically the residues of culture” (Caillois 1962, p.58). He defends the position that there are different types of games; introduces his classification and argues that the prevalence of different types of game within a civilisation can be useful in a study of its culture. In Caillois’ work, the questions are ‘*what are games*’ and ‘*what do they tell us about culture?*’

The Study of Games (1971) is a collection of articles on games by various authors in which Sutton-Smith presents a useful definition of the term ‘*game*’; as well as returning to the concept of classification by identifying the key elements of games. In the work, divided into three sections, games are discussed in relation to their history and origins; their usage and

their structure and function. Within these articles, Huizinga's and Caillois' differing views on the relationship between culture and games are apparent in relation to different disciplines and their usage of games. In fact, this work highlights the multidisciplinary nature of games studies. It emphasises their significance and demonstrates that their analysis is dependent on the intentions of the person looking at them, as Sutton-Smith observes:

“...each person defines games in his own way – the anthropologist and folklorist in terms of historical origins; the military men, businessmen, and educators in terms of usages; the sociologist in terms of psychological and social functions. There is overwhelming evidence that the meaning of games is, in part, a function of the ideas of those who think about them.” (Avedon and Sutton-Smith 1971, p.438)

Despite the obvious differences in the authors' approaches and viewpoints, the texts have many themes in common. Firstly, they all attempt to define and classify games; secondly, there is an agreement that games are worthy of study; and finally, that games have an important relationship with culture.

In these particular texts, each of the theorists has observed how the study of games has previously been overlooked and their significance undervalued. Huizinga observes that civilisation “has grown more serious; it assigns only a secondary place to playing” (1970, p.96). Caillois criticises the view that “games are systematically viewed as a degradation of adult activities that are transformed into meaningless distractions when they are no longer taken seriously” (1962, p.58). In a similar statement, Sutton-Smith states that “historically...in a work-orientated civilisation, they have often been derogated as trivial and unimportant” (Avedon and Sutton-Smith 1971, p.438). Opinion on the significance of the study of games has clearly fluctuated but there are clear trends in the development of the discipline of games studies.

According to Mayra, game studies face a ‘double challenge’ of “creating its own identity while at the same time maintaining an active dialogue with other disciplines” (Mayra 2008, p. 5). It is this challenge that has led to one of the main paradigm clashes in game studies. As Esposito (2005a) states, there has been a long history of debate between ludology and narratology within game studies. On one side, there are the ludologists, often game designers, who study games as games and see the importance of understanding the components of a game. On the other, the narratologists, who often come from a humanities background, are interested in how games can be read as a new form of interactive fiction. For ludologists, such as Aarseth and Eskelinen, it is important to view games as complex

systems in which the components of rules and strategies are key and the main emphasis is put on player interaction:

“Games are both object and process; they can’t be read as texts or listened to as music, they must be played.” (Aarseth 2001)

For narratologists, such as Murray and Atkins, digital games are a new form of text and their narratives can be analysed in a similar way to literature and film:

“Every game, electronic or otherwise, can be experienced as symbolic drama.” (Murray 1997, p. 142)

In her book *Hamlet on the Holodeck* (1997), Murray presents an interesting examination of how digital media is changing storytelling. She sees digital games as the starting point of a change in literary tradition towards ‘cyberdrama’, in which participation and interaction are all important:

“While linear formats like novels, plays, and stories are becoming multiform and participatory, the new electronic environments have been developing narrative formats of their own. The largest commercial success and greatest creative effort in digital narrative have so far been in the area of computer games.” (Murray 1997, p. 51)

These debates have received much interest in games studies’ circles and attempts have been made to align the views. Frasca believes that the “debate has been fuelled by misunderstandings” and has “generated a series of inaccurate beliefs” (2003, p. 1). In his paper, *Ludologists love stories too* (2003), he argues that ludology does not exclude the study of narratives and that the debate is over exaggerated. This is confirmed by Juul:

“Claiming games and narrative to be completely unrelated (my own text Juul 1999 is a good example) is untenable.” (Juul 2001b, p. 3)

This confusion is caused by game theorists’ desire for recognition of game studies as an independent discipline. Ludologists have been highly critical of how other academics use methodologies from different disciplines to analyse digital games. Aarseth accuses them of trying to ‘colonise’ game studies:

“Games are not a kind of cinema, or literature, but colonising attempts from both these fields have already happened, and no doubt will happen again.” (Aarseth 2001)

The purpose of this study is not to explore the origins of these disagreements: this has already been done. The difference in approach of the narratologists and ludologists masks the common feature that all these theorists see value in the study of digital games. Their different methodologies are less important. The valuable conclusions to take from these

debates in relation to this study are that it is both necessary to recognise digital games as games, which are designed to be played; but also to understand the potential of their narratives as a useful methodology to understand them better. Both these factors are significant in relation to digital game preservation.

Game studies is ‘a multi-disciplinary field of study and learning with games and related phenomena as its subject matter’ (Mayra 2008, p. 6). As a multi-disciplinary field, games researchers come from a variety of backgrounds: they are “an eclectic bunch” (Egenfeldt-Nielsen et al 2008, p. 8). This includes, but is not limited to, academics from a film or literature background; computer scientists; psychologists and sociologists. The main reason for this multi-disciplinary interest is that there are a variety of ways of analysing games. For example, games can be seen as another form of moving image or as narratives; they are computer programmes; they are an influential aspect of media culture; they are works of art. In 2007, Bragge and Storgards carried out a research profiling of digital games, using the database, *ISI Web of Science*. This identified the main areas of digital games research as: Social Sciences, Law and Economics (30%), Health Sciences (29%) and ICT and Mathematics (25%); Arts and Humanities (6%) as well as Engineering (6%). The rest (4%) were classified under “others” (Bragge and Storgards 2007, p. 718). In fact, it is only in more recent years that game studies is beginning to build itself as a distinct field of enquiry with its own history, methodologies and “learned community” (Mayra 2008, p. 4), including associations, such as *DIGRA* and journals, such as *Games and Culture*.

Egenfeldt-Nielsen et al (2009) identify two important different approaches in relation to game studies: the formalist and situationist groups. The formalist group are interested in game analysis or ontological analysis. Game analysis focuses on one or more games and is interested in the structure and techniques used in games: textual analysis is a typical methodology. Landwehr et al’s paper, “*The words of Warcraft: relational text analysis of quests in an MMORPG*” is an example of this approach (Landwehr et al 2009). Ontological analysis focuses on the “philosophical foundations of games” (Egenfeldt-Nielsen et al 2008, p. 10), identifying common features of games in order to understand them more. Juul’s work on game definitions is an example of this approach (Juul 2003). The situationist group are interested in game players or game culture. Game play is the focus of the former: typical methodologies include observation or interviews and recent studies in this area have focussed on how players relate to their avatars, such as Martin (2005). Game culture is interested in the world around the games: typical methodologies include interviews and

analysis of media representations – this exploratory study of the preservation of digital games is an example of this type of analysis. These different types of analysis highlight that there are more issues which will need to be considered in relation to this study.

In this section, the nature of games, and game studies, has been considered. Games have been defined as “rule-based systems with a variable and quantifiable outcomes, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome and the consequences of the activity are negotiable” (Juul 2005, p.36). This introduces a number of elements which will need consideration in relation to their preservation. Furthermore, it has been shown that digital games come in different forms and different genres: understanding these differences also introduces certain challenges in relation to their preservation. Finally the discipline of game studies has been considered. This has introduced the variety of ways in which people study and understand games: further accentuating the complexity of digital game preservation. These complexities will be explored in more detail in the following sections. However, in order to understand digital games completely, it is necessary to look at their historical development, including the origins of the first games and the contexts of their development.

2.2 The historical development of digital games

In *Man, play and games* (1962), Caillois observes that “for a long time the study of games has been scarcely more than the history of games” (Caillois 1962, p. 57). Caillois’ observation is also relevant in relation to digital games. There are many comprehensive texts and websites dedicated to the historical development of digital games and there seems little need to add to these. However, as Kline states, “historical perspective is vital to critical understanding” (Kline et al 2003, p. 79): indeed, the historical development of digital games forms the basis for understanding the powerful position they have reached in contemporary culture. Many of the texts on the history of digital games are chronological accounts of developments; however, it is more useful to highlight the contexts of developments and their impacts. In this section, the origins of digital games will be analysed in relation to the various contexts of the first computer games; their relationship to earlier forms of entertainment such as pinball machines; their emergence into popular culture through the arcades and the technological development of consoles, home computing and online gaming. It will also include an introduction to the key digital games companies which have fought a highly competitive battle for the hearts and minds (and money) of the world’s gamers. This analysis of the historical development of digital games will show how they have contributed to the emergence of one of the largest commercial entertainment industries in the world.

People were playing games long before computer technology existed. Games are an intrinsic part of all cultures and Chatfield suggests that “games are as old as civilisation itself” (Chatfield 2010, p.1). Indeed, early games have been traced back to Ancient Egypt, with Egyptians playing the board game *Senet* in 3500 BC (Egenfeldt-Nielsen et al 2008, p. 248). One of the earliest known examples, now in the British Museum, was discovered by Leonard Woolley in the Royal Cemetery at Ur in Iraq. The game, known as the “game of twenty squares”, was a wooden board game, which “dates from about 3000 BC to the first millennium AD and is found widely from the eastern Mediterranean and Egypt to India” (British Museum). Through ancient texts, it is even known how the game was played:

“According to references in ancient documents, two players competed to race their pieces from one end of the board to another. Pieces were allowed on to the board at the beginning only with specific throws of the dice.” (British Museum)

Image of 'Game of Twenty Squares'

I. The 'Game of Twenty Squares' [online version] (Source: British Museum)

The existence of this game shows that games have a very long history and it tells us something about the lives of the people who played it. It is interesting that this artefact has survived. As we have the physical components of the game and the rules, we can play this game. When considering the preservation of digital games, the situation is much more complicated.

As Kent states, "new technologies do not simply spring out of thin air" (Kent 2001a, p. 2): the development of digital games was directly influenced by their cultural environment. In his work, *The Ultimate History of Videogames* (2001), Kent traces the rise of computer games back to the era of the pinball machine:

"If one event paved the way for today's computer and video game industry, it was David Gottlieb's *Baffleball*." (Kent 2001a, p. 2)

Baffleball, developed in 1931, was the first pinball-type machine, which was installed in public places, such as bars, malls and amusement arcades. The success of Gottlieb's invention sparked competition from other manufacturers. This rivalry forced quick developments and by 1933, there was the first 'electric' pinball machine. By 1940s, these 'novelty games' had expanded, drawing on contemporary culture and pastimes such as horse racing, hockey, baseball and shooting arcades: interestingly, all genres later exploited by digital games companies. By the 1960s, the arcade games had become more

sophisticated and were using lighting and images projected on to screens (Kent 2001a, p. 9-11). The culture of these games framed the development of the first digital games.

The first digital game is an elusive object, as Kirriemuir states, “the pinpointing of the first computer game is a contested issue with claims drawing on definition as well as chronology” (Rutter and Bryce 2006, p. 22).



II. SpaceWar! [at the Computer History Museum, California]

Spacewar!, developed by Steve Russell and his research team at MIT in 1962, is often referred to as the first computer game; although, in 1958, William Higinbotham – an engineer for the US Department of Nuclear Energy – had developed *Tennis for Two*. Higinbotham is undoubtedly first chronologically though questions are raised about whether *Tennis for Two* can be defined as an interactive game. Although it is useful to acknowledge these differences of opinion, the arguments are somewhat irrelevant in relation to this study. Kline suggests that “Russell himself says that if he hadn’t created it someone else would have” (Kline et al 2003, p. 88). The important facts about these two early games are how they were developed and their contexts. Both games were developed by research institutions in partnership with the military-industrial complex: these institutions were the few who could afford computer technology at this time. Looking specifically at their institutional context, Kline sees their development as “a part of the moment in computer circles” (Kline et al 2003, p. 88). He states that, in this period, “many programmers steeped in simulation and gaming theories, were rethinking the application of computational capacities for modelling” (Kline et al 2003, p. 88). In other words, digital games were very much part of the history of the development of computer technology. These games appeared at this time because the contexts were right and the games reflected this. The first digital games were framed by a political climate dominated by capitalism, consumerism and the Cold War and when space exploration and science fiction were very much part of the cultural environment. This is

reflected in the name of Russell's game, *SpaceWar!* and games which were to follow, such as *Asteroids* and *Space Invaders*. Kline develops this further, highlighting the influence of cultural activities – this was a period when puzzles, Lego and board games were becoming popular pastimes (Kline et al 2003, p. 88). These were the origins of the first digital games but at this time, no one had recognised their commercial potential.

The history of digital games is seen as separated into three 'entrepreneurial paths', as used by Kline et al (2003). These paths are the arcades; home consoles; and home computing. In recent years, a fourth path has emerged - online gaming. Arcade games were "the first and foremost mode of exhibition which brought videogames to the public" (Wolf 2001, p. 23). In 1970, Nolan Bushnell developed the first coin-operated arcade video game, *Computer Space* based on Russell's original game, *Spacewar!*. It was not entirely successful as "it was too complex and intimidating for early audiences" (Rabin 2005, p. 6); but by 1972, Bushnell had founded Atari and launched the highly successful arcade version of *Pong*, a reworking of Higinbotham's *Tennis for Two*:

"*Pong* became the first well-known video game and helped launch the entire video games industry." (Bakie in Rabin 2005, p. 8)



III. Prototype of 'Pong' [at the Computer History Museum, California]

Emerging from the arcade world, Atari was to become one of the biggest digital games companies in the early 1980s. In similar histories, two other great companies started out in

the arcade industry. In Japan, David Rosen had founded his company importing pinball machines from America. Merging with his rival company in 1965, Service Games Ltd (Sega) was formed and they released the first electronic shooting machine in 1966 (Kline et al 2003, p. 91). Seeing the potential and driven by a need to compete, another traditional Japanese company, Nintendo, was also moving into the electronic games market. New technologies were being embraced in the arcades but it was the development of home entertainment systems which would be the key to the future of digital games.

The Magnavox Odyssey was the first home games console. Launched in 1972, it was a “TV plug-in device that played simple games” (Kline et al 2003, p. 92). However, only around 200,000 Odysseys were sold (Egenfeldt-Nielsen et al 2008, p. 53).



IV. ‘Magnavox Odyssey’ [at the Computer History Museum, California]

Bringing arcade games into the home through people’s televisions was an important breakthrough in the history of digital games and was possible due to technological developments in computer processing. However, it was not until 1977 that a cartridge-based console was released that could be used to play more than one game – Atari’s Video Computing System (VCS). Using the arcades as a test bed for games and making profit from the sales of games, Bushnell “built a successful interaction between two of the main routes to the commodification of the digital game: the arcade coin-op and the home console” (Kline et al 2003, p. 95). This period through to the early eighties is often referred to as the “Golden Age” of digital games (Kline et al 2003, p. 107). At this time, designers were inventing game genres and innovative games were being produced: *Space Invaders*, *Pacman* and *Asteroids* to name a few. However by 1983, the home console was threatened.

Authors cite various reasons for the games market crash: “a poor economy, natural market cycles, and consumer perception that video games were just a fad” (Rabin 2005, p. 8) or “mediocre and shoddily put together” games (Kline et al 2003, p. 105) are some examples. A further convincing reason cited is the rise of the home computer.

Computers had been prohibitively expensive, available to only wealthy government agencies, research institutions and large corporations. But, by the late seventies, a new medium for gaming was becoming available, as companies were emerging which were producing computers for the home market. In 1976, Apple released the Apple I, followed by the Apple II in 1977. Commodore launched its PET in 1977, which was followed by the more successful Vic-20 in 1981. In the early eighties, Sinclair “launched a range of low-cost computers, including ZX80 (in kit form), ZX81 in 1981 and the Spectrum” (Rutter and Bryce 2006, p. 26). Other manufacturers began to produce similar machines; IBM introduced the IBM PC in 1981. Home computers were becoming increasingly accessible and had an advantage over consoles because they offered other facilities, such as word processing. However, their potential role as a gaming machine was certainly not overlooked by the manufacturers. The launch of the Commodore Vic-20 was supported by an advertisement which asked: “Why buy just a video game?” (Rabin 2005, p. 14) and Commodore “offered trade in deals on used game machines” (Rabin 2005, p. 8). It seemed that home computers had killed off the competition. However, the international revival of the games console was possible due to the strength of the Japanese company, Nintendo.

The 1980s are “regarded by most digital games historians as a period which was dominated by Nintendo” (Rutter and Bryce 2006, p. 26) and “by the end of the decade, Nintendo had assumed the crown as the most successful console manufacturer” (Egenfeldt-Nielsen et al 2008, p. 60). The company had moved from trading cards to arcade machines; they had held the Japanese distributor rights to Magnavox and then in 1984, they released their own home console in Japan, the Famicom. Rebranding the Famicom as the Nintendo Entertainment System [NES], Nintendo capitalised on the collapse of the American games market and weak competition. Their success can also be attributed to their marketing strategy; introduction of brand identification; and their brand protection.

The launch of the NES in America was accompanied by an extensive advertising campaign:

“In 1985, Nintendo spent \$30 million in advertising to convince retailers and consumers that their games were different.” (Kline et al 2003, p. 118)

These types of campaign were to become an important part of the success or failure of a particular console or game and it was successful in persuading Americans back to games consoles. After the videogame crash, many retailers were hesitant to stock the new console so the president of Nintendo America “promised to buy back and unsold items and set up his own elaborate displays in store” (Kent 2001b, p. 246). By 1988, “the NES was the best-selling toy in North America” (Kline et al 2003, p. 111). An important part of this marketing campaign was the launch of the Nintendo mascot, *Mario*. Since then, branding has become an important tactic for digital games companies - Sega introduced *Sonic*; PlayStation had *Lara Croft*. These characters ensure brand recognition, and as Kline states, “in the early 1990s *Mario* had greater name recognition amongst US children than Mickey Mouse” (Kline et al 2003, p. 125). They also highlight how digital games have influenced culture, with a wealth of spin-offs.

The final reason behind Nintendo’s success was that they were very quick to guarantee that they could protect their brand identity, ensuring a strong market position by controlling hardware and software production. This has meant having strict control over licensees and closely protecting their copyright and Intellectual Property Rights:

“No one got away with any unlicensed films starring diminutive Italian-American plumbers.” (Kline et al 2003, p. 115)

This became increasingly important as competitors entered the market and threatened Nintendo’s stronghold.

Sega entered the American market in 1989 and the nineties were marked by a period of “console wars” (Kline et al 2003, p. 128). Sega’s launch into the market was aggressive with a dynamic marketing strategy, targeted at older children than the ‘Nintendo generation’:

“Sega launched an ‘in yer face’ advertising campaign to take on Nintendo, smearing its rival as infantile and boring and building its own ‘cool’ image.” (Kline et al 2003, p. 130)

According to Kent, “young players were actually embarrassed to be seen playing games on a Super NES” and “when Sony ran a focus group, some kids refused to admit that they

owned one” (Kent 2001b, p. 47). The aggressive tactics were also evident in their games, with this period marking an increased intensity of in-game violence. This has been the source of much of the negative attention directed at gaming and the games industry but it compounded Sega’s success. In conjunction with big budget advertising, the cycle of technological development began with companies battling for consumer support through innovation. In similar way to the development of pinball machines, the ever-increasing competition between companies drove technological development. Consoles became more powerful and games more sophisticated:

“Sega followed the logic of the perpetual-innovation economy and took advantage of this opening by producing the 16-bit ‘Sega Genesis’, with microprocessors that were superior to the 8-bit NES, creating bigger animated characters, better backgrounds, faster play, and higher-quality sound.” (Kline et al 2003, p. 129)

The “console wars” continued throughout the 1990s and were intensified by the entry of a new player – Sony, with the release of the Playstation in 1995. Against this battleground, as home PCs became more widely accessible, PC gaming was continuing to grow in popularity. This would be the arena for the fourth ‘entrepreneurial path’ – online gaming.

Online gaming has become increasingly popular in the last ten years. According to research by comScore, over 50% of the total internet audience visited online gaming sites in 2009 (MINTEL 2009b). Online games have not ‘sprung out of thin air’ and the history of online gaming can be traced back to the era of *Spacewar!* In 1967, the first text-based game, *ADVENT* was created – a game with strong connections to the role-playing games (RPGs) which followed. In 1969, Ralph Blomme created a version of *Spacewar!* which was shared via the PLATO network. Early PC-based games “were part of the exciting innovation in computer networking” (Kline et al 2003, p. 94) and it is this culture which is changing the future of digital games. With influences from other cultural forms, such as the board game *Dungeons and Dragons* released in 1972, and interactive fiction, such as the series by Jackson and Livingstone, Massively Multiplayer Online Role-Playing Games (MMORPG) have become increasingly popular and games, such as *World of Warcraft*, are played by huge numbers of people around the world. In January 2008, Blizzard, developers of *World of Warcraft*, announced that it had a total of over 10 million subscribers worldwide (World of Warcraft news 2008).

Originally PC-based, as online gaming grew in popularity, console companies have also become interested in exploiting these opportunities. Sony and Microsoft could see the

commercial potential of online gaming and introduced networking facilities to their consoles to allow gamers to connect with each other via the Internet. The main advantage of online games for game companies is the subscription-based model:

“In the offline game world, whenever you finish a game and publish it, it sells over a few months and then it's off the shelves....with MMOs, it's a subscription-based business - as long as you're investing in your player base, you can sustain and grow your revenue over time, which allows you more resources to invest in your next game.” (Richard Garriott in Gambotto-Burke, *The Guardian*, Thursday March 15, 2007)

This obvious benefit for the games companies, and an increased potential audience with the growth of home computing and Broadband access, has ensured the future of online gaming. In May 2009, online gaming sites attracted nearly 20 million visitors (MINTEL, 2009b). For these reasons, it clear to see why “online games have widely been predicted as the future of mainstream, or mass public, digital game playing” (Rutter and Bryce 2003, p. 33).

The history of digital games can be traced back to research institutions, within the context of evolving computer technologies and the cultural influences of space exploration and science fiction. Their rise into a commercially successful entertainment industry and the emergence of key companies can be followed through three ‘entrepreneurial paths’ – the arcades, home consoles and home computing. Digital games are products of the ‘perpetual-innovation economy’; whereby technological development has been driven by competition and the desire of companies to control the market. This control has been strengthened through marketing, brand identification and strict licensing regulations. Marketing campaigns have been aggressive with big budgets and companies have invested huge sums of money in branding their products to ensure market recognition and customer loyalty. In order to protect this, games companies have been quick to defend their copyright and Intellectual Property Rights. The fourth ‘entrepreneurial’ path, rising from the computer culture of network sharing, is the growth of online gaming. Connecting people across the world, online gaming presents exciting experiences for users and huge potential profits for games companies. For these reasons, online gaming has continued to grow in strength and popularity. Another reason that online gaming may prove to be the future of digital games relates to their production cycles and their position as a ‘cultural product’. These are important aspects of the business and economics of the digital games industry, as examined in the following section.

2.3 The business and economics of the digital games industry

As most digital games are commercial products, any comprehensive study of digital games must acknowledge the role of the digital games industry. There are many useful sources on the digital games industry which mainly focus on the rise (and fall) of particular companies, or historical overviews of technological development; individual designers or specific games. However, in order to have an in-depth understanding, it is more useful to have an overview of how the industry works: this will be achieved by focussing on games within the global market. The digital games industry is growing considerably in size and economic significance and this will be examined through a comparative analysis of statistical evidence. This analysis will also necessitate consideration of game genres and a discussion of their relative popularity and pervasiveness. The second part of this section will investigate the business models and production cycles of digital games. It is useful to evaluate how digital games are developed in order to understand why the industry is consolidating into strong global corporations; extremely protective of its Intellectual Property Rights (IPR) and paranoid about piracy. This will be achieved through the contextualisation of games in two different ways: 1) business models will be analysed as systems of hardware and software; and 2) production cycles in relation to games as cultural products. By studying the business models and production cycles of digital games, it is possible to have a clearer understanding of how the industry operates.

The statistics on the digital games industry are not straightforward, as Kerr states:

“Constructing an accurate picture of the size of the global games industry in terms of software and hardware is a difficult task.” (Rutter and Bryce 2003, p. 37)

Statistics differ depending on the source; they analyse different factors and it is very difficult to get an international perspective. The most frequently cited statistics are taken from the American Entertainment Software Association (ESA) and the Association for UK Interactive Entertainment (UKIE), its European counterpart. In the US, according to statistics from ESA, an estimated nine games were sold every second of every day in 2007 and the digital games industry was worth \$22 billion in 2008 (ESA). In the UK, estimates suggest that the market was worth £2.7 billion in 2008, which is “up more than a third on 2003 due to the explosion of the sector into the mainstream” (MINTEL, 2009b). In the US, videogame sales were up 22.9% in 2008 (ESA) and up 23% in UK (BBC 2009b). MINTEL statistics (see **Figure 2**) show a growth of software sales in the UK from £1.15 billion in 2003 to £1.9 billion in 2008. In fact, in 2008, sales of games reached an “all time high” of 82.8 million units (BBC 2009b).

Figure 2: Software sales 2003-2009

This shows very clearly a year-on-year increase in the size and significance of the UK games market. In the United Kingdom, the digital games industry is certainly economically significant. In a report commissioned by the Department of Trade and Industry, the UK digital games industry is described as “a significant global player and a major export earner” (Spectrum 2002, p. 18). Despite falling to fourth in the world’s ranking of game producers in

Graph showing Software sales 2003-2009

(Source: MINTEL 2009b)

2010, the UK games industry remains extremely significant to the country’s economy:

“the games industry has a fraction of the profile that the film and television industries enjoy, despite contributing 30% of the UK’s media exports.” (UK Trade and Investment 2007)

The UK has the largest number of games developers and publishers in Europe and is considered to be a “world centre for excellence in games development - acclaimed for its originality, creativity, technical ingenuity and wit” (Source: UKIE, askaboutgames.com). However, is this sufficient evidence to justify the cultural significance of digital games?

The size and strength of the digital games industry is often given as a reason for the need for research in the area of games studies and evidence of the cultural significance of digital games. Aarseth comments, “we have a billion dollar industry with almost no basic research” (Aarseth 2001) and in his book, *Videogames* (2004), Newman specifically cites the size of the industry as one of his three reasons for studying digital games (Newman 2004, p. 3). As further proof of their cultural significance, digital games sales are often compared with statistics of cinema ticket sales. Using statistics from UKIE, Poole states that the British videogame market already grosses 40% more than total box-office receipts (Poole 2000, p. 20). This is cited as evidence that they are an equally important cultural phenomenon but this is a clumsy and misleading comparison. It does not take into account the comparative

prices of cinema tickets and games or, as Rutter and Bryce (2003, p. 5) observe, the additional revenue from film-associated media - i.e. DVD rental / merchandising. For example, \$500 million (the first-week sales) equates to around 3.6 million copies of *Grand Theft Auto IV*, which is small scale compared to the number of people who will go to see a blockbuster movie. Comparing statistics in this way and using the size of the industry as justification for research is misguided. However, other authors, such as Alvisi (2006); Kerr (2006) and Kline et al (2003), have studied the industry in different but useful ways, and “rather than justifying their research through headline figures” (Rutter and Bryce 2003, p. 6), they have explored the business and economics of the digital games industry with more academic rigour.

In the previous section on the history of digital games, the concept of the ‘perpetual innovation economy’ was introduced. Innovation is not a new concept, as Kundnani (1999) observes, “since the industrial revolution, growth under capitalism has depended on the ability of firms to bring new products to market and to find new techniques of production” (Kundnani 1999, p. 57). However, the “productivity and competitiveness” (Castells 2011, p. 41) of the information technology industry has driven the need for constant innovation. Suzuki describes the perpetual innovation economy as “a ceaseless stream of new commodities with ever-shortening product cycles and life spans” (Suzuki in Dyer-Witthford 2003, p. 128). Dyer-Witthford and Sharman describe how this relates to the digital games industry:

“Every 5 years or so the interacting forces of consumer demand, technological innovation and marketing prowess drive the introduction of an updated generation of consoles, galvanising a new sales cycle” (Dyer-Witthford and Sharman 2005, p. 189)

This level of expected technological innovation, whereby according to Moore’s law computer power doubles every year, has led to a form of “planned obsolescence” (Sterne 2007, p. 22), whereby consumers expect to have to change their games console every few years:

“Computers are designed to be trash – to make room for future profits, additional hardware sales and performance upgrades” (Sterne 2007, p. 19)

These factors are considerably significant in relation to the perceived value of digital games and in relation to the concept of digital games as part of cultural heritage.

In his chapter, “The economics of digital games”, Alvisi frames digital games as systems of hardware and software which is an appropriate method for analysing the business model of the games industry (Alvisi 2006, p. 67). It is a model that is often referred

to as a “razor and razor blade business” (Alvisi 2006; Kline et al 2003). In a similar way to how razor companies make profit from the sale of their brand of blades, consoles are generally sold at a loss with the majority of revenue coming from game sales. This means that there is a direct relationship between the components of the system - the hardware and the software:

“The relationship between hardware and software in all segments of the digital games industry can be defined as ‘complementary’.” (Kerr 2006, p. 58)

In this ‘complementary’ relationship, console companies make money from royalties on game sales. Therefore, if a games console sells well, it should profit from software sales. However, in order to attract customers, there must be enough successful titles available to convince consumers to opt for a specific platform. This interdependency is summarised by Alvisi:

“In the long run, the survival chances of a digital games system depend on the availability of quality titles, which, in turn, affects the installed customer base.” (Alvisi 2003, p. 64)

The development of games is therefore important to console companies. Yet, due to high production costs, it is common for the different components of the system to be produced by different parties. For this reason, the success or failure of the industry relies on relationships between console and game developers. These relationships have proved to be contentious. Game development is so important that Nintendo enforced strict licensing arrangements on developers:

“Nintendo imposed rigid conditions on licensees. It required all suppliers to submit games, packaging, artwork and commercials for its seal of approval, limited the number of game titles a licensee could develop in any one year, and prohibited licensees from making games for other hardware systems for two years.” (Kline et al 2003, p. 114)

These restrictions ensured that Nintendo had control over the games produced for its system and helped them to maximise their profit through royalties on games. However, these relationships raise important questions about the production cycles of the industry.

Kerr (2006) identifies digital games as a ‘cultural industry’. Frequent comparisons are made between digital games and other cultural industries, such as the film and music industry, and by outlining the three elements of what a cultural industry is, as: 1) high risk involved in cultural production; 2) high production costs but low reproduction costs; and 3) the semi-public nature of cultural products and services, Kerr presents a convincing argument that the games industry should be considered alongside these (Kerr 2006, p. 44-

47). Digital games are certainly high risk products, with only a few titles becoming ‘hits’. Hayes and Dinsey (1995) state, “the 80:20 rule applies to video games software” – this means that the top 20% of games represent 80% of sales and, despite huge production costs, estimates suggest that “only 3% of games make a profit” (Rutter and Bryce 2003, p.45). These facts mean that games publishers are hesitant to take more risks and will often rely on popular game genres. In this way, game genres become fairly limited: Herz likens them to “the proverbial fourteen novels that have been endlessly rewritten through history” (1997, p. 25). **Figure 3**, which shows the top 20 games in UK, highlights this trend.

Games companies have other tactics to try to minimise the risks of production. Firstly, they rely on specific games which have proven successful. In the same way that the film industry capitalises on a successful film such as the *Star Wars* franchise by releasing prequels and sequels; successful digital games, such as *Call of Duty* and *Resident Evil*, have also been exploited: this is also highlighted by the Top 20 selling games in 2009 (**Figure 3**).

Figure 3: UK Top 20 games in 2009

1. Call of Duty: Modern Warfare 2
2. FIFA 10
3. Wii Sports Resort
4. Wii Fit
5. Wii Fit Plus
6. Assassin's Creed II
7. Mario Kart Wii
8. Mario & Sonic at the Olympic Winter Games
9. Call Of Duty: World At War
10. FIFA 09
11. New Super Mario Bros. Wii
12. Wii Play
13. Professor Layton And The Curious Village
14. Forza Motorsport 3
15. Lego Batman: The Videogame
16. Call of Duty 4: Modern Warfare
17. Need For Speed: Shift
18. Resident Evil 5
19. Dr Kawashima's Brain Training
20. Mario & Sonic at the Olympic Games

(Source: UKIE 2009)

The second tactic is also highlighted by looking at the Top 20 games: licensing. Increasingly, companies are capitalising on content which has already proved successful; paying huge licence fees for the rights to reproduce subjects from popular culture, such as sports (*FIFA*); movies (*Batman*) and other existing trademarks/franchises, such as *Lego*, *Sonic* and *Mario*. These games have the benefit of having pre-existing fan-bases and they reduce the need for awareness marketing:

“Increased cross-media licensing helps to increase sales and broaden the market by proving themes, narratives and characters that non-gamers are already aware of.” (Kerr 2006, p. 70)

This can be seen as another way that games reflect culture but the motivation is potential profit. Critics, such as Kerr, express concern that it threatens creative innovation within the industry and that there will be “fewer opportunities for original game ideas to make it to the marketplace” (Kerr 2006, p. 72). Production costs and the risks involved are the driving forces behind these moves.

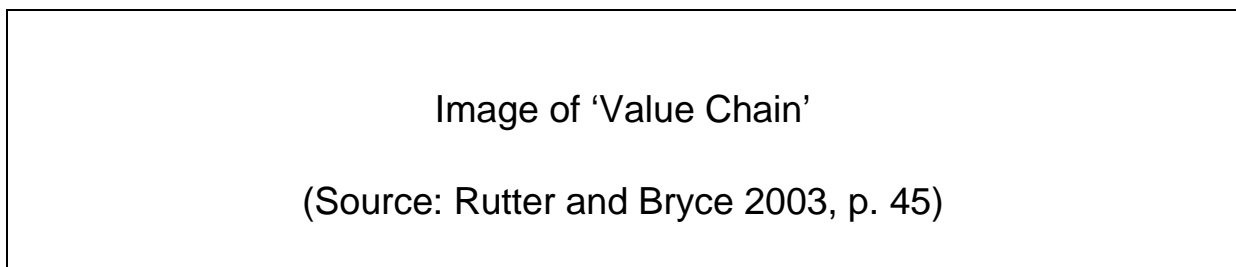
The cost of production of digital games is undoubtedly high. Kerr estimates that a game can cost “\$3-10 million to produce and the same again to market” (2006, p. 46); Bakie refers to “budgets skyrocketing upwards of \$10-20 million with no end in sight” (in Rabin 2005, p. 3). In fact, *Grand Theft Auto IV*, the most expensive game ever made, had a production budget of \$100 million (Bowditch 2008). This is incredible considering these games can expect to have an average ‘shelf-life of six months’. Once produced, reproduction costs are low, and companies will attempt to maximise sales by reproducing the same game across different platforms (Kerr 2006, p. 46). In order to understand the high costs related to the production of digital games, it is necessary to take a closer look at production cycles. Schoback observes, “delivering a game into a consumer’s hand is an increasingly complex, lengthy and costly process” (in Rabin 2005, p. 855). Kerr estimates that it takes on average 15 months to produce a PC game and 18 months to produce a console game (Rutter and Bryce 2003, p. 42) but it can be much longer. (The production of *GTA IV* took 3 ½ years, with over 1000 people working on the game.) The production cycle consists of five different phases: concept; pre-production; production; post-production and aftermarket (Sloper in Rabin 2005, p. 810) and development teams usually consist of 12-20 people (Kerr in Rutter and Bryce 2003, p. 42). These teams may be first-party developers; second-party developers or third-party developers: Kerr defines these as:

- 1) First-party developers: or internal teams which are fully integrated into a publishing company;
- 2) Second-party developers: who are contracted to create games from concept developed by a publisher;
- 3) Third-party developers: or independent development houses, who develop their own projects and try to sell them to a publisher.

(Kerr 2006, p. 64)

In what Kerr refers to as “vertical integration”, whereby publishing companies are buying out development companies, it is becoming increasingly common for games to be produced by first-party developers (Rutter and Bryce 2003, p. 51). According to Kerr (2003, p. 45), “the production cycle can also be seen as a value chain”. **Figure 4** shows how each stage of development affects the eventual price of a game and the relative value of each components input.

Figure 4: The value chain



It also shows clearly the complex relationships between those involved in game development. The involvement of these different groups of people in the production cycle of digital games raises complicated questions about Intellectual Property Rights (IPR), which are significant in relation to the preservation of digital games. Often as part of a Development Agreement, all IPR will be signed over to the publishing company; however, as Rubin remarks:

“The typical video game is protected by an umbrella of patents, copyrights, trademarks, and trade secrets that may well be owned by different parties.” (Rabin 2005, p. 912)

The production of digital games is clearly costly and despite low reproduction costs, it is also evidently time-consuming, lengthy and complex.

The third aspect of a cultural industry - the semi-public nature of cultural products and services, is also related to IPR issues. Kerr states “to define a cultural product as a

public good is to point to the fact that it is not destroyed during use and can be re-used by others who may not have to pay for it" (2006, p. 47). Cultural industries, such as cinema and the music industry, have for a long time battled against the problems related to this; from bootleg DVDs to illegal music downloads. The digital games industry faces similar threats and, according to Kline et al, digital piracy is "endemic to the industry" (2003, p. 210). It is estimated that the UK video game industry loses around £2 billion a year through piracy (MINTEL, 2008) and it is widespread; from the Asian counterfeit markets to the problem of new games being leaked via illegal online distribution networks. The threat of these pirate technologies is very real, as Kline et al acknowledge:

"The strength of corporations depends on...their ability to legally protect innovations from competitors and consumers by means of patents, copyrights, and trademarks." (2003, p. 67)

The industry's professional associations, UKIE and ESA have strong views that emulation, modding and sharing via peer-to-peer networks are threats to the interests of the industry and will investigate and prosecute software pirates on behalf on game companies (UKIE). In addition to piracy, the games industry is "not too enamoured of the pre-owned market" (MINTEL, 2009b). Second-hand sales generate no revenue for the game developers and one suggestion has been that "publishers place *"unique codes"* on all their console games, much like they do on the PC - once the key has been activated, it cannot be resold" (MINTEL, 2009b). The threat of game piracy and strong moves towards the protection of Intellectual Property has huge implications for preservation strategies, as will be discussed throughout this study.

This section has focussed on the business and economics of the digital games industry. It has highlighted that although statistics show that the industry is economically significant, this type of analysis is not enough evidence of the value of digital games: alternative methods for studying the industry are more useful. The industry's business models have been analysed by consideration of the complementary nature of hardware and software: this highlighted the importance of the relationship between console and game manufacturers. Framing games as cultural products has provided a useful tool for consideration of production cycles because digital games have many elements in common with other cultural industries. Production costs and associated risks are high: this has lead to the narrowing of game genres and the consolidation of the industry. High risks are intensified by the threats of digital piracy and games companies have been forced to protect their interests through legal challenges. This overview of the industry has lead to an

understanding of current trends in production; an insight into possible future directions and the necessary foundations for a comprehensive study of digital games.

2.4 The impact and influence of digital games

This research is interested in the cultural significance of digital games: it is therefore necessary to consider the impact and influence of these games on culture and society. Following on from the previous analyses of digital games in relation to their history and economic development, as well as their relationship to traditional games and studies of games, in this section, the impact and influence of digital games will be considered in relation to their connection with various different aspects of society and culture, including education, film and television, art and heritage. As part of this analysis, it will also be important to reflect upon the negative image of digital games in society; as well as the evidence that digital games have become one of the most popular leisure activities for children and adults.

Before considering the positive cultural influences of digital games, it is necessary to address their negative image. With shocking headlines, such as “The Sega sickener: outrage at video nasty that makes a game out of ‘real life’ women being mutilated” (Harding 1993, p. 9) and emotive articles such as, “Is your little angel a computer killer?” (Robson 1995, p. 20), there has been widespread anxiety about the effect of game play on children. Digital games are seen as an “anti-social activity” (Rutter and Bryce 2006, p. 166), containing “high levels of violence” (Rutter and Bryce 2006, p. 206) or as a distraction from more worthwhile pursuits:

“Video game detractors argue that playing games is at best recreational and at worst desensitizing and **degenerate** - no match for the educational and literacy value of reading a book.” (Neiburger 2007, p. 28)

A report into the computer games industry by Spectrum, on behalf of the Department of Trade Industry, confirms these views:

“The games industry in the UK suffers from a poor profile resulting in a lack of awareness and understanding....the industry is held responsible (particularly in certain sections of the popular press) for a range of social ills from increased violent crime to poor exam performance in teenage boys.” (Spectrum 2002, p. 20)

In extreme cases, playing digital games has been blamed as a direct cause of violent action: the influence of *Doom* on the Columbine shootings is perhaps the most infamous. But there have been a large number of other cases in which violent acts have been blamed on the perpetrators ‘obsession’ with particular games – the stabbing in Nottingham of Matthew Pyke

was attributed to an “online obsession which became a real life murder” (BBC 2009) and at the time, the headline in *The Telegraph*, was “War games fanatic Matthew Pyke killed by gamer from Germany” (The Telegraph 2008). Obsession and addiction are other criticisms of digital games. In 2005, a South Korean student died after playing an online game consistently for 50 hours (BBC 2005); and in 2007, a man died in China after playing for three consecutive days (Reuters 2007). In some countries, these and similar events have led to clinics being set up to help people with gaming addiction: another criticism of digital games.

The negative impact that gaming has on people’s lives has received a high profile in the media; yet, in Rutter and Bryce, the authors demonstrate that the “research on the proposed consequences of exposure to game violence is inconclusive and often contradictory” (Rutter and Bryce 2006, p. 217). In 2007, the government commissioned a review into “the risks to children from exposure to potentially harmful or inappropriate material on the internet and in video games” (Byron 2008). Although the review, published in 2008, does not criticise the industry directly, it is indicative of the negative profile of gaming in the UK. In the Spectrum report, cited above, the ‘popular press’ are blamed for negativity towards digital games but it is interesting to examine in more detail the sources and reasons for this negativity. These types of attack on media are not new. There is a common trend for new media to be criticised and viewed as potentially harmful: as Byron states, “new media are often met by public concern about their impact on society” (Byron 2008, p. 3). Early Jazz musicians for example, were accused of being “devils who were destroying ‘good’ music” (Seldes 1957, p. 83). These types of attack have been seen in relation to radio, cinema and television but does this fully explain the negative perceptions of digital games?

Salen and Zimmerman suggest that much of the criticism of digital games is due to cultural rhetoric and society’s attitudes to play. In *The Ambiguity of Play* (1997), Sutton-Smith outlines seven cultural rhetorics which introduce alternative ways of conceptualising perceptions towards games and play. He suggests that the way in which people view play affects the value they attribute to it, arguing that, “the rhetoric is making a statement about the value of the play form” (1997, p. 214). The seven cultural rhetorics are identified as: play as progress; play as frivolous; play as imaginary; play as power; play as identity; play as fate and play as the self (Sutton-Smith 1997, p. 9-11). Using these concepts, Salen and Zimmerman present the following scenario:

“A museum exhibit that included video games might spark a clash of rhetorics: perhaps the curator uses *play as the imaginary* to justify the creative value of video games, offending outraged adherents of *play as progress* that see no cultural value in games that merely entertain.” (Salen and Zimmerman 2003, p. 518)

Play as progress is a functional view of games, whereby play is seen as relevant only as part of a child’s development into adulthood. Digital games are linked to popular culture and are therefore framed by the rhetoric of *play as frivolous* (Egenfeldt-Nielsen et al 2008, p. 147). They have been criticised as they are seen as a negative influence on children’s development: spending time on computer games reduces the time doing more worthwhile activities, such as reading or doing sport. However, there is current research that suggests that digital games have an important role to play in children’s education.

There has been considerable research into the uses of digital games in schools and their potential educational benefits (Gee 2003; de Castell and Jenson 2005; Prensky 2006; de Freitas 2006). Garlarneau (2005) refers to games as “the learning resource du jour”. Supporters of the use of digital games in educational settings argue that children are familiar with the activities and technology of gaming and their familiarity with this environment encourages their development.

“One of the main theories of learning is that teaching and learning is based on social constructivism. Inherent and fundamental to social constructivism is the idea that we also must appreciate that the learner does not operate in a dry theoretical vacuum but within a complex and dynamic social framework. This social framework has very powerful formative influence in terms of learner attitudes to learning and engagement.” (LTS 2009)

In 2008, Learning and Teaching Scotland (LTS) conducted a study into the effects of playing Nintendo’s *Brain Training from Dr Kawashima* game on children’s competency in mathematics. The aim of the study, which involved 600 students from 32 schools, was to explore the benefits of using digital games in education. Derek Robertson, LTS’s National Adviser for Emerging Technologies and Learning, commented on the outcome of the study:

“This was a rigorous academic study which offers us clear evidence for the first time that targeted and informed use of the game can have real impact on pupils’ attainment.” (LTS 2008)

The success of this study has prompted wider interest in the use of gaming technology within the learning environment. This is also reflected in the development of serious games which “involve the use of electronic games technologies and methodologies for primary purposes other than entertainment” (Serious Games Institute). Research is being

undertaken to investigate how gaming environments can be used for training purposes; for example, in 2007, a four-year £2 million R&D program, partly funded by the UK Department of Trade and Industry (DTI), was launched. This project is “developing a series of game demonstrators and evaluation techniques to measure the effectiveness of game-based learning” (De Freitas and Jarvis 2007). These projects highlight the important influence that digital games are having on education and learning: an influence which is also felt in other areas of culture and society.

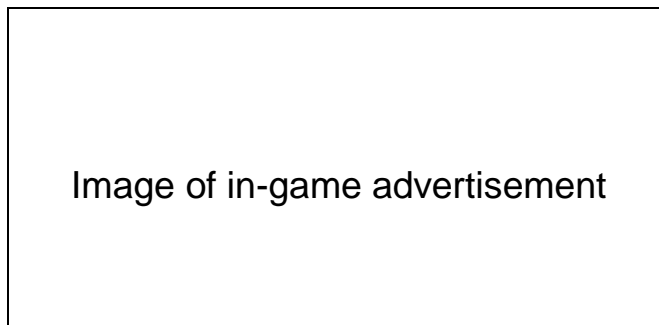
One of the main reasons that educationalists are interested in how digital games can be used in classrooms is because children like to play games: in fact, digital games have become one of the most popular leisure pursuits for children and adults alike. Although they are traditionally viewed as a pastime for the lone teenage male, Newman refers to this as the “continuing myth of the videogame audience” (Newman 2004, p.49) as the reality is slightly different. Statistics show that the average gamer is 35; 26% of gamers are over 50 and there are more adult female players than boys under 17 (ESA 2008). According to MINTEL’s Leisure Report, nearly one third of adults claim to play games regularly and over half claim to play regularly or occasionally: game playing is the 4th most popular leisure activity (MINTEL 2009). Three fifths of internet users own a games console: this statistic increases to four fifths for the under-35 population (MINTEL 2010). In 2008, there was a significant increase in software sales, particularly in the ‘family entertainment’ genre, a trend attributable to the successful launch of the Nintendo *Wii* and new forms of ‘brain-training’ games. These games represent a different form of gaming interaction and are appealing to different audiences: the advertising campaigns for the Nintendo *Wii* have focussed on the social play aspects of the *Wii* and moving away from the traditional image of gaming, they are highlighting how these games can bring friends and family together. Online gaming represents another form of social interaction. With the growth in access to broadband, this genre has become increasingly popular over the last 10 years, with companies releasing new games at the rate of 10 per month (Mintel, 2007). In January 2008, Blizzard, developers of the popular *World of Warcraft* massively multiplayer online role-playing game, announced that it had a total of over 10 million subscribers worldwide (World of Warcraft 2008). These factors demonstrate a change in the demographics of game players and an increased status for gaming in our society but beyond this, *do digital games have any deeper cultural significance?*

For Caillois, games reflect a society's cultural values: digital games theorists see games as a reflection *and* a transformation of society. Aarseth sees digital games as “the most fascinating cultural material to appear in a very long time” (Aarseth 2001) and Kücklich affirms that digital games are “cultural products with deep roots in the culture they stem from” (2006, p. 104). Games can be seen as representative of specific ideologies. A reflective cultural analysis of digital games highlights that they can be used as a mirror of the values and beliefs in contemporary society:

“...interpreting games as symbolic objects, as cultural texts that reflect their context, is one way of understanding games as culture.” (Salen and Zimmerman 2003, p. 510)

Early games were framed by a political climate dominated by the Cold War and when space exploration and science fiction were very much part of the cultural environment. This was reflected in the types of games created, such as the first interactive game, *Spacewars!*, and games that were to follow, such as *Asteroids* and *Space Invaders*. This highlights how games can be a reflection of society.

Further evidence of this lies in the development of in-game advertising. Product placement and static advertising are commonplace in film and sport. Increasingly, companies are now interested in using game-worlds to capture new audiences for their products. According to research by Nielsen Media, in 2006, \$75 million was spent on in-game advertising and they estimate that this figure will have increased to \$1 billion by 2010 (ESA 2008). Digital games are recognised as a significant way of delivering messages to a captive audience, whether these are about consumer products or political messages. In the 2008 presidential elections, Barack Obama used virtual billboards in the game, *Burnout Paradise* and other titles to promote his campaign (ESA; Simons 2008).



V. In-game advertisement for Obama Presidential Campaign (Source: Wired.com 2008)

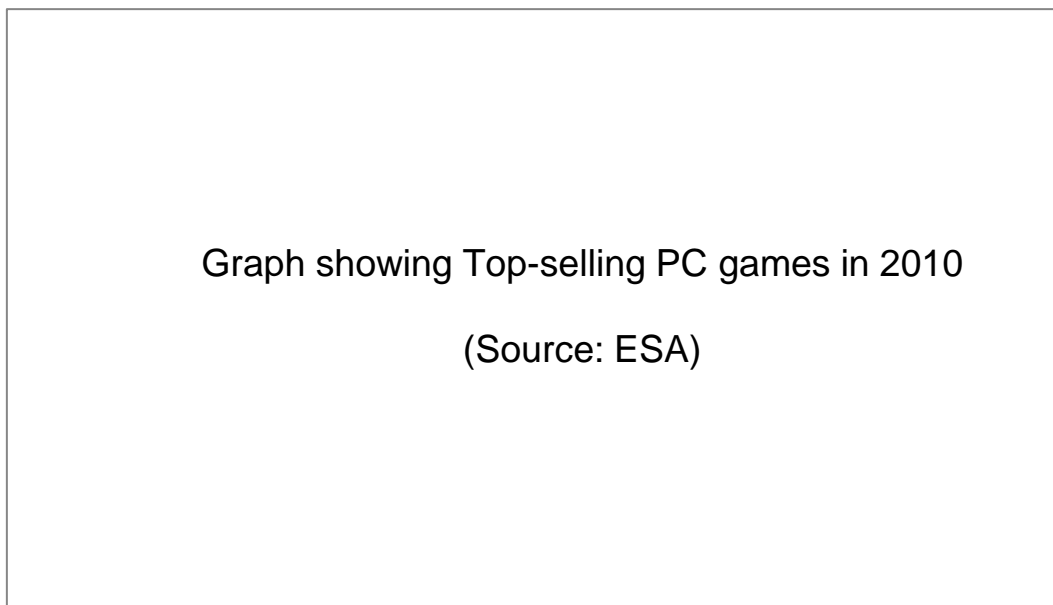
This was the first example of political campaigning through digital games but it demonstrates recognition of the prominence of games in people's lives.

Caillois also recognises the importance of the types of games played within a society, stating, "the destinies of cultures can be read in their games" (Caillois 1962, p.35):

"games necessarily reflect [society's] culture patterns and provide useful indications to the preferences, weaknesses and strength of a society at a particular stage of its evolution" (Caillois 1961, p. 83)

The current popularity of online gaming and handheld devices is an important indicator of today's cultural preferences and the technological strength of society. The prevalence of casual and mobile games is also a significant indication of the issues in society. In relation to genre, **Figures 5 and 6** show the most popular genres by the different formats. This is discussed in more detail in the next section.

Figure 5: Top selling PC games in 2010



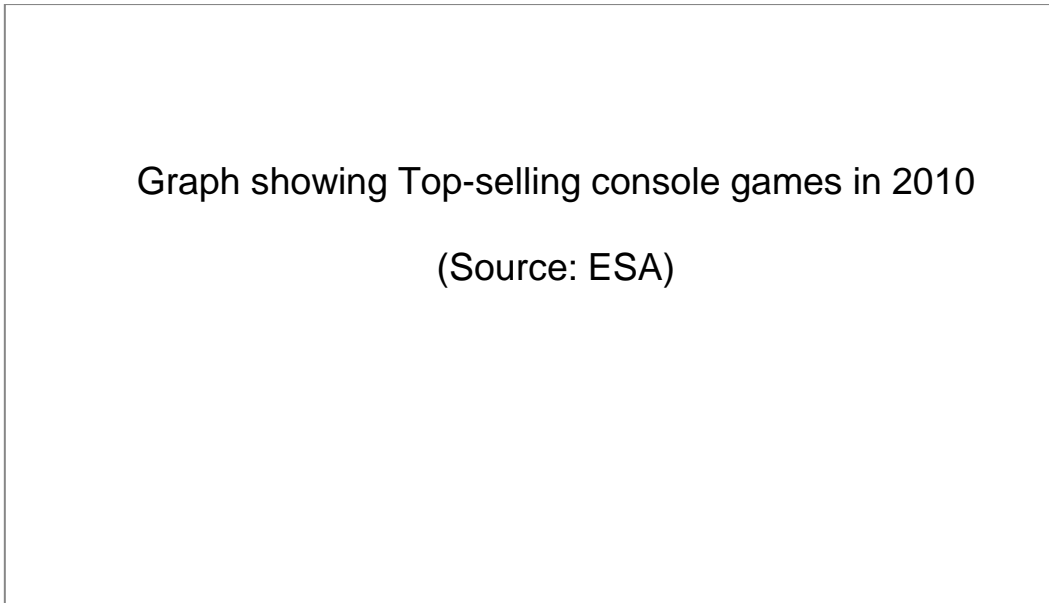
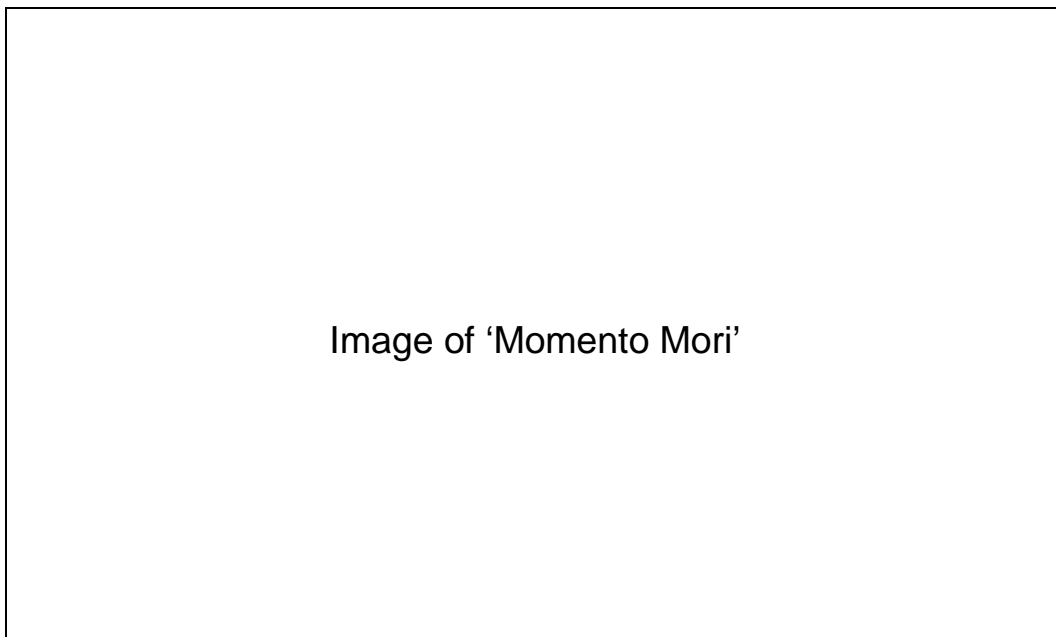


Figure 6: Top selling console games in 2010

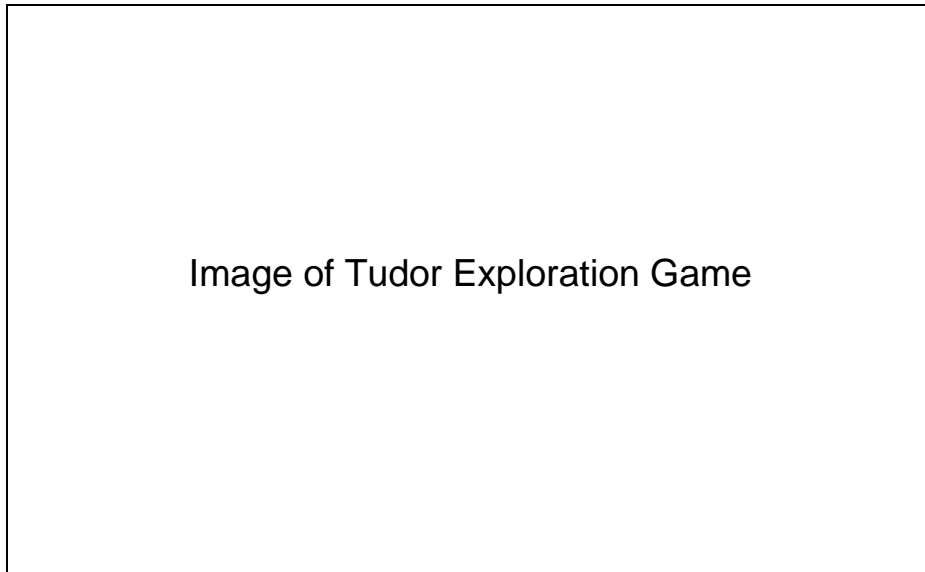
Kerr argues that “new technologies both shape and are shaped by social processes” (2006, p. 12) and digital games can be seen as part of a transformation of society. Certainly, they have had an important influence on the development of computing technology, especially in the area of graphics, network sharing, and social networking. In Hand and Moore (2006), digital games – especially Massively Multi-player Online Role-Playing Games (MMORPGs) and virtual worlds - are shown as shaping social processes in relation to the development of new concepts of community and identity (Hand and Moore 2006, p. 180). Indeed, the influence of digital games on wider culture can be seen in the popularity of movies such as *Tomb Raider*; cartoon spin-offs such as *Sonic The Hedgehog* and extensive ranges of merchandise. Advergaming, “the practice of using a video game to advertise a product” (ESA), is a growing phenomenon which demonstrates the transformative impact of games on society. Companies which have recognised the power and influence of gaming technology are increasingly using this practice to market their products. The car industry has become particularly interested in the potential of game advertising. Toyota released a promotional game for the Microsoft *Xbox 360* to advertise their new car, the *Yaris* (Parfitt 2007); and Mazda and Nissan have used games, such as *Gran Turismo 3*, to launch new products (ESA). Other industries, such as the food and beverage industries (Burger King produced a game in 2006) and the fashion industries are also using this new arena to promote new products (ESA). The reflective and transformative effects of games are an indicator of their value and significance in relation to culture. This is also apparent in their new relationship to art and heritage; and film and television.

In the heritage sector, activities, which include creating interactive gaming worlds set within virtual museum environments and games based on museum exhibits (such as the online version of the *Royal Game of Ur*, see **p.27**); are common on museum websites and are increasingly used within physical exhibitions. (There are excellent examples of these on the website, *Showme*, see **VI** and **VII**.) Digital games are being used as a way for museums to increase their relevance to a new generation of museum visitors, in particular children. Online games are seen as way to attract visitors into museums. This is because games are seen as something which this generation can relate to; they are part of their media diet and how they experience the world. Static displays are no longer relevant to a generation used to interactive technologies. Baker states:

“If museums are to represent the twentieth century in all its technological complexity, then they need to develop twentieth century techniques of communication that are educationally effective.” (Baker 1991, p. 427)



VI. Momento Mori, online game by Tate Modern (Source: <http://www.show.me.uk/games/games.html>)



VII. Tudor Exploration Game by National Maritime Museum (Source: <http://www.show.me.uk/games/games.html>)

Digital games are recognised as a ‘twentieth century communication’ that people relate to and the development of these games is a growing trend with examples in art galleries such as the Smithsonian, MoMA in New York and the Tate Galleries in London; as well as museums such as the National History Museum and Victoria and Albert Museum. Alex Flowers from the V&A discusses the use of games by museums on his website and recognises their benefits:

“the use of computer games by museums’ on their websites allows them to extend and transform the experience, learning potentials and image of the institution....[they] provide the opportunity for the museum space to become transformed into something magical, something more than rooms of cases and labels, something alive and a place to be discovered.” (Flowers 2010)

In this way, digital games are changing the way heritage institutions interact with their audience and the way in which culture and heritage is represented. These developments highlight the influential nature of digital games.

Another area in which digital games have had an impact is the arts sector. Firstly, games can arguably be recognised as an art form in their own right. There have been many debates on the artistic merit of digital games, “are games art?” (Kroll 2000; Jenkins 2005;

Gee 2006; Ochalla 2007). The answer, as Egenfeldt et al (2008) observe, depends on the accepted definition of art. According to Squire, these debates are now over:

“Panels at conferences are almost ready to give up on the "Are games art?" question and begin asking "What kinds of art are they?" or exploring how and why they work.” (Squire 2002)

Certainly, the hosting of the touring exhibition *Game On*, which has been one of the most significant digital game exhibitions, in London by the Barbican Art Gallery (British Broadcasting Corporation, 2001) is a dramatic statement about games relationship to the arts community. Alongside the significance of the artwork within games, there is also a trend for using gaming technology to produce original works. There are an increasing number of media artists who are using gaming platforms and virtual worlds as a tool for creating new forms of interactive art (Creative Games, 2008). Eastwood’s work (see below), which is a modification of the game, *Civilization*, is a commentary on modern capitalist society:

“The computer game simulates in an ironic way a late capitalist world order. Multinational corporations like Sony, Siemens and IBM fight for dominance of the planet.” (Fuchs on Creative Games 2008)

The increase of interest in games as an art form is because artists see the significance of the effect games are having on society. Games artist, Mathias Fuchs states:

“Games are lead media and playing artistically with games or about games is a comment on popular culture... Games play a pivotal role in the mechanisms transforming society. They will become the social and aesthetic frontier of our society” (Fuchs in Fuchs and Strouhal 2008)



Image of **Eastwood - Real Time Strategy Group**

VIII Eastwood - Real Time Strategy Group: Civilization IV 2004, Computergame (Source: Creative Games 2008)

Digital games also have an increasingly influential relationship with film and television. This has been recognised by BAFTA, with the creation of its videogame awards. With film, it has become increasingly common for Hollywood blockbuster movies to be accompanied by the release of a digital game. Famous examples include the James Bond movie/game, *Goldeneye*; the *Harry Potter* series and *Star Wars*. Characters from games have also crossed over to film: the role of *Lara Croft* from the successful PlayStation game, *Tomb Raider* was played by Angelina Jolie in the 2001 movie, *Lara Croft: Tomb Raider*. However, in addition to these symbiotic relationships, digital games are also affecting the narratives of films. In similar way to the 'series of interesting choices' made by game players, Egenfeldt-Nielsen et al discuss how the German film, *Run Lola run* (1998), has multiple endings based upon the decision made by the protagonist, Lola. The film attempts to move away from the passivity of traditional films towards "the idea of multiplicity" (Egenfeldt-Nielsen et al 2008, p. 144). This does not mean that games are the same as film: as King and Krzywinska observe, "videogames, even at their most 'cinematic,' are not a form of 'interactive cinema'" but it does demonstrate the powerful influence that digital games are having on other media.

The influence of digital game technology is also evident in the making of movies. The concept of using Computer-Generated Imagery (CGI) in film has been commonplace for many years: early examples include *Star Wars* and the *Star Trek* movies. These techniques have been in constant development since the early seventies, and in 2009, *Avatar* was the first film to create a fully photo-realistic 3D environment and 3D characters. It was also an example of film and game production teams working together:

"Both the game and film were developed in tandem; so much so that ideas from game developer *Ubisoft* were incorporated into the movie. The game, an action adventure shooter, faithfully replicates the movie environment; in stereoscopic 3D if your monitor is capable." (BBC 2009b)

This marks a significant phase in the relationship between the production of games and films. Another interesting development in filmmaking is 'machinima'. Machinima, defined as "animated filmmaking within a real-time virtual 3-D environment" (Marino 2004), was first exploited in the digital game *Quake* but it is now being used in film and television. It is referred to as the merging of filmmaking, animation and game technology:

"Machinima utilizes the real-time capture of performance, actions, and events (filmmaking), the creation of artistically created elements moved over time (animation), within an interactive virtual 3D environment (3D game development)." (Marino 2004)

It was used to great effect in the BBC series, *Time Commanders*, in which teams recreated famous battles, using a modified version of *Rome: Total War*, a strategy game produced by The Creative Assembly and published by Activision (IMDB).

There has always been an interesting relationship between digital games and television because console games are played via the television set. However, this relationship has been developing in recent years. The increase in popularity of gaming is now seen as a threat to television companies as they are aware that they are competing for the same audiences. For this reason, companies, such as the British Broadcasting Corporation, are exploring the use of interactivity to promote their programmes. Many recent dramas, such as *Doctor Who*, have been accompanied by a series of online games in the hope of appealing to a wider audience. Television cannot ignore the popularity of gaming but it can try to forge connections with it and, as ESA states, “acclaimed film and television directors are entering the world of video game design, recognising the synergy that exists between the media” (ESA). In addition, with the move to digital television, developments in Interactive Digital Television (iDTV) are creating a new medium for digital games:

“TV is a global, near-ubiquitous technology that has played a unique role in shaping modern society. It is now finding a new role as an arena for games and the communities that will play them.” (Nolan 2002, p. 70)

These developments, in which “passive TV has turned active” (Ihamaki and Tuomi 2009), represent a move towards new levels of interactivity: interactivity is a key theme in the following section of this review.

The influence and impact of digital games is widespread and substantial. Despite their negative image, they have grown significantly in popularity since their origins – becoming a mainstream entertainment form. They can be seen as being both a reflection and transformation of society. As a reflection of culture, the popularity of certain types of games is an important indicator of cultural preferences; and the development of new types of console is indicative of the technological progress of society. With the use of games to promote presidential campaigns and products and brands, they are also useful tools for the analysis of culture. At the same time, digital games are influencing other areas of culture and are having an impact on how these are experienced. They are a new art form, as well as changing how art is created. They are influencing how people interact with heritage; how children learn and people’s expectations of film and television. This impact is an important

aspect of understanding the cultural significance of digital games and for framing a discussion of their preservation.

2.5 The special characteristics of digital games

As was explored in previous sections, it is necessary to recognise that digital games are games. It has also been noted that digital games can be studied in various different ways. However, it is also important to identify their unique and special characteristics, as Mactavish states:

“Many scholars want to treat digital games with the same analytic seriousness as they treat works of literature, theatre, visual art, music and film, but they are also concerned to understand what is distinctive about digital games.” (Mactavish 2008)

In this section, these special characteristics are explored in relation to digital games as systems of hardware and software; Salen and Zimmerman’s theory of digital games as systems; debates on the immersive and interactive qualities of games and the participatory nature of digital games, including game modifications and user-generated content. Through these analyses, it becomes clear that digital games are complex objects, and activities; and these special characteristics will be extremely influential to any discussion of their preservation.

At its most basic level, digital games can be framed by their physical characteristics as objects of hardware and software. As discussed in section 2.1, there are various different forms of digital games: arcade games, console games, PC games, handheld games and online games. However, all of these can still be broken down into the constituent parts. In his analysis of the economics of digital games, Alvisi refers to digital games as a “typical systemic product”, describing them as “a combination of two, equally important, elements for the end product” (Alvisi in Rutter and Bryce 2006, p. 58). However, digital games are more than their physical components. Giddings and Kennedy use the term “feedback loop” to describe digital games as a system of exchange between hardware, software, screen and player (Giddings and Kennedy in Rutter and Bryce, p. 142). This introduces additional important factors of games as systems. For Salen and Zimmerman, the concept of games as systems is a “fundamental” part of their definition of a game:

“A game is a system in which players engage in an artificial conflict, defined by rules that result in a quantifiable outcome.” (Salen and Zimmerman 2003, p. 80)

Systems are defined as:

“A group of interacting, interrelated or interdependent elements forming a complex whole.” (Salen and Zimmerman 2003, p. 50)

As systems, digital games are more than physical artefacts. They consist of four elements: objects, attributes, relationships and environment (Salen and Zimmerman 2003, p. 86). This is an important reference for any study of digital games, and especially for consideration of their preservation. Using *Tetris* as an example, viewed as a “system of cultural context”, Salen and Zimmerman demonstrate how “culturally speaking the technological facet...is merely one element among many others” (2003, p. 86). They argue that in order to fully understand the cultural significance of a game, it is also necessary to look at other elements such as “game fan magazines..., the marketing, the manufacturing..., the demographics of players, and so on” (2003, p. 86). This demonstrates that digital game preservation will be more than preservation of physical objects. In order to appreciate them fully, the context of the game and their relationship to their environment is essential. This is just one of the special characteristics of digital games

‘New media’ or ‘digital media’ are terms used to refer to new forms of communication in the digital world, which encompass digital television, the Internet and digital games. In *Rules of Play* (2003), Salen and Zimmerman ask the pertinent question:

“What are the special qualities of digital media that can support gaming experiences not possible in other game forms?” (2003, p. 87)

They identify four traits of digital media: 1) immediate but narrow interactivity; 2) information manipulation and 3) networked communication 4) automated, complex systems— these first three relate to the concepts of immersion and interaction (Salen and Zimmerman 2003, p. 87-89). Similarly, in *Hamlet on the Holodeck* (1997), Murray identifies four specific properties of digital environments: 1) digital environments are procedural; 2) digital environments are participatory; 3) digital environments are spatial; and 4) digital environments are encyclopaedic (Murray 1997, p. 71-90). The first two elements relate to interactivity; the second two elements to immersion.

Interaction and immersion are key features of digital games. They are important because games are both objects and activities, or as Juul states:

“‘game’ can mean two things: a static object or artefact or event that players perform” (Juul 2005, p. 43).

Mactavish states:

“Players must effect change within the game for there to be a game. They require that players physically interact with the work, whether it is to guide characters through the game space, modify the game world, or even to create new game elements.” (Mactavish 2008)

Murray defines interaction as “the codified rendering of responsive behaviours” (Murray 1997, p. 74). Without the player interacting with *Pac-Man* or *Lara*, there is no game. Sid Meier describes games as “a series of interesting choices” (Meier in Juul, *Half-Real: A dictionary of video game theory*) and the choices that players make affect the path the game takes. It is the player who chooses whether *Lara* somersaults, rolls, climbs or dives according to the various obstacles within the game world. It is also the player who chooses how long their *Sims* spend reading, doing exercise or growing fruit and vegetables. This is one way in which players become “co-creators” of the gaming experience (Mactavish 2008). Interactivity has been “one of the key conceptual apparatuses through which new media forms have been theorised” (Garite 2003): it is an “entrenched notion in studies of digital media” (Bogost 2007, p. 182). Stallabrass, for example, suggests that the distinctiveness of computer games lies in interaction (Stallabrass in Garite 2003). However, the validity of the use of the term ‘interactivity’ has been widely debated within game studies and has been disregarded by some in preference for ‘ergodicity’ or ‘configurative performance’.

Ergodicity is a term coined by Aarseth in his work, *Cybertext – perspectives on ergodic literature* (1997). Ergodic literature is work in which “nontrivial effort is required to allow the reader to traverse the text” (Aarseth 1997), or work in which the ‘reader’ “needs to participate in the construction of its material structure” (Klevjer 2002, p. 192). Klevjer suggests that ergodicity provides “an invaluable tool for investigating games as a unique form of expression, a distinct category of cultural activity not reducible to other more established categories” (Klevjer 2002, p. 192). Ergodicity distinguishes digital games from activities, such as watching television or films or reading print books, as the ‘reader’ has to apply effort to unearth meaning within the ‘text’. In a similar way, playing a game is a configurative practice as opposed to an interpretative one (Eskelinen 2001; Klevjer 2002; Moulthrop 2004). ‘Configurative’ implies that there is action undertaken to arrange “parts or elements in a particular form or figure” (OED online): the emphasis is on the action or ‘effort’ of the ‘reader’. Virtual worlds for example, such as *World of Warcraft* and *Second Life*,

would be empty environments without the considerable efforts of players. These debates are extensions of the ludology versus narratology debates, discussed in section 2.1. Their relevance in this study are to emphasise the importance of the ability of players to shape and change games through their actions and the development of participatory culture. This is highlighted by the practices of modding and the growing trend of user-generated content.

The practice of ‘modding’ has introduced new forms of player interaction with games: Kucklich sees it as “extension of play” (Kucklich 2005); Mctavish describes it as “a form of player-creative gameplay” (Mctavish 2008) and Pearce suggests that modding has led to play becoming “an act of production” (Pearce 2006). Mctavish defines modding as:

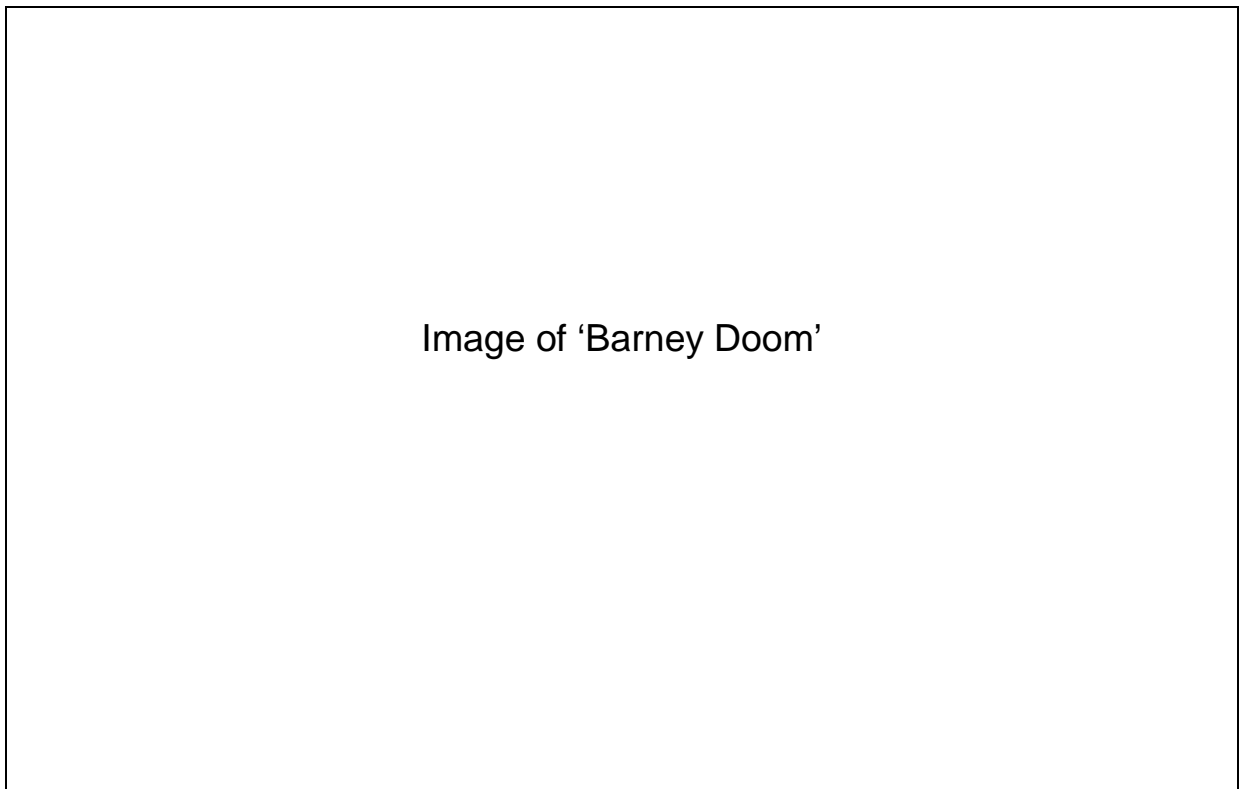
“the production of player-created derivative game content that can be imparted into a game or that can be played as an entirely new game on top of a game’s underlying code or engine” (Mctavish 2008)

There are various different forms of modding from the changing of game characters: the children’s character, *Barney* was famously added into the first-person shooter, *Doom*; the creation of new levels within an existing game; to ‘total conversion’, whereby “all the graphics and game play of the original title are reshaped by fans to create an entirely new experience” (Au 2002). Au (2002) uses the example of ‘*Day of Defeat*’, a mod of the game, *Half-Life* as an example of this type of modding. Modding has become an important part of gaming culture whereby game players are extending the ways in which they are “co-creators of the gaming experience” (Mctavish 2008).

There are differing opinions on the origins and history of the modding phenomenon. Au (2002) and Kucklich (2005) suggest that the first mod appeared in 1983 with changes made to the game, *Castle Wolfenstein*, whereby fans (Johnson and Nevins) “took the original Apple II classic and replaced all the actors and text with Smurfs and Smurf-related items” (Tom Hall in Au 2002), to create the mod, *Castle Smurfenstein*. However, Mctavish (2008) and Kushner (2002) trace the origins back to the text-based game, *Adventure*, developed by William Crowther in 1975. This game was modded “several times to run on different platforms or expanding its map and including extra puzzles” (Mctavish 2008). Despite these differences of opinion, modding is certainly now an established part of the wider culture of network sharing and players desire to “personalise their gaming experience” (Morshirnia and Walker 2007, p. 362). There are two particular games which have been exceptionally influential within the history of modding.

Doom was a first-person shooter PC game released by id Software in 1993 and, according to Mayra, “the popularity of ‘mods’ remains one of the central contributions of *Doom* to digital game cultures” (Mayra 2007). Mactavish also recognises *Doom* as one of the most influential games to “the growth and development of game modding” (Mactavish 2008). The game, created by Romero and Carmack, the team responsible for *Wolfenstein 3D*, was designed so that the game engine and its media assets were kept in separate WAD files: this allowed players to modify the graphics and sounds within the game, famously creating ‘*Barney Doom*’ and ‘*Star Trek Doom*’ (Morris 2003).

IX. *Barney Doom*



(Source: YouTube)

The popularity of these types of mods led to the release of the source code by id Software in 1997, via the *Doom Editor Utility*, and since then “the game has popped up on iPods, cell Phones and PDAs. Its influence is everywhere” (Keefer 2007). Kushner refers to the *Doom Editor Utility* as “a watershed in the evolution of the participatory culture of mod making”:

“Anyone with the interest could create a level of a complex game, the equivalent of writing a new chapter into a book, and then, via the Internet, publish that creation.” (Kushner 2007)

Id Software saw the potential benefits of generating player interest through courting with modding culture and their subsequent releases, *Doom II* (1994), *Quake* (1996), *Quake II* (1997) and *Quake III* (1999) were also released with level editors (Morris 2003). Players needed the original software in order to create mods which assured sales but they protected their assets through licensing agreements:

“[id Software] sought a model that gave them the best of both worlds: an active modding community and a licensing agreement that protected their intellectual property” (Mactavish 2008)

In 1998, the company Valve software released the PC game, *Half-Life*. Its official sequel, *Half-Life II*, was not released until 2004: this is indicative of the success of its modding impact:

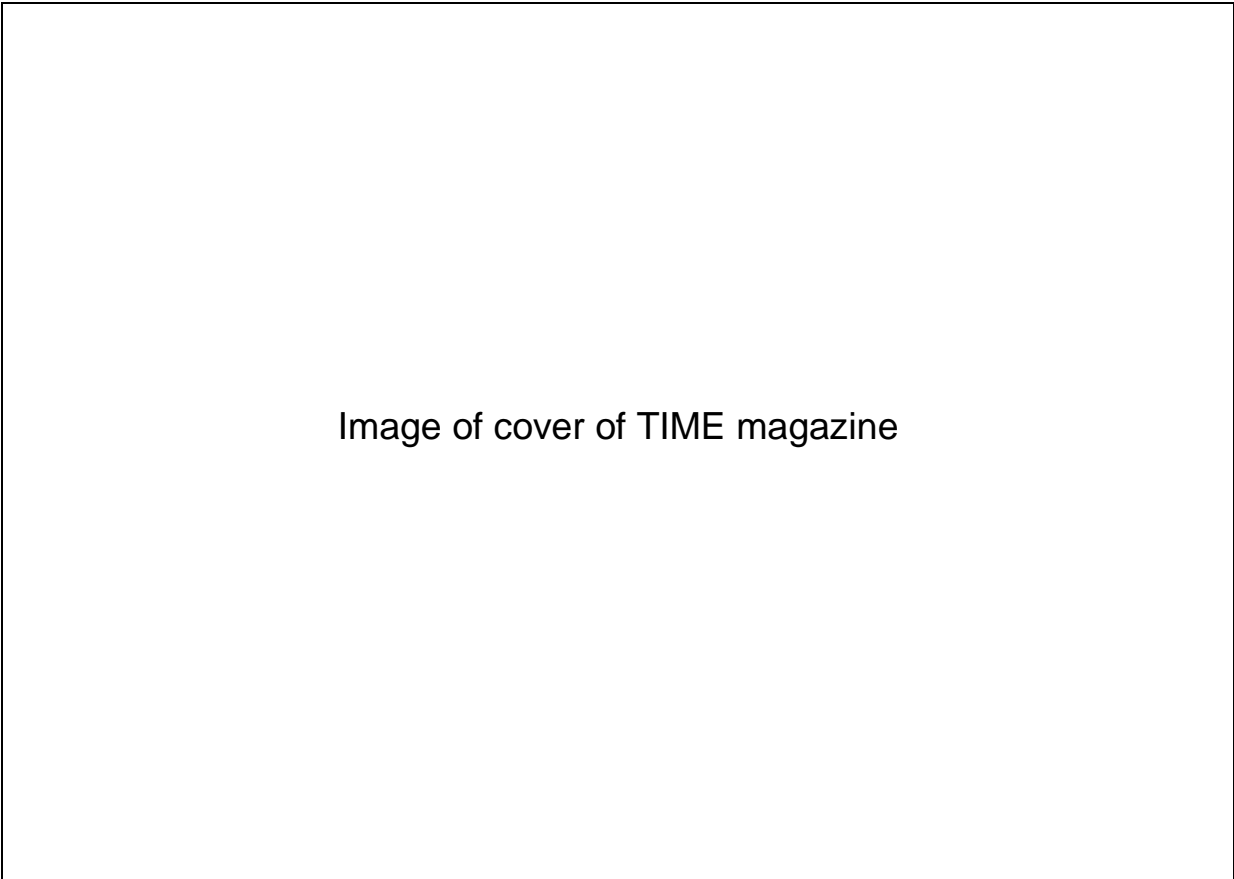
“Valve did not need to produce sequels because its modding community was essentially doing that for them.” (Mactavish 2008)

Half-Life, a first person shooter, was released with its own level editor, *Worldcraft*, created by Ben Morris (Au 2002). Part of the marketing strategy of this game was the promotion of the inclusion of the level editor and “the ability to play levels created by other players” (Mactavish 2008). It was an extremely successful strategy which has been employed by many other companies since. The game also led to the development of the “most successful mod” – *Counter-Strike* (Kucklich 2007). *Counter-Strike* was developed by Minh Le and Jess Cliffe in 1999 and became one of the most popular online games. It became so popular that “it was eventually purchased by Valve and released on CD in 2000, selling over a million copies even though it has always been free and legally available for download” (Morris 2003). This demonstrates how modding has become an “important source of innovation” for the digital games industry (Kucklich 2007).

For companies, the benefits of modding are twofold. In a perpetual innovation economy, modding can significantly prolong the life-span of a product because as Kushner states, “mods feed an endless appetite for variety and evolution in the gaming world” (Kushner 2007). In addition, they are a much needed source of innovation (Kucklich 2007; Morris 2003), which have “led to greater creativity and experimentation within the industry” (Morris 2003). Morshirnia and Walker even suggest that user-generated content will “revolutionise game design” (Morshirnia and Walker 2007, p. 362). For players, modding is an essential extension of their role as co-creators of the gaming experience. Kucklich refers

to modding as “an important part of gaming culture” (Kucklich 2007). Morris proposes that “modding is not just an additional hobby for gamers but an essential element of the current gaming scene” (Morris 2003). Modding is certainly part of the co-creative aspects of gaming culture: a trend which is also seen the appetite for games based on other forms of user-generated content.

There is a growing trend of user-generated content across different media: this was recognised by Time magazine in 2006 when they designated ‘You’ as Person of the Year (Time, 25th December 2006), due to the success of Web 2.0 technologies, such as *Facebook*, *YouTube* and *Wikipedia*, which have allowed “millions of minds that would otherwise have drowned in obscurity get backhauled into the global intellectual economy” (Grossman 2006).

The image area is a large, empty rectangular box with a thin black border. In the center of this box, the text "Image of cover of TIME magazine" is written in a plain, black, sans-serif font. The box is intended to contain a visual representation of the TIME magazine cover mentioned in the text above.

(Source: *TIME* magazine)

Player-generated content is another part of this phenomenon. As Morshirnia and Walker state, “often depicted as passive consumers of entertainment, more and more video game players demand the opportunity to modify and personalise their gaming experience”

(Morshirnia and Walker 2007, p. 362). They also suggest that those involved with modding and the generation of personalised game content “frequently incorporate their belief system, personal preferences or political opinions” (Morshirnia and Walker 2007, p. 363). This is evidenced by players’ identity with their avatars and loyalty to their game environments.

Games, like the PC game *The Sims* (Maxis/EA), which is a real-time simulation game designed by Will Wright, appeal to players’ desire to personalise their game world. Characters can be custom-created including their physical features; houses can be designed and the lives of ‘sims’ can be manipulated by the players. This game is one of the most heavily expanded computer game franchises but in addition to these official expansions, there has also been a wealth of material created by users, as Will Wright states:

“If you look at the amount of stuff fans have created for the game, it probably outnumbers the stuff we have created 9 to 1.” (Wright in Kushner 2002)

The game was later released for Playstation and Xbox with slight changes; for example, console versions contain an object limiter which limits the number of objects that players can have in their houses: this is to maximise the game’s performance on console hardware (Sims Wiki). There was also an online version, which was largely unsuccessful and was shut down in 2008. Poremba suggests that *The Sims* is “a canvas for creative expression” (Poremba 2003):

“The use of *The Sims* to model/recreate personal environments is one of the more popular ways players appropriate the mechanics of the game to create their own meaning.... Technical wizardry is less important than aesthetics: items that are attractive receive a great deal of social validation.” (Poremba 2003)

Its popularity and significance was underlined by the announcement of “a multi-million dollar product placement deal with fast food giant *McDonald’s*” in September 2002 (Dodson 2003).

One of the mainstream’s most successful games which has promoted the generation of new content is a PlayStation3 game, *LittleBigPlanet* (Media Molecule) released in 2008. The game is a puzzle-platform game in which players control ‘sackboys’ and can be played by up to four players simultaneously. The main feature which differentiates *LittleBigPlanet* from other puzzle-platform games is the ability to create new levels and customise content:

“Although *Little Big Planet* could be described as a platform game, its dedication to creativity in every area takes it far beyond the confines of the genre. Everything from

your character to the environment is geared towards user creation and adaptation, via stickers and costumes right up to a full-blown level creator.” (Gamespot UK)

Players can then share their levels and customisations via the PlayStation network. The game has been very successful and has generated a large community-following which is evident by “over three million community published levels on *LittleBigPlanet*, with a level added roughly every 30 seconds” (Sony).

Virtual worlds, like *Second Life* (Linden Labs), and Massively Multi-player Online Games, like *World of Warcraft* (Blizzard), also have huge communities around them. It is through these communities and the development of online identities that these games become immersive. Players control avatars which are their in-game personas: there has been much research into how players identify with these online representations (Turkle 1995; Gee 2003; Martin 2005; Waggoner 2009). According to Martin, “there is a general consensus among researchers that virtual worlds allow players the freedom and anonymity to create, explore, and play with multiple identities” (Martin 2005). These identities are something which are fiercely guarded and defended by their owners. In Pearce’s ethnographic study of the Diaspora of *Uru*, for example, she discusses how after the closure of the Myst-based MMOG *Uru*, in 2004, players migrated to other virtual worlds (Pearce 2006). One group “formed an ethnic community in *There*, an online virtual world”; another has “settled in *Second Life*” (Pearce 2006, p. 22). Although the game no longer exists, the players have taken it upon themselves to continue its legacy:

“Players have quite literally taken it over and made it their own, carrying it forward to a new level. Eighteen months, after the game was closed, we still see a vibrant, creative, and highly productive community, dispersed throughout other games and reinforced by their shared traumatic experience” (Pearce 2006, p.23)

This example raises questions in relation to preservation and the longevity and ephemeral nature of online games. It also highlights the impact and influence of fan culture.

According to Mactavish, it is “the participatory nature of digital games that distinguishes them from other textual and visual forms of culture” (Mactavish 2008). This participatory culture extends beyond the games themselves with “metaculture” (Egenfeldt-Nielsen et al 2008, p. 152), activities such as fan fiction, fan art/music and walkthroughs. Rambusch et al have studied fan fiction. They state, “no matter the amount of backstory in a game, or lack thereof, it is very likely that there is fan fiction written about it”: this is confirmed in their study of game fan fiction in relation to three very different games: *Tetris*,

StarCraft and *Dreamfall: the longest journey* (Rambusch et al 2009). Mitchell and Clarke have studied fan music: “the artists and hobbyists who produce music by hacking and reprogramming videogame hardware, or by sampling in-game sound effects and music for use in their own compositions” (Mitchell and Clarke 2009). Simons and Newman have written about walkthroughs, “texts outlining, in often painstaking detail, the potentialities of the game world” (Simons and Newman 2003). It is these types of activity that confirm the idea that “media fans are not merely consumers of media texts” (Simons and Newman 2003). In addition, they highlight that playing games is not necessarily an individual act: communities are an important part of game playing too (Hand and Moore 2006; Simons and Newman 2003). This is particularly evident in virtual worlds, as the *Uru* example discussed above demonstrates; and in work by Tosca on *EverQuest* “speech communities” (Tosca 2002).

Digital games are games but in order to study them, it is necessary to consider a variety of different elements, including the objects themselves but also their attributes, relationships and the environment. Whether the relationship between games and their players are referred to as interactive or ‘ergodic’ or as an act of ‘configurative performance’, it is essential to understand the importance of the participatory nature of digital games. This is because it is through these relationships that digital games become “a living, dynamic entity” (Simons and Newman 2003). Through the practices of modding, players become co-creators. Through the acts of generating content for games, players develop a sense of identity and through virtual worlds and the creation of fan fiction, fan art/music, players develop a sense of community. All of these special characteristics will be important when considering how to undertake the responsibility for the preservation of this aspect of digital culture.

2.6 Conclusions

As there is very little existing literature on the subject of digital game preservation, the overall aim of this literature review is to place the subject of the preservation of digital games within its wider context by identifying key concepts. In this chapter, the focus has been the literature on digital games. Digital games have been explored as part of the broader subject of games and in relation to the discipline of game studies. The history of digital games provides the basis for understanding the powerful position they have reached in contemporary culture. This is further framed by the analysis of the business and economics of the digital games industry. The final sections of this chapter underline the cultural impact and influence of digital games; and their special characteristics contextualise some of the issues and challenges of their preservation. Through these analyses, recurring themes have been identified.

- **The significance of games**

Debates on the significance of games can be traced back to the works of Huizinga and Caillois. In relation to digital games, the size and strength of the industry have often been used as a means to justify the study and significance of games but this is not enough. Brewster (in Avedon and Sutton-Smith 1971, p. 11) suggests that games are “undervalued as tools of analysis” but there is growing evidence of a large range of scholarly interest in digital games from a variety of disciplines. Furthermore, they are having an interesting affect on different aspects of society and culture.

- **Games and culture**

Huizinga describes play as a “cultural phenomenon” (1970, p. 58): Aarseth (2001) refers to digital games as “the most fascinating cultural material to appear in a long time”. If the accepted definition of culture is “what we think, what we do and what we produce” (Salen and Zimmerman 2003, p. 508), digital games can be framed as an important part of culture in many ways. Firstly, digital games are a reflection of society or “a living mirror” (Massonet in Lauwaert et al, 2007. p.91). As such they reflect the views and attitudes of contemporary society and, as Caillois suggests, the prevalence of different types of games can be used a tool for analysing a society. If this view is accepted, the development of digital games is an

important part of this analysis. Digital media is changing many aspects of our lives and digital games are no exception. Certainly, digital media is changing the way individuals interact with technology. The interactive and immersive qualities of digital games are important developments: Murray refers to changes in storytelling and the development of 'cyberdrama' (1997, p. 51); and Hand and Moore refer to the changes in social networking through online gaming and virtual worlds (in Rutter and Bryce 2006, p. 180). In this way, digital games could be viewed as having an important relationship to culture, as important as other cultural products such as film, music and television. However, the position of digital games as a product of a cultural industry has implications for how they are perceived.

- **Perceptions of digital games**

The language used to refer to games, and digital games in particular, offers an insight into how they are perceived: specific examples from this text demonstrate this. Games are seen as "meaningless distractions" (Caillois 1962, p. 58); "trivial and unimportant" (Avedon and Sutton-Smith 1971, p.438); and digital games are "at best recreational, and at worst desensitizing and **degenerate**" (Neiburger 2007, p. 28). The negative perception of digital games is emphasised by attitudes in the popular press, which link game-play with violence and suggest gaming has a negative influence on young people. Three potential reasons for these perceptions have been identified. Firstly, Byron (2008) suggests that due to a lack of understanding and fear of the unknown, all new media faces similar attacks. However, in the context of preservation, it is also useful to consider the factors of attitudes towards games and views of popular culture. Sutton-Smith's framework of cultural rhetorics offers an insight into how games are perceived and Salen and Zimmerman's (2003, p. 518) example of how these may affect preservation decisions is highly relevant. The final influence on perceptions of digital games is their position as an aspect of popular culture. As cultural products, digital games are often viewed as a disposable, entertainment product - an attitude the games industry seems to encourage. Framing digital games as a cultural product introduces an interesting debate of high v low culture: cultural products can be seen to represent the 'commodification of culture' and the production and business cycles of games are seen as reducing creativity. This is used as an argument to devalue their significance. How digital games are perceived will have a direct impact on whether they are considered an important part of cultural heritage and worthy of preservation. These decisions of value are made by those responsible for the process. This will be examined in the following section on 'cultural heritage and preservation'.

Chapter 3: Cultural heritage and preservation

Chapter 3: Cultural heritage and preservation

In this chapter, the focus is on theories and research pertaining to cultural heritage and preservation. This is divided into three main themes. In section 3.1, the question of why we preserve cultural heritage is reflected on in relation to definitions of culture and the work of cultural studies' theorists. This includes consideration of key concepts such as heritage, value and preservation. Section 3.2 focuses on the current research and debates within the field of digital preservation, including discussion of the technical, social and cultural issues. This is a useful introduction to the specific issues of digital game preservation. In the final section, the current status of digital game preservation is reviewed in relation to current institutional activities; online efforts and preservation projects.

3.1 Understanding key concepts: preserving cultural heritage

The question of why we preserve cultural heritage needs to be considered because it is useful to understand the wider context before considering the specific issues of the preservation of digital games. In order to achieve this, it is necessary to unpack the key concepts: these concepts are identified as culture, heritage and preservation. In this section, how these concepts relate to each other will be considered with reference to suggested definitions; perspectives from different disciplines and the theories of different academics. Firstly, it is essential to consider culture: culture is the central concept in this analysis but it is a complex term. This complexity will be analysed in relation to the definitions offered by social anthropologists, such as Bodley, Tylor, and Geertz; as well as an investigation of the perspectives of cultural studies theorists. The anthropological views of culture are a useful starting-point and it will be shown how their interpretation of culture is varied. Cultural studies is influenced by a wide-range of knowledge and draws upon a number of other disciplines besides anthropology. It is “multi-faceted” (Kline et al 2003, p. 42) and a field of diverse theories and therefore, a full investigation of these lies outside the scope of this analysis. However, the focus here will be on two specific groups - the Frankfurt and Birmingham Schools – and their views of popular culture. This is because their differing views demonstrate how the concept of culture is complicated by theories of what is viewed as valuable and significant. The distinct positions of these theorists highlight opposed perceptions of popular culture, and through this comparative study, further understanding of how value judgements relate to cultural heritage and its preservation can be reached. Cultural heritage will be defined in relation to cultural identity and its relevance to civilisation. These views demonstrate the value and significance of cultural heritage and introduce the reasons for preservation. Preservation will be considered in relation to the role of institutions and how cultural perceptions affect decisions of selection and retention. Through this analysis, an understanding of why we preserve cultural heritage will be reached; and pertinent questions about the interpretation of value, and the treatment of popular culture, will be raised.

It is generally accepted that culture is a difficult concept to define. Williams believes culture to be “one of the two or three most complicated words in the English language” (1987, p. 87) and Kluckhohn dedicates 27 pages of his work *Mirror for Man* to trying to define it (Geertz 1975, p. 4). Salen and Zimmerman refer to culture as “a diverse and flexible concept” (2003, p. 508) and it is this diversity which is at the root of the problem of a

definition. In his 'classic definition', the anthropologist Tylor defined culture as "socially patterned human thought and behaviour" (Salen and Zimmerman 2003, p. 508) and Geertz sees culture as 'webs of significance', related to a mixture of signs and symbolic meaning:

"the culture concept to which I adhere...denotes an historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms..." (Geertz 1975, p. 89).

Bodley presents an open-ended list of definitions, which ranges from a historical interpretation to an analysis of accepted symbols or behaviours within a society (Salen and Zimmerman 2003, p. 508). This range of definitions demonstrates how the meaning of culture is directly linked to the different research focus of the theorist: the definition is a function of those who use it.

Williams outlines three different meanings of the term, culture: 1) a general process of intellectual, spiritual and aesthetic development; 2) a particular way of life, whether of a period, a group, or humanity in general; 3) the works and practices of intellectual and especially artistic activity (1987, p. 90). These are summarised usefully by Salen and Zimmerman as: "what we think, what we do and what we produce" (2003, p. 508). Traditionally, anthropologists have studied culture in relation to what people do - culture is the way of life of a people or society. They have recorded and commented on their observations and these perspectives have a huge bearing on how these cultures have been interpreted. In this way, the inclusion, and exclusion, of certain elements of culture are important and is directly related to the views and accepted definitions of researchers. Brewster, for example, has noted that the activities of play and games are repeatedly lost aspects of culture because they are undervalued as tools of analysis (Avedon and Sutton-Smith 1971, p. 11). Different interpretations of culture, and what is considered significant, are also common themes in the work of cultural studies' theorists.

Cultural studies, and its theorists' views, are strongly affected by other disciplines and these influences are particularly evident in the differing views of popular culture. The Frankfurt School, which was inspired heavily by Marxist ideology, viewed culture as a power structure. Popular culture, in particular, was viewed as another way in which people were exploited by capitalism:

“..the masses are not primary, but secondary, they are an object of calculation; an appendage of the machinery. The customer is not king, as the cultural industry would have us believe, not its subject but its object.” (Adorno 2001, p. 99)

Focussing on the concept of the cultural industry, theorists such as Adorno were highly critical of the ‘commodification of culture’ or, in other words, how the influence of capitalism reduces the variety and quality of cultural products in the pursuit of profit. This is summarised by Crawford and Rutter:

“The Frankfurt School suggests that cultural products...become formulaic and standardised, as the industry continues to churn out carbon copies of what has gone before and has proven sales success...” (Rutter and Bryce 2006, p. 150)

Adorno often used the example of the film industry in his work but evidence of ‘formulaic, carbon copies’ can be seen in other cultural industries: in the music and television industries, where manufactured pop; boy-bands and ‘reality TV’ dominate and in the digital games industry, with limited genres dominating the top selling games (See **Figure 3, p. 47**). Although the Frankfurt School have been criticised for being elitist, this is a misunderstanding of their rebellion against the capitalist system. Adorno’s theories and his interpretation of the cultural industry were seen as *enforcing* the significance of the differences between ‘high’ culture (culture élitaire) as opposed to the “emptiness of mass culture” (Kline et al 2003, p. 42) or ‘low culture’ (culture populaire). This differentiation, which emerged in the late nineteenth century, continues to be commonplace in contemporary society, as these comments in *The Guardian* (1992) reflect:

“The on-going debate on culture in the media has hardly risen above the old stereotypes. Still mired in the reductive categories of "high" versus "low," Keats versus Bob Dylan...” (Jencks, 1992)

However, Adorno’s views were not a result of cultural snobbery but related to the Frankfurt School’s main thesis that capitalism’s negative influence on popular culture is a barrier to innovation and creativity. Yet, even where the reasoning behind the Frankfurt School’s negative interpretation of popular culture is understood, these views are still rightly challenged by other cultural studies theorists.

Although the Marxist influence is still present, the Birmingham School and its theorists, such as Stuart Hall and Raymond Williams, were highly influenced by the literary theory of semiotics – the theory of signs and symbolic meaning, and authors such as Roland Barthes. Their main thesis is that popular culture is significant because it reflects society’s values and is embedded with potential meaning, as Kline states:

“Commercial media products...were recognised as socially meaningful and academically legitimate topics of study.” (Kline et al 2003, p. 42)

Culture is still viewed as a power structure but the emphasis of the influence of the producer over the consumer has changed. Culture is seen as a reflection of a “dominant cultural order”, or the values of the ruling class, and it is acknowledged that there are “preferred readings” of cultural meaning, influenced by political and ideological values (Hall 1980). However, in his paper, ‘*Encoding/decoding*’, referred to as “the most important legacy of the Birmingham School” (Rutter and Bryce 2003, p. 153), Stuart Hall focuses on how people create their own meanings and it is in this opposition to the ‘preferred readings’, that theorists recognise a potential for subversion and resistance to the dominant values. In this way, the fluidity of cultural meaning is emphasised and it is this fluidity that adds to the difficulties of defining and describing culture. Cultural objects cannot be viewed in isolation from other elements of society. However, it is because of this potential interaction between an audience and cultural objects that they become potentially significant for understanding society. The differing interpretations of culture discussed here are important because they underlie contemporary perceptions. The theories about the value and significance of cultural objects, and popular culture in particular, relate directly to issues of preservation as will be demonstrated through an analysis of cultural heritage.

The term ‘heritage’ relates to the concept of inheritance in terms of what history leaves behind for future generations. Cultural heritage relates to the cultural legacy of past generations. The *Oxford English Dictionary* definition of the term ‘cultural heritage’ is that which is “characterized by or pertaining to the preservation or exploitation of local and national features of...cultural...interest” (OED online). This definition is too broad and lacks clarity. It is more useful to consider Koboldt’s definition because it separates ‘features’ into tangible (art, architecture or games) and intangible assets (language and customs), with an emphasis on artifacts, or ‘what we produce’:

“a collection of tangible objects related to the cultural development of a society that are inherited from past generations and are valued by contemporaries not only for their aesthetic values or for their usefulness, but also as an expression of the cultural development of a society” (Koboldt 1997, p. 4)

Cultural heritage has a contemporary value, as well as being significant to the development of society. This conclusion is echoed by other authors. Indeed, there is a broad consensus about the value of cultural heritage. Firstly, cultural heritage is recognised as an important part of society’s identity: as Lowenthal acknowledges, “the relics of the past

are necessary to identity” (1985, p. 389). He also proposes a direct link between the impulse to preserve and nationalism, a link suggested in the *Oxford English Dictionary* definition, with cultural artefacts considered “a focus of group consciousness” (Lowenthal 1985, p. 393). Certainly, because of cultural heritage’s connection with cultural identity, it is usually considered to be a national policy area, with national institutions responsible for its protection. This however raises issues when considering cultural products, such as digital games, which are produced by an increasingly globalised industry.

In a similar conclusion to Lowenthal, UNESCO state that cultural heritage “embodies the symbolic values of cultural identities”, but they also suggest that it “constitutes a fundamental reference for structuring society” (UNESCO). The view of cultural heritage as ‘a reference for structuring society’ relates to others’ views on its’ significance. Deegan and Tanner assert that civilization’s foundations are based upon “our ability to pass information and knowledge, whether technical or cultural, from one generation to another” (2006, p. 3). In the report, *Preserving Digital Information*, it is suggested that “the ability of a culture to survive into the future depends on the richness and acuity of its members’ sense of history” (Task Force on Archiving of Digital Information 1996, p. 1). These two views – cultural heritage as central to identity, often national identity, and as the foundations of civilization - represent the key reasons that protecting cultural heritage is considered to be so important. However, it is clear from the debates about culture that what is constituted as ‘cultural’ heritage, and therefore considered worthy of preservation, is subjective.

Cultural heritage is seen as an essential way for future generations to learn about what we think, what we do and what we produce. Preservation is a key component in how this information is shared: this is emphasised by the *Oxford English Dictionary’s* inclusion of the term in its definition. Preservation is defined by Deegan and Tanner as:

“the continuous process of creating and maintaining the best environment possible for the storage and/or use of an artefact to prevent damage or degradation and to enable it to live as long a lifetime as possible.” (Deegan and Tanner 2006, p. 3)

These processes are necessary because, as Deegan and Tanner observe “culture is at constant risk” (2006, p. 4). This is echoed in the report, *Preserving Digital Information*, which states that “cultural memory is...far from secure” (Task Force on Archiving of Digital Information 1996, p.1). Other authors also highlight the transient nature of cultural heritage and why this means that preservation becomes important. During states:

“...because the past is thought of as other and vanishing, efforts to preserve it become more and more strenuous.” (During 2005, p. 54)

This is reiterated by Lowenthal, who suggests:

“We value our heritage most when it seems at risk; threats of loss spur owners to stewardship.” (Lowenthal 1998, p. 24)

Without positive action, and the ‘continuous processes’ of preservation, important information and resources are damaged, destroyed or lost. There is a useful example of why this positive action is necessary from the history of television. Many early television and radio programmes were lost because there were no preservation policies in place. [Similar circumstances saw the loss of many early Hollywood films.] Since 1981, the Independent Broadcasting Authority has made preservation a compulsory clause in its contracts with companies (Bredin 1987). This change in policy reflects a wider acceptance of television as an important part of media history and a valuable aspect of popular culture. But it also highlights the complexity of preservation decisions. These decisions are seen as the responsibility of national preservation organisations and institutions, such as museums and libraries; but they are aided through national policy initiatives and legislation, such as the *Legal Deposit Libraries Act* (2003).

Legal deposit is a “statutory obligation which requires that any organisation, commercial or public, and any individual producing any type of documentation in multiple copies, be obliged to deposit one or more copies with a recognised national institution” (Lariviere 2000, p.3). Legal depositories in the UK are: the British Library, the National Libraries of Scotland and Wales, the Bodleian Library, Oxford University, Cambridge University Library and Trinity College Library, Dublin. The law is applied with variation in different countries and, according to UNESCO:

“A deposit law can include virtually anything a country wishes to collect and preserve. But in general, legal deposit is usually assumed to be associated with library materials and the depository assumed to be a library. As a matter of principle, legal deposit should not be concerned with archives and museum material.” (Lariviere 2000, p.39)

In the UK, the emphasis is on print material, and although there have been movements towards the incorporation of digital publications into the legal framework of legal deposit, audio-visual material and software have remained excluded from these initiatives. One of the main purposes of national policy and legislation, such as the *Legal Deposit Libraries Act* of 2003, is to ensure the protection of national heritage. It also overcomes the problem of

having to make selection decisions about which material should be preserved. Without these all-inclusive policies, the responsibility for these decisions rests with individual institutions.

UNESCO suggest that resources with value and significance should be protected and preserved (de Lusenet and Wintermans 2007, p. 50). Yet, the task is not simple, as Lowenthal observes:

“All this salvaging however requires money, time, and effort; against the benefits of preservation must be set its costs.” (Lowenthal 1985, p. 399)

The commitment necessary to ensure the longevity of preserved material is restrictive. Not everything can be preserved, and therefore, institutions rely upon strategic selection and retention policies. These policies are based on value judgements about what materials are considered culturally significant. However, it becomes difficult because, as Lowenthal (1985, p. 387) remarks, “what warrants preservation expands with what is thought historically significant”. The example of the lost television and radio programmes, referred to above, highlights how easily when the wrong decisions are made, material is lost forever. Making value judgements about what should be preserved will affect how culture is perceived by future generations. It is therefore significant to consider, “whose values are taken into account?” (Deegan and Tanner 2006, p. 15). Certainly, selection policies are based on the opinions of those involved in the process of preservation and their decisions will be directly influenced by how they perceive culture; the role of cultural heritage and the value they attach to specific elements within it.

During suggests that value can be broken down into three aspects: 1) value; 2) quality and 3) taste (During 2005, p. 203). Each of these aspects can be seen as related to different groups. Value is defined as “the abstract worth of a cultural object...in relation to other objects” (During 2005, p. 203). This ‘worth’ is determined by institutions. It is difficult to measure as culture has no economic value, except in relation to the heritage industry. The heritage industry plays an important role in how culture is preserved and During suggests that “cultural memories have become increasingly bureaucratized and commercialised” (2005, p. 57). This is echoed by Lowenthal in his work, *The Heritage Crusade* (1998). Institutions responsible for the preservation of cultural heritage either have to rely on government support and justify their policies, or rely on public interest and enthusiasm, in relation the purchase of heritage or visitor fees: ‘value’ is therefore directly influenced by

these factors. Quality is described as “the worth of a cultural object as judged from within the institutions from which it is produced” (During 2005, p. 203). It is associated with winners of prizes such as the Turner Prize or films with Oscar-nominations – recognition from the organisations from which the objects originate. Certainly, internal industry attitudes and decisions are important. Popular culture has a difficult relationship with quality because of its disposable nature: for example, game companies are keen for consumers to move on to the next release and abandon the old; quality is viewed as transient. Taste is “an individual’s personal and cultural preferences” (During 2005, p. 204). Online game preservation is an example of how individuals’ own interests can lead to preservation decisions. But, in relation to heritage, these tastes relate to the individuals who make decisions within memory institutions. By breaking down value into these three components, it is easy to see how preservation decisions can be influenced by a variety of factors.

In this section, the question of why we preserve cultural heritage has been analysed in relation to its component parts - culture, heritage and preservation. Culture has been shown to be a difficult concept to define but at its most basic level, Salen and Zimmerman suggest that it can be summarised as “what we think, what we do and what we produce” (2003, p. 508). However, this does not reflect the complexity of different interpretations that have been outlined here. These are influenced by individuals’ value judgements and are specifically evident in relation to differing views of popular culture. Popular culture’s value is attacked by the Frankfurt School but embraced by the Birmingham School theorists and this debate introduces the problematic differentiation between ‘high’ and ‘low’ culture. These complicated arguments influence cultural heritage and preservation. Cultural heritage has been shown to be an important reflection of cultural identity and a significant means of sharing knowledge with future generations, which is achieved through preservation strategies. These strategies are based on decisions, influenced by the different values of individuals involved in the process. Value has been shown to be directly related to the perceptions of culture of the different parties involved in the preservation process. These stakeholders are: the preservation organisations (museums and libraries); the institutions which produce cultural objects (digital game companies) and individuals’ tastes (general public or members of a specific group, such as academics). Thus, in summary, cultural heritage is preserved because it is a means of ensuring the past can be understood in the future; it offers the foundations for the development of civilisation and offers an understanding of cultural identities. However, the decisions which are made about preservation affect how well these aims are achieved and views of culture are highly

influential in these decision processes. These decisions have been further complicated by the challenges of the digital age.

3.2 Digital preservation: theories and current debates

The 'digital age' has presented new dilemmas for the institutions and organisations responsible for the preservation of cultural heritage. In this section, these dilemmas will be considered in relation to the technical processes; and the social, cultural and economic issues of digital preservation. It will be shown that institutions are conscious of the need to respond to the complex issues involved in the process of preserving digital heritage; but how the differences between digital and traditional materials are causing many problems. Yet, despite the technical differences and the complexity of the issues involved, it is possible to see that many of the concepts involved are similar to those in the non-digital environment. This analysis will therefore involve forming an understanding of the purposes of digital preservation and if and how it differs from traditional processes. This will include discussion of the special characteristics of digital material; an analysis of the key methods for their preservation; and consideration of the core concepts of institutional responsibilities; collaboration; funding and costs, as well as selection decisions. Through this analysis, a comprehensive understanding of the current debates in the digital preservation literature will be reached, which will enable the specific issues of digital game preservation to be situated within their wider context.

Much of the literature on digital preservation suggests that it is presenting difficulties for those involved in the preservation of cultural heritage. Deegan and Tanner refer to it as a "complex issue" (2006, p. xiii), which is echoed by Owen's reference to the preservation of digital heritage as "a complex process" (2007, p. 45). However, despite these complexities, there is a consensus that these issues need to be addressed in order to ensure the long-term survival of potentially significant elements of cultural heritage. Deegan and Tanner state that "culture is at constant risk" and argue that "the digital domain...may exacerbate this risk" (2006, p. 4). Abid refers to the preservation of digital materials as "a question that has become increasingly pressing" (2007, p. 7) and Lavoie and Dempsey speak of the loss of digital heritage as "a sense of imminent crisis" (2004). These authors' statements demonstrate that the preservation of digital heritage is understood to be important and the volume of literature on this subject highlights that it is an issue that is currently being given much attention. However, it is necessary to consider this literature in more detail in order to be able to understand the risks and challenges. To be able to do this, it is first necessary to differentiate between the different streams of digital preservation.

Digital preservation “is about ensuring full access and continued usability of data and digital information” (Deegan and Tanner 2006, p. 5). There are currently two different strands of digital preservation activity and these can be seen to be concerned with two distinctive types of material. On one hand, there are many projects being undertaken to digitise materials within collections. This involves making digital surrogates of valuable materials, such as *The Domesday Book*; the *Gutenberg Bible* and early editions of Shakespeare’s plays. Deegan and Tanner refer to this as “preservation through digitisation (which allows for greater physical security of physical analogue originals)” (2006, p. 5). There have been a variety of mass digitisation projects: these have been mainly undertaken by academic and research libraries, such as the University of Bristol’s digitisation of their theatre collections (JISC Digital Media); and organisations, such as the Arts and Humanities Data Service (AHDS). The second strand of digital preservation is related to the preservation of ‘born-digital material’, or “data which exists only in digital form” (Abid 2007, p. 9). In this section, the focus will be the preservation of ‘born-digital’ materials and the issues related to this.

In relation to digital preservation, there is also another important distinction to be made; this is summarised by Owen:

“Digital heritage materials are not just traditional heritage materials in digital form.” (Owen 2007, p.46)

There are a number of materials from academic journals to annual reports which were traditionally produced in analogue form but are now only available in digital form. These ‘digital equivalents’ fit more easily into the remits of existing institutions and are therefore less at threat. However, with the development of computer technology and the Internet, there are also a large number of materials which did not previously exist. These materials have a more difficult relationship with the preservation strategies of the traditional institutions. Owen refers to this as the ‘heterogeneous’ characteristic of digital materials and states:

“Modern society is characterised by a multitude of digital forms that far exceeds what is preserved in the majority of our heritage institutions, even when they make the shift to digital materials.” (Owen 2007, p. 47)

In other words, the novelty of some of these digital forms, which includes material such as ‘blogs, social networking sites as well as digital games, exacerbates the risk of loss because, as Owen observes, current institutional preservation policies are not designed to include them. This is just one issue which underlies the complexity of digital preservation.

The special characteristics of digital materials are usefully outlined by Owen and are summarised here with particular reference to what this means in relation to their preservation. Firstly, digital materials can be described as 'dynamic'. They do not have the same physicality, or ensured life-span, of traditional materials. In addition, "they are often not static objects that can be stored 'as-is' but...change over time" (Owen 2007, p. 48). Online games and virtual worlds such as *Second Life* are excellent examples of this. Their dynamic nature emphasises the risk of loss and thus, a need for "pre-emptive action" because "a digital object that has become corrupted or obsolete is often impossible (or prohibitively expensive) to restore" (Lavoie and Dempsey 2004) or, as Abid states, "if you do not save something, you effectively erase it" (2007, p. 10).

Secondly, digital materials are products of a globalised world. Traditionally, preservation has been the responsibility of national institutions but, as Owen observes:

"any digital object may contain components from any number of locations worldwide. The question of an object's 'nationality' often makes no sense." (Owen 2007, p. 47)

Digital games are a good example of 'global provenance'. They are often developed in one country; produced in another; published by a multi-national corporation, and marketed and sold around the world. In this way, the origins of these products become blurred and it becomes more difficult to identify the rights holders and to consider who is responsible for their preservation.

Finally, digital materials have a complex structure and, unlike traditional materials, are designed to be interactive. As Lavoie and Dempsey observe, they can "subsume multiple formats, being at once text, images, animations, sound and video" (2004). This is clearly demonstrated in the example of digital games. Digital games are also a good example of the interactive nature of digital objects and how the interaction between the user/player and the object is an intrinsic part of its significance. Capturing these experiences is therefore an important component of their preservation, as Owen explains:

"Heritage preservation, therefore, implies not just storage and maintenance of digital artefacts, but the capturing of dynamic processes and patterns of use." (Owen 2007, p. 48)

The complexity of the structure of digital objects and their interactive component raises complicated issues about the methods necessary to preserve their integrity and authenticity, which will be discussed in more detail below in relation to significant properties. Firstly, it is

important to recognise that all of these characteristics are connected to the fact that digital materials are physically different. Non-digital objects are tangible: digital objects are more ethereal. These differences will affect the preservation decisions which need to be made.

The most obvious difference between digital and non-digital materials is their form. In order to preserve any material certain specialised methods are needed: with digital objects, the methods needed are different because this material is 'machine-dependent':

"In contrast to traditional non-electronic objects such as books or photographs which immediately *are* the content, a digital object always needs an environment to render, or *perform*, it." (Becker et al 2009, p. 134)

Digital objects are defined as "a discrete unit of information in digital form which is comprised of three different levels: bitstream, file, representation" (PREMIS). The bitstream is the binary inscriptions which are stored on a physical medium, such as a floppy disk or game cartridge. The file is the way in which the bitstream is converted into something meaningful: it is therefore necessary to know the file format in order to translate this. The representation is the information that "denotes the set of files needed for a complete and reasonable rendition of an Intellectual Entity" (Paradigm 2008); or, in other words, the information which describes the digital object. It is these various components that cause difficulties in relation to preservation strategies.

Technical issues present one of the major challenges for the institutions and organisations which have responsibility for preserving digital heritage. In 1998, Hedstrom observed:

"New technologies for mass storage of digital information abound, yet the technologies and methods for long-term preservation of the vast growing store of digital information lag far behind." (Hedstrom 1998, p. 192)

Despite extensive work and numerous projects, there are still issues around the long-term preservation of digital material. This is particularly evident in relation to non-text based material, or digital objects. To date, a combination of three main approaches is being taken to ensure the preservation of digital objects: technological preservation; migration and emulation.

Technological preservation, or the 'computer museum' approach, involves preserving and maintaining both hardware and software. In this way, the integrity of the material - and the experience - is maintained:

"It could be argued that maintaining the original technology is the most effective and obvious means of preserving the look and feel of a digital environment, and there is certainly merit in keeping samples of old computer systems as a resource for researchers in the future." (Paradigm 2008)

This is the approach taken by many museums, including the Computer History Museum in California, where original versions of machines such as the PDP-1, Magnavox Odyssey and Deep Blue (the chess computer which beat Kasparov in 1997) are displayed and maintained. Maintaining old versions of computing hardware which can run the original software is in many ways an appealing option, especially in relation to the preservation of digital games. For researchers in the history of technology, for example, access to the original machines is an important resource. However, this is not seen as "a viable long-term solution" (DPC 2001). Rosenzweig refers to technological preservation as a "backward-looking solution" (Rosenzweig 2010, p. 14). From an organisational perspective, physical collections require time, space and money to maintain and have limited accessibility: therefore, they are "usually dismissed out of hand as too expensive and not demonstrably feasible" (Hedstrom 1998, p.199). From a technical perspective, if the original hardware or software fail, it may be impossible to replace:

"If you have files created on an Apple II, then why not keep one in case you need it? Well, sooner or later, a disk drive breaks or a chip fails, and unless you have a computer junkyard handy and a talent for computer repair, you are out of luck." (Rosenzweig 2010, p. 14)

It is for this reason that "most librarians and archivists have accepted the basic wisdom that digital preservation depends upon copying, not on the survival of the physical media" (Hedstrom 1998, p. 193).

Migration is one form of 'copying', which involves transferring data from one file encoding format to another and is often carried out in conjunction with refreshment, which involves copying material from one physical medium to another (see **Figure 7**). It has been the most widely used preservation approach (Paradigm 2008; Becker et al 2009; Yeo 2010). However, migration can be time-consuming and expensive because it involves ongoing processes to stay ahead of technological obsolescence. In order to keep up with technological innovation, migration "may be required after as little as five years" (JISC 2010). These processes, as Rosenzweig states, are "equivalent to photocopying all the books in the

library every five years” (Rosenzweig 2010, p. 14). For these reasons, projects, such as CEDARS (Curl Exemplar in Digital Archives) and CAMiLEON, have recommended a migration on demand approach (Jones 2002; Wheatley 2001); which maintains the original object and uses a migration tool run on a contemporary computing system. This means that it is only the migration tool that needs to be constantly updated. However, both of these approaches can potentially threaten the integrity of the original data as “each migration incurs certain risks and preserves only a certain fraction of the characteristics of a digital object” (Becker et al 2009, p.135). Hedstrom discusses these risks in more detail:

“Migration strategies that involve reformatting of digital materials to a simple standard format usually eliminate the structure of documents and relationships imbedded in databases. Computation capabilities, graphic display, indexing, and other features often are lost, thus limiting future analytical potential.” (Hedstrom 1998, p. 195)

Yeo argues that for this reason “migration is flawed” and should be considered as simply “an access strategy” (Yeo 2010, p. 109). However, these problems are seen by some as an inevitable part of migration:

“Some degree of 'acceptable loss' may be an inevitable result of migration; digital curators must strike a balance between achieving a perfect reversible migration and maintaining an accessible version of the digital object which is as close to the original as possible in all essential respects, but which may have undergone some subtle changes during migration.” (Paradigm 2008)

Lawrence et al’s study of the risks related to migration concludes that the risks involved are ‘measurable’ (Lawrence et al 2000). They suggest that “the amount of risk will vary, sometimes significantly, given the context of the migration project” and that the greatest challenge is “the interpretation of the risk i.e. to determine whether a risk is acceptable” (Lawrence et al 2000, p. 12). Whether these losses are acceptable will be dependent upon the particular characteristics or ‘significant properties’ of the original which are considered important and these decisions will need to be made by those responsible for the preservation of the material.

Emulation is “the heart of software preservation” (DiGA) and involves the development of “programmes that translate code and instructions from one computing environment so it can be properly executed in another” (Cornell University 2007) (see **Figure 7**). Emulators are used to recreate the actions of the original hardware in an accessible form, or as Lorie describes:

“Emulation consists of developing a software emulator for a year 2000 machine for a future computer, say in 2050. That emulated machine will then be able to run the

2000 programs on the actual data, without requiring any change to the program or data.” (Lorie 2002, p.6)

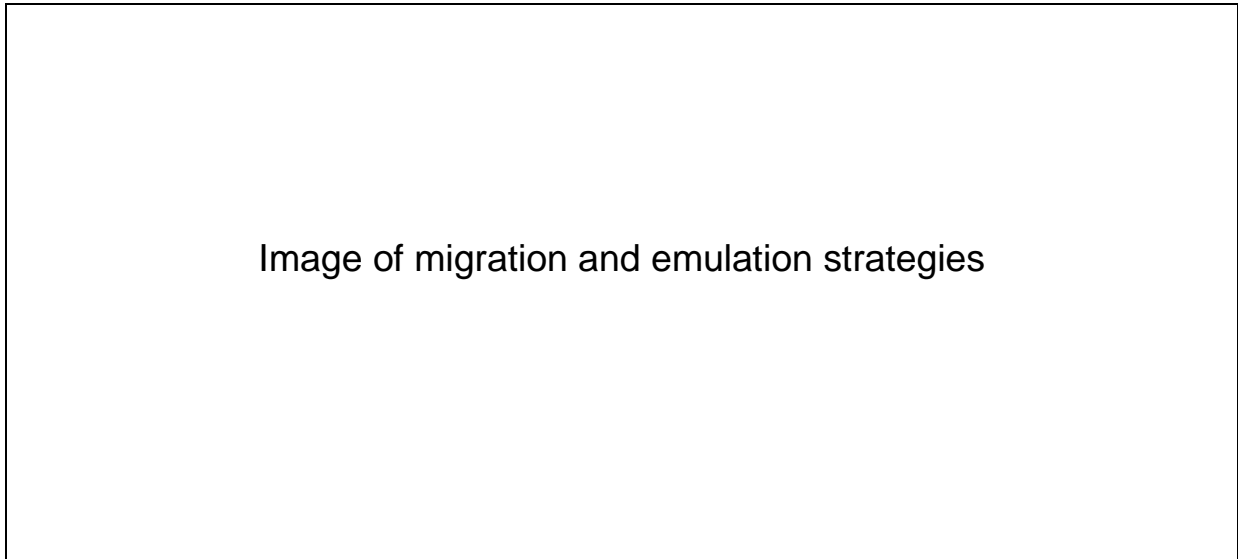


Figure 7: Migration and emulation strategies (Source: KEEP 2009)

One of the suggested advantages of emulation is that it “enables us to recreate the full functionality and exact look and feel of a digital object's performance” (Paradigm 2008) but, *to what extent is this true?* As stated on the JISC website, this approach is often used for computer games (JISC 2010) but converting a console game to a PC-emulator implies a change in how the game is experienced, as the host platform is different to the original. *Is this important?* According to Rosenzweig, critics of emulation suggest it is only “a theoretical solution” (Rosenzweig 2010, p. 14) as it has not been widely tested as a preservation solution (Paradigm 2008). Furthermore, emulators themselves become obsolete (Paradigm 2008; Von Suchodoletz and Van der Hoeven 2009): as technology develops, the original emulator will become redundant and need to be updated. However, projects, such as the ‘*Preservation and Long-term Access through Networked Services*’ (PLANETS) project and ‘*Keeping Emulation Environments Portable*’ (KEEP) project, as well as work on the Universal Virtual Computer by Lorie and the Koninklijke Bibliotheek in the Netherlands, are providing essential testing on the usefulness and effectiveness of this approach for long-term digital preservation.

All of these different approaches have been shown to have their advantages and disadvantages and Van Wijngaarden and Oltmans observe that the choice of strategy for

preservation will depend upon “the goal of the preservation, and the type of digital object in question”:

“What functionality and what type of information do we want to offer future generations? What is it exactly that we want to render in the future?” (Van Wijngaarden and Oltmans, 2004)

These questions relate to the issue of significant properties. The concept of ‘significant properties’ originated from the ‘*CURL exemplars in Digital Archives*’ (CEDARS) project, which was aiming “to address strategic, methodological and practical issues, and provide guidance for libraries in best practice, for digital preservation” (CEDARS). This was subsequently developed further through ‘*Investigating Significant Properties of Electronic Content*’ (InSPECT), a JISC-funded project between King’s College, London and the National Archives. ‘Significant properties’, sometimes referred to as ‘characteristics’ or ‘essence’, are defined as “those aspects of the digital object which must be preserved over time in order for the digital object to remain accessible and meaningful” (InSPECT). It is widely accepted that they are critically “important to establish best practice approaches to digital preservation” (JISC 2008). This is because:

“Unless such properties can be defined in a rigorous and measurable manner, cultural memory institutions have no objective framework for identifying, implementing, and validating appropriate preservation strategies, nor for asserting the continued authenticity of their digital collections.” (Wilson 2007, p.7)

The purpose of defining the significant properties of a digital object is to ensure its authenticity and integrity (InSPECT) and the development of ‘an objective framework’ was the focus of the InSPECT project. The significant properties of digital objects have thus been categorised into five areas: content, context, appearance, behaviour and structure (Paradigm 2008). Content is the general of description of the object. Context is the description of the environment of its creation. Appearance includes information about aspects such as colours and layouts. Behaviour is how the object interacts with other objects or users. Structure is the relationship between different types of content within the object. The relative importance of these different properties will be decided by institutions. In a workshop at the British Library in 2008, Wilson highlighted the “complexity of determining significant properties for digital objects” (Wilson in Hockx-Yu and Knight 2008, p. 151). One of the issues is remaining objective because, as has been previously discussed, concepts of significance are “culturally loaded” (Yeo 2010, p. 99). It is therefore the responsibility of the heritage institutions as keepers of collections to make decisions about an object’s significant properties in relation to their different users, or as Dappert and Farquhar state, significance is “in the hands of the stakeholders” (Dappert and Farquhar 2009).

To date, most preservation efforts have focussed on documents and images but there is a new level of complication when 'complex digital objects', such as digital games, websites and multi-media art, are considered. A complex digital object can be defined as "a digital object composed of more than one type of component...common types of components [include] numeric data, text, images, graphics, audio, video, and executables" (Hedstrom and Lee 2002, p. 218). Becker et al describe the issues of multi-media art:

"Electronic art is extremely complex to preserve due to the heterogeneity of employed media as well as the complexity of file formats....it is inherently interactive, virtual, and temporary" (Becker et al 2007, p. 257-258)

These issues apply to most types of complex digital objects and can be seen to relate back to the special characteristics of digital games, as discussed in section 2.5. Another important concern is the problem of legal issues, such as intellectual property rights, because as Von Suchodoletz and Van der Hoeven observe, "digital rights management and copy protection mechanisms can prevent one from copying the original bit stream from its carrier into a digital archive" (Von Suchodoletz and Van der Hoeven 2009, p.151). Although not much research has been taken into the preservation of digital games, there have been some significant projects which have examined the issues of software and digital art preservation. These projects will have relevance to the challenges of digital game preservation.

The need to preserve software has been in discussion for some time already: Zabolitzky, for example, discussed the issues of software preservation in his paper, '*Preserving software: why and how*' in 2002 (Zabolitzky 2002). However, according to Von Suchodoletz and Van der Hoeven, "no standardised or coordinated approach for software preservation currently exists" (Von Suchodoletz and Van der Hoeven 2009, p. 151). Despite this fact, there have been some useful projects which have considered the challenges of, and solutions to, software preservation. The JISC funded-project, '*Preserving and accessing software research outputs*' (2007-2008), investigated the issues involved in the preservation of software generated through research projects and the potential use of software repositories. In another JISC-funded project, *SigSoft*, the Science and Technology Facilities Council investigated the significant properties of software (STFC 2008). Other important work has been carried out by amateur enthusiasts, such as the Software Preservation Society; and museums, such as the Computer History Museum in California. Two significant recommendations from projects that will be relevant to digital game preservation were noted. Firstly, Matthews states that the most effective way of preserving software is "to use good practices when developing software tools" (Matthews in Hockx-Yu

and Knight 2008, p. 147). In a related project, on the significant properties of moving images, Mike Stapleton observes that “a digital archive must obtain the digital master which has been produced by the creator and should not be reliant on lower-quality derivatives that have been produced for distribution purposes” (Hockx-Yu and Knight 2008, p. 146). Both of these recommendations highlight the importance of collaboration: this is also evident in research into the preservation of media art.

The increasing trend for artists to use digital media in their work is creating new issues for museums and galleries in relation to preservation. One of the most significant projects has been the *Variable Media Network*, a partnership between various cultural institutions in the US. This project has worked to develop “tools, methods and standards to implement new preservation strategies for unstable and mixed media” (Becker et al 2007, p. 259). Part of the solution is the collaboration of creators with museum curators “to imagine potential futures for works in ephemeral formats, including digital media, performances and installations” (Variable Media Network). This collaboration involves:

“[encouraging] creators to define their work **independently from medium** so that the work can be translated once its current medium is obsolete. This requires creators to envision acceptable forms their work might take in new mediums, and to pass on guidelines for recasting work in a new form once the original has expired.” (Variable Media Network)

This is an advanced form of the representational information which is gathered alongside the object for preservation and in this way, the documentation becomes “a fundamental part of a digital artwork” (Marchese 2010, p. 306). This is an interesting solution to the problem of preserving complex digital objects and it highlights the importance of collaboration between different stakeholders, as discussed below.

Despite the technical differences between digital and non-digital materials, many of the organisational, cultural and economic issues are similar. Deegan and Tanner observe that “the subject of digital preservation is one that is often represented as being distinctly different from more traditional preservation issues due to the digital component” (2006, p. 2) and Jones and Beagrie refer to digital preservation as “radically different” (2001). However, it is clear to see that, although the technical aspect of the material means the methods may be different, many of the key issues are similar to the decisions and processes involved in traditional preservation situations. Owen suggests that there are three important dimensions of preservation - functions (the activities involved); responsibilities and funding (2007, p. 45).

These are common themes, which were highlighted in the previous section on the preservation of cultural heritage. In relation to digital preservation, responsibilities can be seen to be associated with key stakeholders and will be analysed in relation to institutional responsibilities; industrial involvement and collaboration. Funding will be considered in relation to governmental involvement and the problems of a lack of financial support. Functions can be broken down into the technical issues, as considered above, as well as issues of the selection of material. An analysis of these three dimensions leads to further understanding of the complexity of the issues involved and highlights specific problems in relation to the preservation of digital games.

Museums and libraries have traditionally been responsible for the preservation and protection of cultural heritage, but as Jones and Beagrie observed in 2001:

“the question of who should be responsible for ensuring long-term preservation is by no mean as established in the digital environment as it is in the analogue environment.” (Jones and Beagrie 2001)

The main problem is that ‘born-digital’ materials do not fit comfortably into the traditional collection strategies of these institutions. Owen suggests that “the culture, standards and values of traditional heritage institutes are not suited for preserving the ‘digital fabric of society’” (2007, p. 48). This is particularly true in relation to museums. The nature of digital materials is problematic for these institutions: digital culture is closely linked to popular culture and these objects are seen as disposable, entertainment products which do not fit into the institution’s traditional collection strategies. Owen accuses the heritage institutions of being “too inward-looking”, arguing that they are “defining the digital world in terms of the institution instead of defining the institution in terms of the digital world” (Owen 2007, p. 48). According to him, the result of these attitudes will be detrimental to future generations:

“...future generations will see the 21st century through the 20th century eyes of the heritage institutions that have failed to make the transition to an entirely new definition of heritage materials required by the digitization of society.” (Owen, p. 48)

However, the importance of the involvement of these institutions should not be disregarded, as Jones and Beagrie observe, “all public institutions need to be involved in applying their professional skills and expertise” (2001). Jones and Semple agree on this point, stating that “the professional expertise of archivists and librarians in selecting and organising material for preservation is still valuable” (2006). It would be foolish to ignore the knowledge and experience of the people within these organisations but it is realistic to

acknowledge that these institutions can no longer work in isolation. Collaboration is essential and, as Lavoie and Dempsey suggest:

“...the distribution of digital preservation responsibilities is almost certain to include decision-makers outside the cultural heritage community.” (Lavoie and Dempsey 2004)

As Deegan and Tanner observe, “collaboration...is ubiquitous in the digital preservation community” (2006, p. 148). There is a broad consensus that digital preservation will require collaborative efforts between different stakeholders because “the problem is far larger than one group or individual can solve” (Deegan and Tanner 2006, p. 148). Jones and Beagrie expand on this, suggesting reasons why collaboration is important:

“There is an increasing need to go beyond the confines of individual organisations, or even countries, to maximise the benefits of the technology, address issues such as copyright, and also to overcome the challenges cost-effectively.” (Jones and Beagrie 2001)

So, who are these external stakeholders and ‘decision-makers’? Jones and Beagrie maintain that the principal stakeholders are the “creators of the digital material” (2001). There are two main reasons for this: firstly, as the creators of the material, the industry and publishers have control over the formats and documentation relating to their material/products and thus, should assume responsibility for “the implications of their actions” (Jones and Beagrie 2001). Secondly, their involvement is necessary due to the complicated rights issues involved in the preservation of digital material. It has been suggested that the creators of digital objects should be “persuaded or enjoined to preserve the material in their custody” (Lavoie and Dempsey 2004). However, what potential motivation is there for them to do this? Furthermore, as Owen rightly observes, “many arguments can be brought against this, including the fact that originators may cease to exist, that copyright expires, that it leads to fragmentation of the canonical collection, and that originators would have little financial incentive to guarantee continued maintenance and access” (2007, p. 45). The alternative option, according to Lavoie and Dempsey, would be that “the content provider must cede the right to preserve to another entity who is willing and able to assume responsibility for preservation” (2004). This would involve publishers relaxing control of their Intellectual Property Rights. Lavoie and Dempsey are conscious of the fact that “digital preservation is perceived as a threat to Intellectual Property Rights” and the cultural industries are extremely protective of these rights, as has already been examined. Handing over ‘the right to preserve’ to an external organisation will involve negotiation between stakeholders and the development of agreements over how the process is managed. Lavoie and Dempsey suggest that:

“Striking a balance between the interests of content providers and collecting institutions may best be achieved through appropriately designed contracts.” (Lavoie and Dempsey 2004)

However, in order to ensure the cooperation of the creators of the materials, it may be necessary to consider governmental involvement and the enforcement of these agreements.

Governments are expected to “play an active role in ensuring the welfare of a nation’s heritage” (Adcock 1998, p. 12) and it is certain that governmental involvement is necessary in addressing some of the legal issues in relation to copyright and Intellectual Property Rights. An important step would be the introduction of ‘the right to copy’ legislation, which, as Abid states, has still not been agreed worldwide (2007, p. 9). Individual countries have started to make moves towards this. In United States, the Library of Congress was given the right to make computer games exempt from the Digital Millennium Copyright Act’s prohibition against circumvention of technological measures that control access to copyrighted works (U.S. Copyright Office). This exemption states:

“Computer programs and video games distributed in formats that have become obsolete and that require the original media or hardware as a condition of access, when circumvention is accomplished for the purpose of preservation or archival reproduction of published digital works by a library or archive.”

In a similar move, in 2004, the Digital Games Archive (DiGA) worked on a statement to have computer games included in the new German copyright law as an independent term and exempt from these restrictions for the purposes of non-commercial preservation. In the UK, the ‘Digital Britain’ report promised a review of copyright exceptions, in relation to preservation:

“The Government is however considering the scope to amend the copyright exceptions regime where we believe exemptions exist, in areas such as distance learning and the preservation of archive material and intends to announce a consultation on this later this year.” (DCMS and DBIS, 2009)

The second stage of the consultation process on this was completed at the end of March 2010.

There is much literature devoted to the costs of digital preservation programmes, and as Jones and Beagrie (2001) state, “there is understandable concern that the costs of preserving digital materials will be high”. However, as Rusbridge states, “all preservation is expensive” (2006). The main problem is that the responsibility of the preservation of digital

material has put pressure on the finances of these institutions because “it is a new cost and we have not worked out how to factor it into our budgeting and business models” (Rusbridge 2006). Traditionally, cultural heritage institutions are funded by governments and through support from sponsors but, despite the immensity of the task facing these institutions, most governments have not provided additional financial support. Lavoie and Dempsey observe that “allocation of funds to digital preservation has been insufficient... [and] funds that are made available are usually provided on a temporary basis” (2004). These factors mean that digital preservation has had to be paid for from existing budgets and therefore, “finding funds for digital preservation programmes will likely come at the expense of less funding for other activities” (Deegan and Tanner 2006, p. 124). Making these decisions may therefore be difficult but, as well as worrying about the costs of preserving digital materials, “it is equally important to consider the costs and implications of not preserving them” (Jones and Beagrie 2001).

The funding implications and costs of preservation activities mean that active decisions have to be made about what should be preserved. In the digital environment, these decisions are especially important because what is not selected for preservation is at risk of disappearing forever:

“With traditional collections, lack of selection for preservation may not necessarily mean that the item will be lost, allowing for a comfort zone...no such comfort zone exists in the digital environment where non-selection...will almost certainly mean loss of the item, even if it is subsequently considered worthwhile.” (Jones and Beagrie 2001)

In this way, the importance of these decisions adds to the difficulty of making them. Institutions rely on “well-defined criteria” (Abid 2007, p. 13) in order to make appropriate choices. These are based on factors such as “institutional mission, cultural preferences, economic practicality” (Lavoie and Dempsey 2004), as well as an assessment of value and significance based on “uniqueness of the object, its irreplaceable character, and a number of other criteria such as time and place, form and style” (Abid in de Lusenet and Wintermans 2007, p. 9). The problems with these criteria are twofold. The first question on the *Decision Tree for the Selection of Digital Material*, developed by the Digital Preservation Coalition (DPC), is “does the content of this resource fall within the institutional remit/collection development policy?” (DPC 2001) For new forms of digital material, will they fit into the institutional missions of traditional organisations? It is arguable, especially in the case of digital games, that the response to this question will be negative. The second problem rests on the familiar issue of who decides the value and significance of a specific artefact. This

responsibility has traditionally been held by those responsible for preservation processes. Owen suggests that these decisions should be made “based on publicly debated criteria” (2007, p. 49). Considering the responsibility of making these decisions, it is feasible to argue that Owen is right that the criteria should be more widely debated. Otherwise, it is possible that the wrong decisions will be made and “our societies will suffer irreversible damage in their collective social memory” (Abid 2007, p. 14).

The evidence shows that institutions regard digital preservation as important but problematic: this is especially evident in relation to ‘born-digital’ materials. Due to the digital form and other special characteristics of digital material, institutions have had to implement new technical approaches to managing their collections. However, although the methods needed for ensuring the longevity of digital material are different, many of the concepts and issues involved are familiar. These have been summarised as functions; responsibilities and funding and have been analysed in relation to funding issues; defining responsibilities and selecting material. The extent of digital material and a lack of specific funding are problematic. Responsibilities are no longer as clearly defined and there is more need to collaborate with different stakeholders. The selection of material for preservation has become a more complex process due to the dynamic nature of digital objects and the lack of a ‘comfort zone’ to allow retrospective collecting. All of these issues have a definite effect on how digital preservation policies are developed. These policies will affect what future collections will look like and there is a very real risk that “future generations will see the 21st century through the 20th century eyes of the heritage institutions” (Owen 2007, p. 48)?

3.3 The preservation of digital games

Despite the amount of interest in digital preservation, there has been little specific research on the preservation of digital games. Henry Lowood, curator of the Stephen Cabrinety collection at Stanford University and founder of the IGDA Special Interest Group on game preservation; and Andreas Lange, founder and curator of the Computerspiele Museum in Berlin, are the most well-known advocates of digital game preservation. Lowood has given numerous papers on game preservation (2002, 2004, 2009) and is currently a partner in the Library of Congress funded project, '*Preserving Virtual Worlds*'. Despite the closure of the *Computerspiele Museum* in 2002, Lange is still active in his support of game preservation through the *Digital Game Archive* (DiGA) and his involvement in the EU-funded project, '*Keeping Emulation Environments Portable*' (KEEP). [These projects are discussed below.] However, despite the activities of these experts, there have been very few papers published specifically on digital game preservation: the examples discussed below are notable exceptions.

In 2002, Jeremy Gieske, a student at the University of Salford, undertook a masters-level research project into the issues of displaying videogames in museums. Using a case study approach, his exploratory study aimed to investigate the issues that videogame museums and exhibitions need to address in order to be "a feasible venture in today's heritage marketplace" (Gieske 2002, p.15). Limited by time and research experience, his original intention to include four case studies was abandoned and the final study focussed on just two cases – the *Computerspiele Museum* in Berlin and '*Game On*', the touring exhibition at the Barbican in London. Although the research was not particularly focussed on the preservation of digital games, the study does pose questions about how museums can exhibit and display videogames; the relationship of these exhibitions to games research and the issue of how these objects should be preserved. Gieske acknowledges the limitations of his study (Gieske 2002, p. 34) and recommends that further research is necessary.

In another masters-level research project, Paul Gooding at University College London carried out a quantitative study into the current status of digital game preservation. Using a random sampling approach, Gooding carried out an investigation to "quantify the scale of computer game preservation" (Gooding 2007, p. 16). This included three aspects of gaming - hardware, software and documentation. Selecting ten random home gaming systems, 50 random games for the Atari 2600 and 15 books on particular games from the

British Library Catalogue, the availability of the originals was investigated using online sources such as *ebay*, the 'Guide to the Stephen Cabrinety collection' and *DiGA* (for the full list of sources, see Gooding and Terras 2008, p. 25). His findings showed that *ebay* was the best source for finding old games and he concludes that there is a lack of serious efforts to preserve digital games, particularly in UK. However, as acknowledged in Gooding and Terras (2008), the limitations of this research mean that it can provide only "a snapshot of contemporary computer game preservation" (Gooding and Terras 2008, p. 34). Although it is interesting to try to quantify the scale of loss, these statistics do not explore the value of the preservation of the randomly selected games. Furthermore, the sources used to verify the existence of hardware are limited. (For example, the BBC Micro and Spectrum ZX are not only gaming consoles and examples of these machines do exist in other collections, such as the *Computing History Museum* at Bletchley Park.) Gooding suggests that further research should focus on discussion with the major stakeholders in order to understand the challenges curators and archivists are facing and to ensure co-ordination between these groups in future preservation efforts (Gooding 2007).

In 2009, the IGDA Special Interest Group published a white paper on digital game preservation. This paper was aimed at raising awareness about the issues of digital game preservation amongst the membership of IGDA, in particular game developers and those in the games industry. Comprising of sections on the loss and significance of gaming history and a brief section on current activities, the paper introduces some of the interesting reasons for the importance of digital games and reasons for their preservation. It is particularly strong in its efforts to engage the industry with the issues of preservation. As an introduction to the issues, the paper is a useful starting point but its arguments lack sufficient justification. The issues it raises are not academically grounded and the arguments it presents are not supported with evidence or research. However, the publication of this paper is an important step forward for digital game preservation. It led to the inclusion of a panel on digital game preservation at the 2009 *DiGRA* conference and it has been published in the *American Journal of Play* (Lowood 2009b) thus raising awareness of the issues to a wider audience.

As a cultural industry, digital games are often compared to film and this relationship between the industries was explored in section 2.5. For this reason, it is interesting to compare the preservation of games with the history of film preservation. The timelines depicted in **Figures 8, 9 and 10** were developed by Andreas Lange (Lange 2009). **Figure 8** shows the development of film, from its invention in 1895, through commercialisation to the

establishment of institutional preservation with the launch of the British Film Institute's National Film Archive in 1935, with the mission "to maintain a national repository of films of permanent value" (BFI).

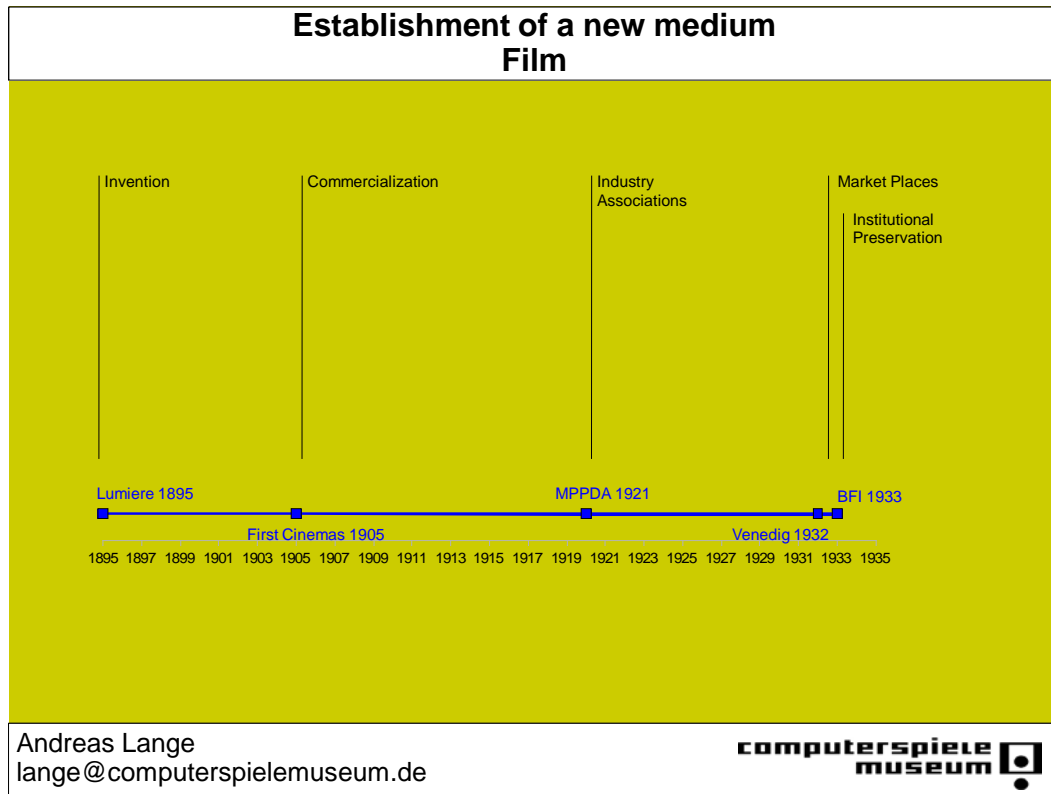


Figure 8: The development of films (Lange 2009)

Figure 9 shows the similar development of games from invention, commercialisation and the opening of the Computerspiele Museum in 1997. Figure 10 is a comparative analysis of these two media. These timelines counter the argument that the games phenomenon is too new to have been recognised by national preservation organisations. With both mediums, there is a similar 40 year development cycle from invention to preservation. However, it is interesting that, within this time period, film has successfully become part of a national institutional preservation policy, whereas digital games have yet to be recognised in the same way. This is evidenced by current digital game preservation activities.

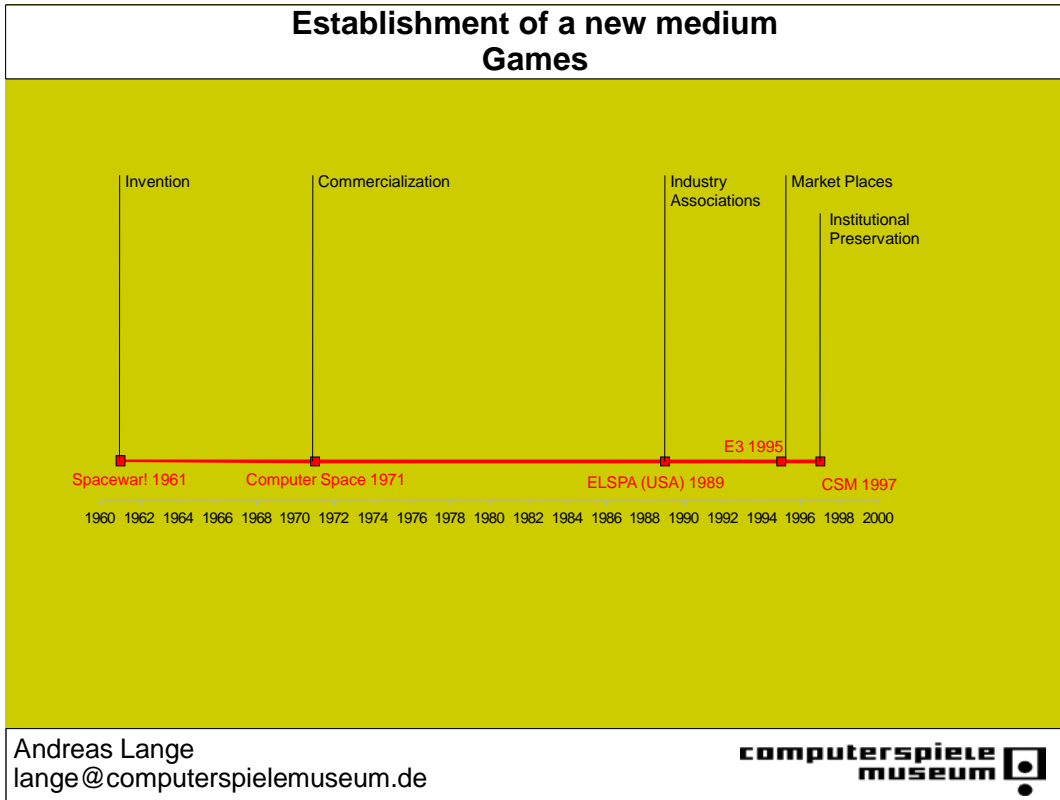


Figure 9: The development of games (Lange 2009)

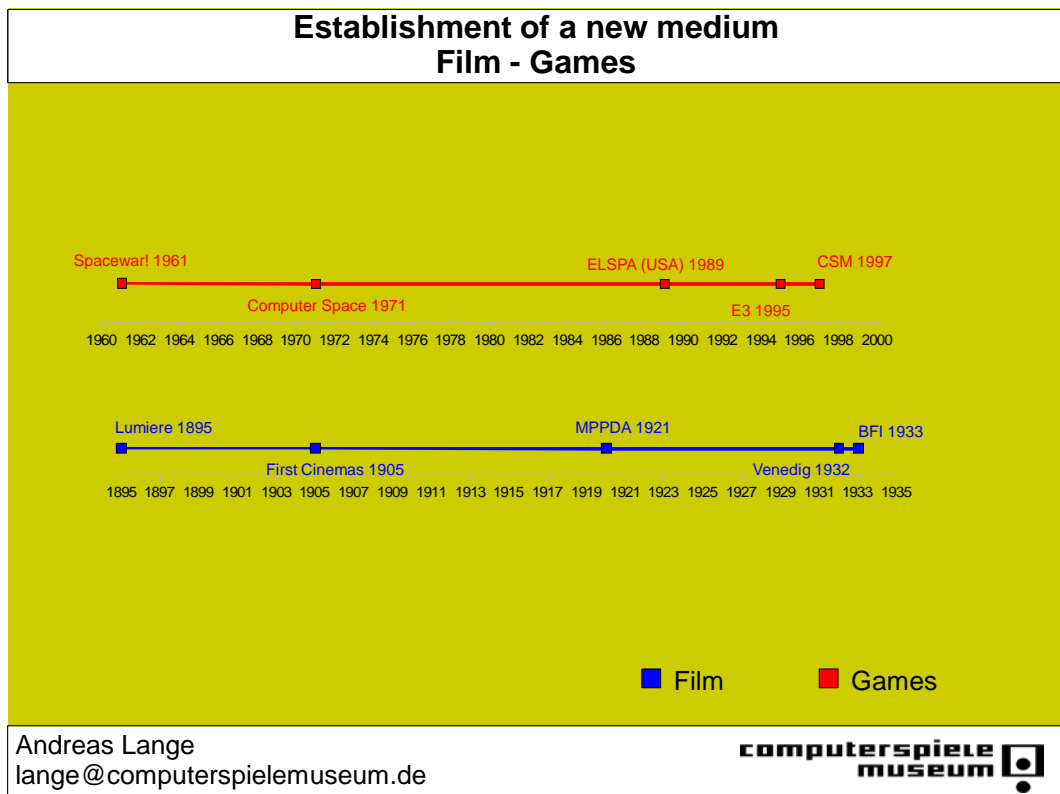


Figure 10: The comparative development of film and games (Lange 2009)

It is essential to have a complete overview of current digital game preservation activities in order to have a full understanding of the complexity of the issues. This includes consideration of the questions of what is being preserved; how this is being achieved and for what purpose. Thus, this section will present a survey of the different approaches, as well as considering their advantages and disadvantages. It will show that there are already institutions and individuals involved in the processes of protecting digital game history but it will also highlight the diversity of approaches and the lack of cohesion between activities. The three main areas of interest to be considered are institutional activity; internet archives and current projects. These analyses will demonstrate the diversity of ways that the original questions are being answered. It will also highlight how digital games have an uncomfortable relationship with traditional institutions; how online preservation activities are limited by legal issues, due to the lack of consent from the digital games industry; and the importance of collaboration to the long term preservation of these cultural products.

Cortada states that “the first group of individuals to recognise a new subject area consists usually of participants followed closely after by students of the field and finally, if belatedly, by librarians and archivists” (Cortada in Lowood 2004, p.11). In relation to digital games, it is the gaming enthusiasts who have been one of the first groups to identify the significance of preserving their history. Having formed online preservation sites, the gaming community have been the most prolific activists in this area. Motivated by nostalgia, these groups, run by part-time enthusiasts, have an awareness of what is being lost due to the lack of interest from official preservation organisations. Certainly, the work of these groups represents some of the most comprehensive efforts to ensure long-term access to these games. They have dedicated considerable time to this goal and they have become technical experts in working with advanced digital preservation methods, such as emulation.

There are various internet-based digital game preservation activities. The *International Arcade Museum*TM (IAM) and its digital game section, the *Killer List of Videogames*[®] (KLOV), are online databases of arcade machines, including photographs and descriptors of thousands of games. Launched in 2002, the museum does not provide access to the games and has yet to realise its ambition of “establishing a permanent, physical museum” (IAM), but is a useful information source. *Mobygames* is a similar database of digital games, which catalogues a wide-range of information from system requirements to the names of those who worked on a particular game. Developed by games enthusiasts with industry experience, it claims to be “the world's largest and most flexible

electronic game documentation project in existence” (Mobygames) and is an important metadata resource.

The *Internet Archive* is a project which has a strong support network, which includes the Smithsonian Institute and the Library of Congress. Founded as a non-profit organisation in 1996, the *Internet Archive* aims “to prevent the Internet - a new medium with major historical significance - and other "born-digital" materials from disappearing into the past” (Internet Archive) and this includes internet sources related to software and digital games. There is a large amount of game-related material available, which includes “all kinds of rare and difficult to source video files relating to video games” (*Internet Archive*), such as interviews with developers; demos and reviews of games. This material is an important part of digital game culture but because the focus is material which is freely available, it does not include access to the games.

The *Software Preservation Society* (S.P.S.), formerly the *Classic Amiga Preservation Society*, is an example of a project working within legal boundaries to preserve at-risk software. The aim of the project, according to their website, is “to preserve all commercial (therefore often copy protected) games in their original format for various systems - no matter how good or bad a particular game is perceived to be” (S.P.S.). Unlike abandonware sites, archived games are only made available if specific permissions are given or by request from individuals who own the original software. Nevertheless, the project is a grass-roots approach; a part-time initiative by game enthusiasts and therefore has similar limitations due to its lack of financial and institutional support.

The *Digital Game Archive* (DiGA) is an Internet-based archive of digital games founded by Andreas Lange, the director of the Computerspiele Museum. The archive differs from other examples because it provides “free access to legal downloads of computer and video games, regardless of their original platform or their age” (DiGA). The games are made available online, ensuring accessibility; and are provided through emulators which mean that they can run independently from the original hardware and operating systems. The archive is not meant to replace physical collections, as the website states:

“Without the physical objects, these experiences will be even more difficult to be understood by future generations.” (DiGA)

However, the online archive is seen as “offering a solution that increases the probability of long term preservation at much lower costs than any other approach dealing with this question” (DiGA). Working with members of the industry, DiGA’s emphasis is on the voluntary donation of games by the rights holders, ensuring that the games are provided legally. They see the cooperation of licence holders as “crucial” (DiGA) to the long term preservation of digital games and it is this cooperation which distinguishes the archive from illegal abandonware sites. Unfortunately, to date, the DiGA has only eight titles available.

Abandonwarez are digital games made freely available online because they are no longer commercially available. Games are distributed via websites, usually hosted by game fans. Prompted by nostalgia for old games, these gamers argue that their activities do not harm the industry; McClellan, who runs the *Bunny Abandonware* site, states:

“We take the game down if the IDSA asks but it’s pretty silly because abandonware means games that are no longer sold and supported by their makers. There is no alternative to downloading them. You can’t buy them anywhere.” (King 2002)

However, unlike games available on the DiGA, these games are made available without permission from the companies and therefore, the activities of these sites are illegal. In fact, as Saltzman states:

“The act of sharing abandonware is no different from piracy or ‘warez’ – that is the unauthorised duplication and distribution of computer software.” (Saltzman 2003)

Although the industry does not actively monitor these activities at present, as the trend for releasing retro-games continues, this passivity may change. Certainly, it is clear that the industry does not view the protection of its Intellectual Property rights as ‘silly’: Ric Hirsch, the IDSA’s vice president of intellectual property enforcement, states:

“As old as these game titles are, they are considered to be important assets and (the companies) hold exclusive rights.” (Saltzman 2002)

Digital games, as cultural products, have high production costs and companies need to maximise sales in order to make profit: if retro-games are popular, the release of back catalogue material is a potential way for them to achieve this. Due to their illegal status, abandonware sites cannot be seen as a stable preservation process. However, their existence highlights important considerations. Firstly, they demonstrate a desire for the protection of gaming history; and secondly, the importance of industry involvement in the process.

The growth of academic interest in digital games has prompted some response from research institutions in relation to preservation. The Stephen M. Cabrinety collection at Stanford University is one of the most notable examples, as the “first archival and library collection of digital games in the US” (DiGA). This collection contains “software, computer hardware, peripheral devices, hand-held games, and computer industry literature documenting the micro computing gaming industry during its formative years [between 1975-1993]” (OAC). Held in the University’s History of Microcomputing Library, it includes over 6000 pieces of software, 400 items of hardware and nearly 20 linear feet of printed materials (Stanford University Library). Other American institutions have also started digital game collections, for example, the Centre for American History at the University of Texas and the University of Illinois. These collections are seen as valuable research support tools. A librarian at the University of Illinois, comments:

“Cultural preservation is significant in that video games are a cultural production of contemporary society. One of the important things that libraries do is collect the intellectual output of not only scholars, but our culture as a whole. We think it’s important to capture these and to preserve them because people want to use them now and probably analyse them in 30 years.” (Cheung 2007)

Outside of the United States, other institutions have also seen the significance of preserving these artefacts. In Japan, Professor Hosoi Koichi of Ritsumeikan University started the Game Archive Project in 1998 to create an archive of “the entire gaming experience” (Ritsumeikan University, 2006). This project involves collecting computer hardware and software; developing emulators and making visual recordings of gaming experiences. This archive is intended to support the work of future generations of researchers. These institutional examples of digital game preservation are exceptional. Very few institutions that teach and research digital games have similar collections, or the resources to develop them.

The preservation of digital games has received some attention from heritage institutions and the complexity of the discipline of games studies is reflected in the different preservation environments. Digital games fit into a number of different contexts. They are an important aspect of the development of computer technologies, as well as a new branch of the medium of the moving image. In relation to this, institutions such as the Computer History Museum in Mountain View, CA and the American Museum of Moving Image in N.Y have collections of digital games as part of their wider collection. They are also part of the history of play and one of the most significant museum collections is at the Strong National

Museum of Play, which has recently launched the National Center for the History of Electronic Games.

The Strong National Museum of Play in Rochester, N.Y. is “the only museum in the world devoted to play”. Founded in 1968 from the private collection of Margaret Woodbury Strong, the current museum opened in 1982 with the mission “to collect and preserve items that illuminate the history of play” (Strong National Museum). The museum is dedicated to protecting cultural objects related to the development of play with particular emphasis on American culture:

“These personal everyday objects help Americans to understand who they are, who they believe they are and why.” (Strong National Museum)

This embodies some of the previous discussions of games as part of culture; the significance of popular culture, as well as issues about national cultural heritage. The museum currently houses over 500'000 objects, with collections which include digital games and has a 90'000 volume library of material and records related to play, including photographs, literature and artworks. The museum is also responsible for the ‘National Toy Hall of Fame’, a collection of toys considered culturally significant within the history of play, with the emphasis again on American culture. Toys are nominated by the public; these nominations are reviewed by a museum advisory committee based on criteria including icon-status, longevity or innovation and voted for inclusion by a National Selection Committee. There are currently 38 artefacts in the National Toy Hall of Fame, which includes a variety of toys from the cardboard box to Mr. Potato Head®. In 2007, 30 years after its production, the Atari 2600 game system was the first digital inclusion into the Toy Hall of Fame.

Digital games can be seen as part of the history of computers: the Computer History Museum in California opened in 2003, with the mission “to preserve and present for posterity the artefacts and stories of the information age” (Computer History Museum). The museum’s collections focus on materials such as hardware, software as well as photographs and ephemera related to the development of computing technology. It is clear to see that digital games are an important part of the technological development of computers and this collection does therefore include digital games: for example, the Computer History Museum houses the only original working existence of the early computer game, SpaceWar! as well as an interesting collection of material relating to computer chess.

From another perspective, digital games are seen as a wider part of the history of film and the moving image. In 2003, the preservation and protection of digital media was added to the mission statement of The American Museum of the Moving Image, which opened in 1988. The museum houses America's "largest and most comprehensive collection of artefacts relating to the art, history, and technology of the moving image" (AMMI), which with the inclusion of digital media, now includes digital games. These examples demonstrate the diversity of museum interest in digital games but highlight how they are considered only as one aspect of a larger context: interest in digital games as cultural artefacts in their own right is more limited.

Within these contexts, digital games are only a small chapter in a bigger story: examples of institutions recognising games as unique aspects of culture in their own right are rare. *'Game On'* has been one of the most significant digital games exhibitions. Sponsored by Nintendo, the exhibition has toured the world, travelling to America, Asia and throughout Europe. Originally organised by the Barbican Art Gallery in London, the exhibition was seen as "a hands-on exhibition" (King in Gestalt, 2002), and included original arcade machines, early console games as well as artworks and new game releases. The purpose of the exhibition was "to show the cultural impact of games and consoles" (BBC, 2006) and "to examine some of the controversial elements of computer gaming" (Brown, 2006). Lucien King, the guest curator of the exhibition states:

"We saw the chance to stage an ambitious look at an everyday part of many people's lives, a part which often only got taken seriously in the specialist games press and websites" (Gestalt, 2002)

The involvement, and financial support, of Nintendo was significant to its success and the exhibition proved popular enough for it to tour again in 2006. However, in 2006 it was hosted by the Science Museum, which clearly highlights the debate of how digital games fit into traditional institutions and where responsibility for their preservation belongs. It is also interesting that, despite its success, a more permanent exhibition has not been established in UK.

In Berlin, a museum dedicated to digital games was opened in 1997. The Computerspiele Museum was "the first permanent exhibition of digital interactive entertainment culture" (Computerspiele Museum). Unfortunately, the museum closed in 2000 and there are still no clear signs that the permanent collection will re-open. In France,

the Bibliotheque Nationale de France has been collecting digital games since the 1990s. This started when the Law on Statutory Deposit was changed and extended in June 1992 to include the legal deposit of electronic materials, including software, databases, multimedia products, and digital games. Guillaume Vinet of the Bibliotheque Nationale de France's audio-visual department, states:

“Today the BnF has more than 12000 video games in its collection. To complete this collection (for video games edited before 1992), the BnF has also started to purchase second-hand video games.” (Vinet 2009)

This interest in digital games from a national library is unusual but in fact, it follows on from an established tradition. In France, board games have actually been part of legal deposit arrangement since 1980s (Mauvieux 2009).

As these examples show, the majority of game preservation efforts have been undertaken outside the UK. Cultural heritage is seen as a national policy issue but even though the UK is the fourth most significant games producer in the world, it seems that initiatives in other countries have not been acknowledged in UK institutions. To date, despite the involvement of the Science Museum and the Barbican in the touring exhibition, *Game On*, institutions have paid little attention to the matter of the preservation of digital games. The interests of comparable institutions, to those discussed in this section, in the UK are uncertain and it is unclear what efforts are being undertaken by British national heritage institutions.

There are no particular references to the collection of games by museums of play and childhood; the Computer History Museum; or the Science Museum. In fact, institutions such as the British Library and the British Film Institute have excluded digital games from their digital preservation programmes. The British Film Institute, unlike its American counterpart, has not included digital media in its mission statement and its collecting policy for digital games is limited to “games with close links to film culture” (BFI 2004). There have certainly been no signs of the extension of legal deposit to include electronic material, such as software and digital games. The British Library seems to have specifically excluded digital games because they are regarded as entertainment products, rather than information products; as a British Library working party report on legal deposit suggests:

“While collecting all material appropriate to scholarly, scientific, technical, business, or other research use they [the legal deposit libraries] would wish to exclude, or

collect only on a selective or sample basis, material such as computer games and computer software.” (British Library 1998)

The only positive sign of interest in the preservation of digital games has come from the announcement of the development of the National Videogame Archive. The National Videogame Archive is a joint project between the National Media Museum in Bradford, Nottingham Trent University and Bath Spa University. In 2006, the National Media Museum was re-branded from its previous incarnation as the National Museum of Photography, Film and Television and started to look at other aspects of media, in particular new media:

“The digital revolution has radically transformed the ways in which media is produced, delivered and consumed, and continues to do so. It is the National Media Museum’s duty to record, understand and interpret the cultural impact of this evolution. The National Media Museum will aim to observe the forefront of ‘new media’ and preserve landmark achievements so this fast moving evolution can be understood by future generations.” (National Media Museum)

From this new remit, an interest in digital games was developed and the National Videogame Archive was launched in 2008. The aim of the archive is “to preserve, analyse and display the products of the global videogame industry by placing games in their historical, social, political and cultural contexts” (National Videogame Archive). At present, this initiative is a project and represents just a small part of what the National Media Museum does. However, it is an important step in the right direction for the preservation of digital games in the UK.

With the growth of academic interest in digital games, there has been some interest in digital game preservation and some important research projects in this area. A particularly significant collaborative project between various institutions in the United States was announced in August 2007. The University of Stanford, in partnership with the University of Maryland; the University of Illinois and the Rochester Institute of Technology, as well as the company, Linden Lab, were announced as partners in a project, funded by the Library of Congress. As part of the library’s digital preservation program - ‘Preserving Creative America (PCA)’, the *Preserving Virtual Worlds* project will investigate possible solutions to the technical issues of digital preservation and computer games:

“Major activities will include developing basic standards for metadata and content representation and conducting a series of archiving case studies for early video games...” (Library of Congress, *News Release*: 3 August 2007)

As part of this process, the project partners have identified the ‘Digital Game Canon’ (**Figure 11**), which is a “list of the 10 most important video games of all time” (Chaplin, 2007). This list was devised at the 2007 Game Developers Conference by a group of five game developers and experts (Matteo Bittanti, Christopher Grant, Henry Lowood, Steve Meretzky, and Warren Spector). The titles were chosen as representative of the first example, or the most significant example of, particular game genres.

Figure 11: Digital Games Canon

1. *Spacewar!* (MIT, 1962)
2. *Star Raiders* (Atari, 1979)
3. *Zork I: The Great Underground Empire* (Infocom, 1980; PDP-11 version)
4. *Tetris* (Alexey Pajitnov, 1985)
5. *Sim City* (Maxis, 1989)
6. *Super Mario Brothers 3* (Nintendo, 1990)
7. *Civilisation I/II* (MicroProse, 1991-1996)
8. *DOOM* (id, 1993)
9. *Sensible World of Soccer* (Sensible, 1994)
10. *Warcraft I/II/III* (Blizzard, 1994-2003)

Source: IGDA Preservation Special Interest Group)

These games will be the primary focus for their case studies. It is hoped that ten new games will be added to this list each year (IGDA Preservation SIG). The project is significant because of its collaborative nature. These research institutions are working with game developers, alongside the national preservation organisations. This highlights that game preservation is being taken seriously, as Chaplin states:

“Mr. Lowood’s notion that video games were something with a history worth preserving and a culture worth studying has gone from absurd to worthy of consideration by the Library of Congress.” (Chaplin in *New York Times*, March 12 2007)

Another significant project is the EU-funded ‘Keeping Emulation Environments Portable’ [KEEP] project. This project involves a consortium of partners, which include the Bibliotheque Nationale de France, Deutsche National Bibliothek, the Koninklijke Bibliotheek

in the Netherlands (for the full list of partners, see <http://www.keep-project.eu/ezipub2/index.php?eng/Consortium>). Launched in 2009, it is a technical project, focussing on the technological issues of digital preservation. The overall aim of the project is “to facilitate universal access to our cultural heritage by developing flexible tools for accessing and storing a wide range of digital objects”, including digital games (KEEP). This will involve the development of an ‘emulation framework’, a user-friendly emulation system. The project’s focus is not just digital games but the broader issues of emulation. However, games are a useful test-bed for digital preservation and are therefore an important part of this project.

The diversity of approaches to the issue of the preservation of digital games highlights its complexity. For traditional institutions with established collection policies, digital media has presented complications. Digital games fit into a number of different contexts: they are part of the history of play; an important aspect of the development of computer technologies, as well as a new branch of the medium of the moving image. However, within these contexts, they are only a small chapter in a bigger story. Research institutions are developing useful collections but their focus is different to the role of the museum and these collections are being established to support research needs. Online activities are providing better access to the materials: however, due to a lack of involvement from the industry and the significance of the protection of their Intellectual Property Rights for the business and economics of digital games, legal issues are a serious hindrance to the development of these initiatives. Collaborative projects, such as the *Preserving Virtual Worlds* project (Library of Congress 2007), are essential to the development of successful preservation strategies but these rely on the cooperation of all parties and are concentrating on the technical issues. There has been little research into the social, cultural and economic issues. Furthermore, if digital games are part of a national cultural heritage, the lack of involvement of British national organisations needs to be addressed. In this way, this survey of current activities has shown that there are complex issues remaining to be answered in order to ensure the longevity of digital games and the security of their place within our cultural heritage.

3.4 Conclusions

In relation to cultural heritage and preservation, the main themes which are relevant to this exploratory study into the status and significance of digital game preservation are roles and responsibilities; selection processes; and the interpretation of digital games.

- **Roles and responsibilities**

The key stakeholders in the preservation of digital games have been identified as institutions; the games industry and the potential users of the preserved artefacts. Institutions, such as museums and libraries, have traditionally been responsible for the protection of cultural heritage but how does this relate to digital heritage? 'Born-digital' materials have an uncomfortable relationship with the collection strategies of most institutions and digital games are no exception. This is particularly obvious in UK. Despite being the fourth most significant games producer, UK institutions have so far largely excluded digital games from their collection strategies. The knowledge and expertise of institutional stakeholders should not be undervalued and it is vital that they play a key role in the preservation of digital games. However, it is important to recognise that this will involve collaboration with people outside traditional heritage institutions, including the 'creators of digital materials'. Cultural products face the challenge that they become 'public goods'; they are not destroyed and face the threat of being used by others for free. This has led the digital games industry to be extremely protective of its IPR and digital game piracy and the practices of 'modding' and 'emus' have made the industry extremely suspicious of digital preservation. However, the cooperation of the industry is crucial if government mandates are not put in place. The third group of stakeholders are the potential users of games collections. As Cortada (in Lowood 2004, p. 11) suggests, recognition of the significance of material often comes from outside the institutions. If collections are supposed to support research, it is only through communication with these user groups that satisfactory policies can be defined.

- **Selection**

Making predictions about what will be significant in the future is a difficult task: attitudes and perceptions change – this is emphasised by the example of the lost television and radio broadcasts. The National Toy Hall of Fame has a structured process for the inclusion of artefacts but the first digital game system has waited 30 years to be included.

The fragility of digital media does not allow for a 'comfort zone': if the wrong decisions are taken, materials could have been lost forever. This means that prompt action and 'well-defined criteria' for selection are essential. If these decisions are based on the perceptions of value of institutions in isolation, this will have huge implications on what is preserved for future generations. These value judgments are as significant as the technical processes.

- **Technical issues**

Technical issues have received much attention in the literature on digital preservation and there are three established methods of preservation: technological preservation; migration and emulation. Technological preservation or the 'museum approach' is important because this offers a real-life experience of playing the game; however, it is not a reliable long-term solution. Migration and emulation may present better long-term solutions but the authenticity of the experience is lost. These problems stem from the fact that games are more than systems of hardware and software; they are more than just artefacts but are activities. This means that a combination of approaches will be required and will include where possible physical collections and digital collections; oral histories and documentation on the experience of playing these games, as well as related artefacts such as merchandise; packaging; instruction booklets and advertising material. Work towards this has started: there are physical collections, such as the Stephen Cabrinety collections and digital collections, the DiGA archive. The IGDA Preservation SIG is working on oral histories and an outcome of the *Preserving Virtual Worlds* project will be key case studies of technical approaches. However, at present, there seems to be a lack of cohesion between activities.

Chapter 4: Methodology

Chapter 4: Methodology

Methodology is the foundation of any research study and methods are the building blocks of research. In this chapter, the research methodology and methods which have been used will be reviewed. This will include consideration of how the research was developed, in relation to the literature review process; as well as how an appropriate methodology was chosen and the implications of this choice. It will also incorporate a discussion of how the research methods have been implemented in this study; the systems of data collection; and the processes of data analysis, including the use of Computer-Assisted Qualitative Data Analysis Software (CAQDAS).

4.1 Developing the research

This section will outline how the research was developed. Firstly, the literature review process will be examined. This will lead into a discussion of the specific aims and objectives of this study and the development of the research methodology.

According to Creswell, “the strongest and most scholarly rationale for a study...comes from the scholarly literature: a need exists to add to or fill a gap in the literature” (2007, p. 102). In this section, it will be shown how the literature review revealed that there has been little previous research into the status and significance of digital game preservation. Due to this gap in the literature, the review focussed on identifying independent themes, which would have an influence on the direction of this research. These were game studies research and digital preservation. This procedure for bringing together previously unrelated material in order to create a framework for the review is referred to by Bryman as “synthesised coherence”, whereby “connections are forged between established theories” (2005, p. 532).

It became clear very early into the literature search process that there was little relevant academic literature on the preservation of digital games. A bibliographic search on the databases Article First, Web of Science, LISA, ASSIA and BHI returned no results for the search terms ‘computer games’ and preservation / ‘video games’ and preservation / ‘digital games’ and preservation. At this stage, it was recognised that the literature search would need to involve the use of different sources (for example, weblogs and gaming websites) and a wider scope. It also became apparent that the study of digital games was a multi-disciplinary research topic and the literature search would need to reflect this, with the use of different search terms and a wider range of search tools.

Phillips and Pugh refer to the literature review as the “background theory” stage (2005, p. 57). It is an opportunity to explore current thinking in relation to a topic. Through the initial stages of searching, current trends in computer games research (such as the debates on ludology and narratology) became clearer and key figures in the field of digital games research were identified (Lowood, Aarseth, Juul). Conducting a simple search on Google Scholar for ‘computer games research’ lead to useful resources, such as the *Digital Games Research Association (DIGRA)*; the *Copenhagen Centre for Computer Games*

Research; and the online journal, *Game Studies*. This 'background theory' stage also highlighted that it would be necessary for the literature review to start from a broad perspective before it would be possible to focus on the specific research problem.

Due to a lack of previous research into the preservation of digital games, it was necessary to break the topic into its component parts and analyse separately the available literature on digital games and preservation. The common theme of 'what makes a game a game' emerged, with recurring references by many authors to three key texts. Although these texts were not specifically related to digital games, they were an important reference point for identifying why games are socially and culturally important. They introduced the question 'what is a game?' and formed the basis of the first section of the review. Starting from this broad perspective, it was clear that a process of "progressive narrowing" (Hart 1995, p. 13) was necessary. It was concluded that it would be invaluable to investigate how these texts related to the theories of digital game research and to consider the similarities and differences of digital games and traditional games. This approach of 'synthesised coherence' was continued throughout the literature review process.

By this stage, other clear categories of information had been identified and it was necessary to start to build a logical structure for the review. There was no obvious way in which the literature should be structured but, by using mind mapping software to order the identified categories, a "clear and compelling framework around which the writing is structured" (Bryman 2005, p. 532) was developed (see **Appendix I**). Main sections were outlined, working from the broadest perspective to the most focussed. These were, in relation to digital games, games and game studies; the history of digital games; the business and economics of the digital games industry; the impact and influence of digital games; and the special characteristics of digital games. In relation to preservation, the main sections were 'understanding cultural heritage'; digital preservation and the preservation of digital games. References were then considered in relation to the appropriate section or sections. By breaking the research topic into its component parts, it was much easier to manage the gathered information and identify gaps for further reading. From the overall framework of the review, it was possible to identify the themes which were most pertinent to this study. These themes were used to develop the aims and objectives of the research.

The process of formulating research questions is part of the stage referred to by Phillips and Pugh as the “focal theory” stage, in which “you spell out in great detail precisely what you are researching and why” (2005, p. 58). The literature review had highlighted three major themes which were of interest: the question of the value and significance of digital games; the relationship between games and culture; and common perceptions of digital games. These themes were used to develop research questions and refine the aims and objectives of the study.

The aims of this research have been to explore the significance of digital games and the status and significance of their preservation. The specific research objectives were:

1. To explore the social and cultural significance of digital games;
2. To investigate perceptions of this significance;
3. To review current preservation activities;
4. To assess attitudes towards the preservation of digital games;
5. To identify the key stakeholders and their roles and responsibilities in the preservation of games;
6. To identify any potential barriers to the preservation of digital games;
7. To make recommendations for future digital game preservation activity and research.

The next stage was to identify an appropriate methodology to investigate these aims and objectives. In order to do this, it was necessary to consider the various theories about the nature of research.

4.2 Methodological approach

As Crotty observes, “whenever one examines a particular methodology, one discovers a complexus of assumptions buried within it” (2004, p. 66). These assumptions will be analysed here before the chosen methodology is considered in more detail in the next section. With a lack of previous research in this particular area, it was necessary to consider the methodology in relation to the nature of the aims and objectives. This included an evaluation of the practical considerations of this choice and the epistemological and ontological positions of the researcher.

- **Type of research**

Hart suggests that “the bulk of research in the social sciences is aimed at explaining, exploring or describing the occurrence (or non-occurrence) of some phenomenon” (1998, p. 44). He also acknowledges that it is important to differentiate between these approaches. Due to a lack of previous research, this study has been exploratory in nature because its primary aim was to “provide better understanding” (Hart 1998, p. 47) of the status and significance of digital game preservation. It can also be seen as ‘illuminative evaluation’ because one of its main objectives was to “make behaviours or attitudes in a given context visible for contemplation” (Hart 1998, p. 46). In other words, this research aimed to uncover perceptions towards digital games; to investigate the implications of these to preservation and communicate these findings to the research community; preservation policymakers and the industry.

- **Philosophical assumptions**

In order to choose an appropriate methodology, it was necessary to consider the various philosophical assumptions which affect this choice. According to Bryman, “a variety of considerations enter the process of doing social research” (2004, p. 4); and these are summarised in a number of ways by different authors. Crotty suggests that there are four basic elements of any research process: methods, methodology, theoretical perspective and epistemology (Crotty 2005, p. 2-3).

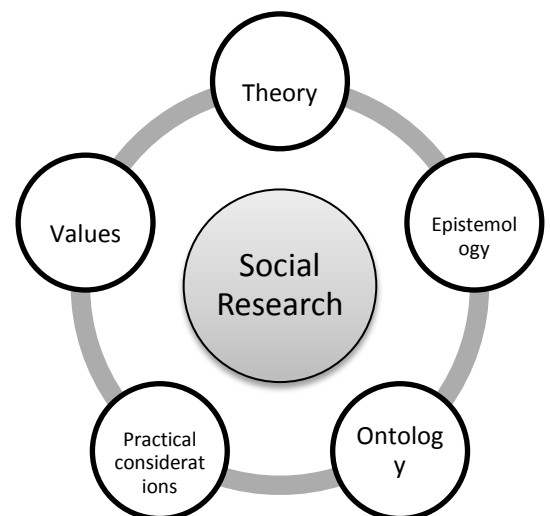


Figure 12: Five influences on social research. (Source: Bryman 2004, p. 21)

Creswell, whose focus is on qualitative approaches to research, develops this further. He suggests that there are five philosophical assumptions, which have “practical implications for designing and conducting research” (Creswell 2007, p. 15). These are ontology, epistemology, axiology, rhetorical and methodological. Bryman (see **Figure 12**) also suggests that there are five influences on social research: theory, epistemology, ontology, practical considerations and values (Bryman 2004, p. 21). These five influences are closely related to the philosophical assumptions outlined by Creswell: practical considerations relate to methodology and rhetorics; values to axiology. In this study, Bryman’s five influences was the preferred framework for considering a choice of methodology. This was because, as well as differentiating between the concepts of epistemological and ontological considerations, it presents an unbiased comparison of qualitative and quantitative approaches and includes the important consideration of the relationship between theory and research.

- **Theory**

There are two main ways of viewing the relationship between research and theory. These “two broad methods of reasoning” (Trochim 2006) are referred to as the **deductive** and **inductive** approaches. According to the *Oxford English Dictionary*, deduction is “the process of deducing or drawing a conclusion from a principle already known or assumed; specifically in *Logic*, inference by reasoning from generals to particulars”: induction can be seen as its opposite, whereby it is “the process of inferring a general law or principle from the observation of particular instances” (OED online). In relation to research, Walliman states that deduction “begins with general statements and, through logical argument, comes to a specific conclusion” (2005, p. 10). In other words, the researcher starts with a theory and from this, develops a hypothesis which can be tested and will ultimately be proved or disproved. Induction is a different approach to theory. It is often referred to as a “bottom-up” approach (Trochim 2006; Creswell 2007) whereby “theory is the outcome of the research” (Bryman 2004, p. 9). Framing these approaches within the context of this research, the inductive approach was the appropriate theory. This was because this research would be exploratory and there were no previous theories on which to base a hypothesis.

- **Epistemology**

Epistemology is related to the principles of the philosophy of knowledge. It is defined as “the theory or science of the method or grounds of knowledge” (OED online) or “how the

researcher knows what he/she knows” (Creswell 2007, p. 16). Creswell suggests that different authors use different terms to refer to research paradigms (Creswell 2007, p. 19) and in Crotty (2004), epistemology is referred to as “theoretical perspective” (Crotty 2004, p. 5). Here, epistemology is used to investigate the relationship between the two main trends in epistemological debates which are at opposing ends of the spectrum - positivism and interpretivism. These are explored in relation to where individuals place themselves on this spectrum and the implications that this will have for how research is approached.

Positivism is closely related to the natural sciences and can be seen as “a position that holds that the goal of knowledge is simply to describe the phenomena that we experience. The purpose of science is simply to stick to what we can observe and measure” (Trochim 2006). It is an approach that advocates the use of the same scientific methods used by natural scientists in the study of the social sciences:

“...the positivist social scientist believes that the methodological procedures of natural science may appropriately be applied to the social sciences, and its results can be expressed as laws or generalizations similar to those developed for the natural sciences.” (Walliman 2005, p. 203)

However, as Walliman observes many social science investigations do not fit “comfortably within the parameters of natural science” (2005, p. 202). Weber describes sociology as:

“science which attempts the interpretive understanding of social action in order to arrive at a causal explanation of its cause and effects” (Weber in Bryman 2004, p. 13)

This interpretive view of research emphasises the individual’s view of the world around them and the subjective meaning they apply to this; or as Crotty states, it “looks for culturally derived and historically situated interpretations of the social life-world” (2004, p. 67). This relates closely to the aims and objectives outlined in this research. The aim was to gain a “sense of understanding of phenomena” (Walliman 2005, p. 235), in this context the cultural and historical significance of digital games; to interpret the reasons for people’s perceptions towards digital games (its cause) and the implications for preservation (effects).

- **Ontology**

Ontology is defined by Creswell as “the nature of reality and its characteristics” (2007, p. 16) and by Seale as “what can be said to exist” (2004, p. 508). Crotty excludes ontology from his framework, suggesting that “ontological issues and epistemological issues tend to emerge together” (2004, p. 10). However, ontological considerations are very important in relation to this research, particularly because it is concerned with culture.

Objectivism suggests that reality is a fixed state which is not influenced by the acts of individuals. Bryman uses the example of culture to illustrate this point: culture can be seen as “constraining” because it “comes across as something external to the actor and as having an almost tangible reality of its own” (Bryman 2004, p. 16). The opposing position – constructivism – is based on the view that “social phenomena and their categories are not only produced through social interaction but that they are in constant revision” (Bryman 2004, p. 17). The constructionist view underpins the aims and objectives of this research because it is accepted that culture is a product of society; that the actions of individuals affect how it is perceived and their perceptions have implications for its revision.

- **Values**

It is important to acknowledge the role of values – the personal beliefs and feelings of the researcher – in research. According to Creswell, all qualitative “research is value laden and includes the value systems of the inquirer, the theory, the paradigm used and the social and cultural norms for either the inquirer or the respondents” (2007, p. 247). It is therefore essential, as Bryman states, that these influences are acknowledged in the process of research:

“Researchers are increasingly prepared to forewarn readers of their biases and assumptions and how these may have influenced the subsequent findings.” (Bryman 2004, p. 22)

This ‘self-reflective’ approach has been adopted in the course of this research: the way in which this has been achieved is discussed in more detail in relation to the chosen methodology.

- **Practical considerations**

Practical considerations relate to making appropriate choices of “research strategy, design and methods” (Bryman 2004, p. 23). The researcher’s position in relation to theory; epistemological and ontological considerations has implications for the chosen research strategy as shown in **Figure 13**.

Figure 13: Fundamental differences between qualitative and quantitative research strategies (Source: Bryman 2004, p. 20)

	Quantitative	Qualitative
Theory	Deductive	Inductive
Epistemology	Natural science model (in particular positivism)	Interpretivism
Ontology	Objectivism	Constructionism

Based on the exploratory nature of this research, and the philosophical positions outlined above, the most appropriate research strategy for this research was identified as the qualitative approach: the research design and methods will be considered below.

4.3 Methods

Research methods are the procedures for collecting data and for this exploratory study, semi-structured interviews and case studies were the chosen techniques. In selecting interviews as a research method, there were various considerations. These included the type of interview strategy or, how to conduct the interview; and choosing participants – the decisions of who and how many people to interview. It also had various implications, such as ensuring objectivity and quality, which are also discussed here. In addition to investigating perceptions towards digital games and their significance to preservation, this research was interested in the status of digital game preservation. In order to support the data from interviews with stakeholders, case studies were also carried out to consider current approaches to digital game preservation.

There are various different methods used in qualitative studies, in particular observation, focus groups, interviews and case studies. Observation is a method predominately used in ethnographic studies and was inappropriate for this research as the focus was not one particular group or organisation but an exploratory study of the perceptions of various stakeholders. Focus groups are group interviews and are useful for the collection of data from various people at the same time. However, as there is a limit to how much detail can be gained of individual's perspectives, these were also seen as inappropriate. The decision to undertake an interview investigation was based on the researcher's position in relation to theory; epistemological and ontological considerations. Critics of interviews suggest that they are not a scientific method and they cannot be used to test hypotheses (Kvale 1996, p. 288) but the purpose of this study was not to do this. The purpose of this research has been to explore the significance of digital games and the status and significance of their preservation. Exploratory studies are useful parts of social research.

The methods chosen complement the specific aims and objectives of the study. Interviews are a valuable method for gaining insight into individual's views and perceptions of specific phenomena, as Kvale says, "if you want to know how people understand their world and their lives, why not talk with them?" (2007, p.1). This research has been about what people think about digital games and their preservation: it is an interpretive constructionist approach in which "how people view an object or event and the meaning that they attribute to it is what is important" (Rubin and Rubin 2005, p. 27). Interviews were

identified as the appropriate method to achieve this purpose. This decision was reinforced by recommendations made by Gooding (2007) and is a recognised common methodology in cultural analysis of games (Egenfeldt-Nielsen 2008, p. 10). Having a clear direction and purpose are fundamental in relation to the validity of the study.

The validity of the study is directly linked to its quality. Quality is an important issue in interview research and is related to the skill of the interview researcher. Kvale states that the “quality of the original interview is decisive for the quality of the analysis, verification and reporting of the interview” (2007, p. 90). In other words, how effectively the interviews are conducted is pivotal to the effectiveness and value of the overall research: the actions of the interviewer are highly influential. Before starting the primary research, the researcher attended various seminars on good interview practice and undertook pilot interviews to improve her techniques. Aware of Kvale’s criteria for quality interviews, she assured that she had a good understanding of the issues of digital game preservation, and the interview framework was carefully considered, prior to conducting any interviews. During the interviews, she adopted an open, yet critical, style which allowed interviewees to discuss freely their opinions, whilst probing what they have said. This openness has also included transparency about the aims and objectives of the study and the interviewer’s background.

Being open about the interviewer’s background is one aspect of objectivity. Critics of qualitative research interviews suggest that there is insufficient objectivity in this method and a lack of freedom from bias. In order to address this issue in part, the researcher was open and honest with interviewees about her position as a researcher in the information sciences and has acknowledged her background in relation to digital games in this report (see **Appendix II**). In many ways, not being a hardcore gamer has been beneficial to this study as the researcher had no preconceptions about the outcomes of the study, which allows for an increased level of objectivity. Openness is one way of reinforcing the reliability and validity of the study. This discussion of the implementation of the interview methods and the following examination of the data analysis processes are additional means to ensure the transparency of the research processes.

Designing the interview strategy was an important stage because, as Gillham suggests, the researcher must consider the following issue: “what questions for the purpose

of the research can only be answered by asking people?" (2000, p. 20). For this study, it was necessary to consider how to structure an interview which would allow the researcher to unpack the meanings of what people say when they are talking about games and the values that they attach to them. It was understood that interviews are a challenging choice of method and that there are different approaches to interviewing. These range from "the formal questionnaire-based interviews at one end of the spectrum to totally open-ended interviews that might begin with a single prompt" (Seale 2004, p. 180). The advantage of the semi-structured interview is that "it facilitates a strong element of discovery, whilst its structured element allows an analysis of commonalities" (Gillham 2005, p.72). Indeed, for this study, a semi-structured was adopted, with open-ended questions. This allowed the interviews to remain focussed, as it is important for the interviewer to control the conversation, but it also presented the participants with the opportunity to speak freely about their experiences and for the interviewer to allow the conversation to move in any new direction of interest.

Knowing how questions are "most efficiently posed or presented" (Gillham 2000, p. 20) is one of the challenges of interviewing. The aims and objectives of the research were used as the basis for developing appropriate questions and understanding how to ask the right questions was helped through a pilot interview. Gillham suggests that the pilot interview should "use people who are representative of the group you are researching but not from that group" (2000, p. 55). For the purposes of this research, an academic was chosen whose interests are within the field of games studies but who is not directly linked to the discipline. The pilot interview was an excellent opportunity for the researcher to practice the skills of prompting and probing and to refine the interview questions. These stages lead to the development of the interview framework.

According to Gillham, an interview framework should consist of four stages: an introductory phase; the opening development of the interview; the central core of the interview and a closing phase (2000, p.37). The introductory phase, which began with the original contact email, was used as a way for the researcher to explain the context of the interview. Questions about the participant's current role and/or research were a useful opening. Interviewees were comfortable talking about familiar things and these answers gave the interviewer a fuller appreciation of the background of the interviewee. This could then be used as a prompt for more a focussed discussion. The topics of cultural significance and preservation were the central core of the interview. As Rubin and Rubin observe, the

main questions in the central core should “translate the research topic into terms that the conversational partner can relate to and discuss” (2005, p. 135). Using the knowledge acquired in the opening phase, the interviewer was able to probe for answers relating to the research questions through an understanding of the interviewee’s field of interest. For example, one of the academics interviewed came from a cultural studies background and was very comfortable talking specifically about terms such as ‘culture’ and ‘cultural significance’, whereas with other participants it was necessary to take a less direct approach. The closing stage of the interview gave the interviewee an opportunity to ask questions; provide any further opinions and for the researcher to ask permission to use the interviewee’s name in subsequent reports. It was also used to identify any further potential participants for the study through a discussion of the interviewee’s contacts. This basic framework was used in all of the interviews, although the questions were adapted to the responses of individuals and the order of questions altered to allow the interview to flow freely. This need for flexibility is common in interview research.

The purpose of responsive interviewing is “to generate depth of understanding” (Rubin and Rubin 2005, p. 30) and, in order to achieve this, Rubin and Rubin suggest that:

“design must remain flexible. Each major new discovery may require a redesign, figuring anew whom to talk to, where to carry out the study, or what concepts and themes to focus on” (2005, p. 35)

The researcher has been conscious of this need for flexibility and has continually reconsidered the focus of the questions in relation to previous data collected. However, it is important to “prioritise topics you want to talk about” (Gillham 2000, p. 20) to avoid inconsistency. It is very easy for interviews to be rendered useless by the over enthusiasm of a participant with an irrelevant topic. In this study, the topics which were prioritised were: the participant’s current research interests; the perceived cultural significance of digital games and opinions on the preservation of games.

Another important issue in interview investigation is choosing participants. Probability sampling was unsuited to this research because it was necessary to identify people who had experience and/or appropriate knowledge of the research area. Therefore, for this exploratory study, a selective sampling approach was chosen because, as Creswell states, it is important to “select individuals because they can purposefully inform an understanding of the research problem and central phenomenon of study” (2007, p. 125).

A combination of purposive sampling, in particular expert sampling, and snowball sampling was used. The literature review highlighted three potential groups to be studied: users of potential collections (academic and researchers); creators of material (the games industry) and those responsible for the preservation of heritage (memory institutions) (see **Chapter 3**). Participants were selected from these key stakeholder groups as they were seen as the experts on the different aspects of this study.

Through the interview process, it was also possible to widen the scope of the research as new contacts were identified. This included the addition of a fourth stakeholder group – the preservation groups. This process is referred to as ‘snowball sampling’, in which “the researcher makes initial contact with a small group of people who are relevant to the research topic and then uses these to establish contact with others” (Bryman 2004, p. 544). As this research was exploratory, and there has been a lack of previous research in this area, this sampling method was highly appropriate to the study.

In relation to interview participants, there were various ethical considerations. These were: informed consent, confidentiality and consequences (Kvale 1996). All participants in this study were asked to complete an informed consent form: this form outlined the purpose and details of the study and permission to record the interviews was sought. It also included a statement about confidentiality: whether participants were willing to have their names disclosed in publications and who would have access to the data. It has benefited this study that all participants agreed to recordings and to the use of their names in subsequent analyses. Participants were informed at this stage about any consequences of the study, in particular how data would be used. They were also asked whether they were interested in feedback and the outcomes of the study.

Opinion on the actual number of participants to interview ranges from 1-325 (Creswell 2007, p. 126) but Polkinghorne (1989) recommends between 5-25 individuals (Creswell 2007, p. 126). Kvale discusses how there is a tendency towards the attitude “the more interviews, the more scientific” (Kvale 1996, p. 103) but it was felt that the emphasis in this study should be on the quality of the interview rather than quantity. As there were four specific interview groups, it was hoped that between 5-10 interviews would be held within each category. This has been achieved although there has had to be a great deal of

flexibility in relation to the arrangement of interviews. In total, 27 interviews were carried out with the following groups.

- **Academics and Researchers**

In the initial phase of recruitment, academics working within the field of games studies were identified through information gathered in the literature review process and a UCAS search for games courses and inspection of institutional websites. Further potential participants were identified through the BFI's database of researchers, the *Moving Image Research Registry*. Nine interviews were carried out with this stakeholder group because the researcher wanted to ensure different aspects of games research (i.e. the multi-disciplinary nature) were represented.

- **Memory institutions**

Relevant institutions and organisations were identified through the literature review process and recommendations from other interviewees. Nine interviews were achieved with this stakeholder group. These included: representatives from the British Library, the British Film Institute, the Science Museum, the National Trust's Museum of Childhood, the National Computer History Museum, the V&A's Museum of Childhood and the executive director of the Digital Preservation Coalition. Contact was made with other institutions, such as the National Library of Scotland and the National Library of Wales, but no responses were received.

- **Games industry**

Participation from the industry in this study has been disappointing. Five interviews were held with this stakeholder group. These included representatives from UKIE, Game Republic and BAFTA; and two game developers. Contact was made with TIGA and other game companies but no responses were received. In one case, a developer was approached and agreed to be interviewed but he needed to get permission from his managers. He requested that the questions be sent to him before the interview so they could be checked. Further contact was not made. There was certainly an aspect of hesitancy from games companies to engage with this study: this is indicative of their lack of interest in preservation but also the competitive and secretive nature of the industry. The Department of Media, Culture and Sport; the Department for Business, Innovation and Skills; and members of the All-Party Parliamentary Group for the Computer and

Videogame Industry were also uninterested in participating in this study. This may also be due to a lack of interest in the issues of digital game preservation; or the hesitancy of civil servants and MPs to engage in PhD research.

- **Preservation groups**

This group had been overlooked in the initial research plan but they were identified as important to this study. Interviews have been held with representatives from four major online preservation groups. These were: the Software Preservation Society; the World of Spectrum; C64 tapes and Mobygames. These groups represent the most significant online preservation efforts and were suggested by other participants.

Locating and enlisting the cooperation of respondents was one of the biggest challenges of this study. As discussed above, various organisations declined, or failed to respond to requests, to participate in interviews. This was extremely frustrating and has hindered fuller development of this study. Even after people agreed to be interviewed, it was then necessary to negotiate an appropriate time for an interview. This process was often slow and time-consuming - it took 6 months to arrange and complete 5 interviews – and complicated, as participants would agree a date and then cancel at short notice. These experiences highlighted a need for flexibility and to adapt the approach taken. It was for this reason that telephone interviews were conducted as an alternative to face-to-face interviews in some circumstances.

Face-to-face interviews were the preferred method in this study as this presents the best opportunity for the interviewer to engage with the interviewee. However, telephone interviews have been used in some cases. Typically, telephone interviews are used for survey research in which quick responses to structured questions are elicited: there are limitations to this approach. On the telephone, there are “no visual clues such as eye contact, smiling, puzzled looks between you and the interviewee” (Walliman 2006, p. 92). However, by using this method, it has been possible to take a much wider focus than if only conventional interviews had been used. In particular, they have been used with some of the international participants due to a lack of funding to travel to all locations. They have also been used as a bargaining tool with some participants. When approached to take part in this study, some interviewees were reluctant to commit to dates for meetings but were more

willing to agree to telephone interviews. For people with busy schedules, this was seen as less of a time commitment, even though the length of the interview was usually the same. All interviews, both face-to-face and telephone, were recorded.

Recordings were made of all of the interviews in this study. Digital recordings were made at the face-to-face meetings and telephone interviews were recorded using a telephone recorder. Making recordings allowed the interviewer to focus on the topics and direction of the interview. It also meant that the interviewer did not have to rely merely on notes taken during the interview and memory when analysing the data. This would potentially have meant that important themes may have been missed and/or forgotten or there could have been issues of selective memory. In early interviews, some problems were experienced with recordings. One participant had chosen to meet in a noisy cafe and the recording was inaudible: this highlighted the importance of choosing an appropriate location for future interviews. In another interview, the recorder's batteries failed but the interviewer was unaware of this at the time. Details like these were double-checked before subsequent meetings. These interviews had to be excluded from the data analysis as their quality was inadequate. These are not included in the total number of interviews.

In addition to the interviews, various case studies have been carried out as they are an effective method for gaining an understanding of the current status of a certain phenomenon. They allow for "a detailed and intensive analysis" (Bryman 2004, p. 537) and when carried out in combination with other case studies, this can be useful for comparative purposes. One of the objectives of this study was "to review current digital game preservation activities" and, in order to achieve this, a case study approach was taken. The type of case study used in this study has been the 'exemplifying case study', "chosen because they will provide a suitable context for certain research questions to be answered" (Bryman 2004, p. 51). Significant case studies were identified through the literature review and additional interviews were held with representatives from four organisations currently involved in digital game preservation activities. These were: Stanford University; the National Center for the History of Electronic Games at the Strong National Museum of Play in the U.S.; the Computerspiele Museum in Germany and the National Videogame Archive, based at the National Media Museum in U.K. Visits were made to the National Media Museum and Stanford University (a visit to the US was made possible with funding from the John Campbell Trust). Telephone interviews were held with representatives from the Computerspiele Museum and the Strong National Museum of Play. In addition to these

visits and interviews with representatives from these institutions, the case studies included evaluation of their institutional websites and documentation on their game preservation strategies. Although this study has been UK-focussed, these cases have provided a useful international perspective on the issues surrounding game preservation.

4.4 Data analysis

Data analysis is the process of managing data and extracting meaning from the information that has been collected. According to Creswell, this “consists of preparing and organising the data; reducing the data into themes through a process of coding and condensing codes; and finally, representing the data in figures, tables or a discussion” (2007, p. 148). This can be summarised as organising the data; data reduction and data display. In this section, data analysis will be considered in relation to these steps. This will include consideration of the use of Computer-Assisted Qualitative Data Analysis Software (CAQDAS); an introduction to the process of preliminary data analysis and a discussion of the methods of coding and classifying data into themes.

CAQDAS packages are tools designed to facilitate the process of data analysis. However, as Dey observes, “a computer can help us analyse our data, but it cannot analyse our data for us” (Dey 1993, p. 55). The critics of CAQDAS suggest that the use of a computer distances the researcher from the data and that there is a high risk of decontextualisation (Grbich 2007, p. 234). It was important to be aware of these criticisms but it was also clear that CAQDAS presented the researcher with many advantages. It is a useful management tool for large amounts of data, making it “faster and more efficient” (Bryman 2004, p. 420). Furthermore, the fact remains that the researcher is still responsible for the analysis and, as Dey states, “these problems lie less in the technology than in the use (or abuse) we make of it” (Dey 1993, p. 62).

The package used in this research has been ATLAS.ti as it was readily available in the department and an individual licence was reasonably priced. Despite the criticism that it takes “considerable time” to set up (Grbich 2007, p. 233) and that it is a “daunting task” (Creswell 2007, p. 165), the researcher found the software easy to use and there was minimal effort involved in setting it up. Its ability to expedite the coding and retrieval process was a huge benefit and this enabled a more in-depth comparative analysis of the transcripts. The software also manages notes and memos attached to transcripts: this was useful in the process of preliminary data analysis.

The main purpose of preliminary data analysis is to ensure the researcher's closeness to the data and to assist the process of data reduction. Grbich refers to preliminary data analysis as "a process of engagement with the text to gain a deeper understanding of the values and meaning which lie therein" (Grbich 2007, p. 20). After transcribing the interviews, the first step was to read through the transcripts. This was an essential exercise in which the researcher gained an overall picture of what had been said. From here, it was then possible to start considering various questions in relation to the text. These questions were: who is the interview with; are there any special circumstances; what are the major issues emerging and what issues need following up (for an example of this preliminary analysis, see **Appendix III**). These questions were applied to all the interview transcripts and, as Grbich states, it has been a useful method of "checking and tracking the data to see what is coming out of them; identifying areas which require follow-up and actively questioning where information collected is leading" (Grbich 2007, p. 25). This was especially important because of the 'snowball' sampling strategy of the study and it has enabled the researcher to monitor potential gaps in the data collected. It has also been a useful starting point for the process of coding, or the "reducing of data into meaningful segments" (Creswell 2007, p. 148).

Coding is the core activity in data reduction: it draws out the elements, which are important to understanding the essence of meaning within the data. It allows the researcher to look for similarities and differences across cases and it is the first stage in developing relevant themes in relation to the research questions. According to Lewins and Silver, there are two possible approaches to coding:

"Codes can be generated inductively (from salient aspects identified in the data) or deductively (from predefined areas of interest)." (Lewins and Silver 2007, p. 84)

As an exploratory study into a new field of research, it was logical that the codes were generated inductively from the data itself. A deductive approach would have been inappropriate as there were no specific theories on which to base the coding process.

The process of coding each interview transcript was undertaken as soon as possible after the transcripts had been uploaded into ATLAS.ti. This was important as it meant that the interviews were still fresh in the memory. Bryman refers to this process of coding as "generating an index of terms that will help you interpret and theorise in relation to your data"

(Bryman 2004, p. 409). The ATLAS.ti software manages the code index and cross-references the different texts in which they appear: as new codes were generated, a memo was attached to identify in which text they first appeared. Once this had been achieved, the next stage in the process of data reduction was classifying the codes.

Creswell suggests that classifying is the process of “looking for categories, themes or dimensions of information” (2007, p. 153). This is achieved by reviewing the codes and identifying the links and connections between them. Grbich refers to this process of data reduction as “thematic analysis” (2007, p. 31). In this study, the researcher used the code index to distinguish patterns and identify examples of where different codes were used to express the same concepts. For example, in the coding process, ‘cultural significance’ had been used as a code in its own right but by studying the index of codes, it became evident that other concepts being used were also related to this particular theme. These codes were used to build a ‘code family’ of related codes (see **Figure 14**). [Other examples are shown in **Appendix IV**.]

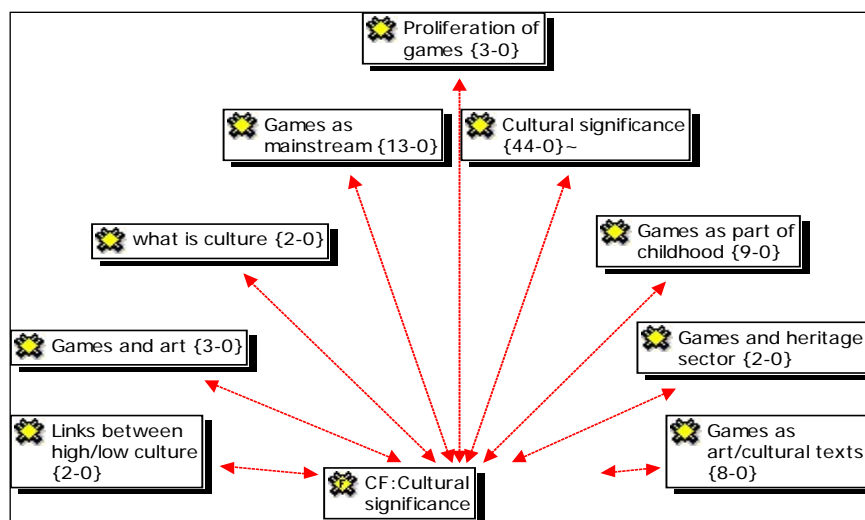


Figure 14: Code family - ‘cultural significance’

Through this process, it was possible to identify the key themes within the transcripts. Although it was recognised that, as Dey states, “classifying should always be guided by the research objectives” (1993, p. 46), it was also important that the themes came from the data itself because, as Lewins and Silver observe:

“the general principle underlying inductive approaches to coding is a desire to prevent existing theoretical concepts from over-defining the analysis and obscuring the possibility of identifying and developing new concepts and theories.” (2007, p. 84)

This also implies the importance of the researcher 'bracketing out' their own views and focussing on those of the participants. The researcher has been conscious of this throughout the study and has constantly referred back to the data when coding. Dey suggests that classifying is a process of "breaking up the data and bringing it back together again" (Dey 1993, p. 46). The process of bringing the data back together is completed in the data display stage.

Presenting the data is a crucial stage in the research process but, as Kvale observes, there are no standard ways of presenting the results of interview studies (1996, p. 264). However, in qualitative studies, the main focus is the data, with the use of direct quotes from participants. These quotes need to be contextualised and the reason for their inclusion explained. It is also important that the researcher observes the rules of objectivity, as Walliman states:

"There is often a temptation to be too selective in the data used and in presenting the results of the analysis carried out. Silently rejecting or ignoring evidence which happens to be contrary to one's beliefs constitutes a breach of integrity." (Walliman 2006, p. 149)

These factors have been used to guide the presentation of the results of this study.

Chapter 5: Findings and discussion

Chapter 5: Findings and discussion

In this chapter, the results of the interviews will be analysed in relation to the key themes and significant concepts from the literature review. This will enable an analysis of the main issues and findings in relation to the aims and objectives of this study. This discussion will focus on the following areas: the cultural significance of digital games; the relationship between games and cultural heritage; the current status of game preservation; the roles of stakeholders in the preservation of games and the barriers and challenges they face.

In section 5.1, the cultural significance of digital games will be discussed in relation to definitions of culture and cultural significance and the perceptions of different stakeholders.

In section 5.2, the relationship between games and cultural heritage will be explored. This will include a discussion of attitudes towards digital game preservation.

Section 5.3 focuses on the roles and responsibilities of the different stakeholders in digital game preservation and their attitudes towards these. These stakeholders are: the academic community; the heritage community; the games industry; and those involved in digital game preservation.

In section 5.4, the current status of digital game preservation will be examined, including the findings from the case studies undertaken in this research. This will highlight some of the key challenges facing those involved in the preservation of digital games.

Section 5.5 considers the barriers and challenges of digital game preservation. These include the issues of selection, emulation and the exhibition of digital games.

Finally, in section 5.6, a summary of the main findings of this study will be presented.

In this section, individuals from the different stakeholder groups are identifiable through the use of the following key: academics and researchers [A]; preservation groups [PG]; representatives from the industry [I] and memory institutions [M]. However, the researcher also includes here a full list of the interview participants in this study: these are organised alphabetically for ease of reference from the main text. Interviews were held between September 2008 and August 2009.

- **Interview participants:**

Duncan Best is the events manager for UKIE and the director of London Games Festival.

Stephen Brown is a volunteer involved in the *World of Spectrum*, a preservation website dedicated to games for ZX Spectrum.

Tilly Blyth is the Curator of Computing and Information at the Science Museum.

Chris Crawford was a major game designer in the 1980s. He was founder of the *Journal of Computer Game Design* and organised the first-ever *Game Developers Conference* in 1988.

Jon-Paul Dyson is Vice President for Exhibit Research and Development and Associate Curator for Electronic Games at the Strong National Museum of Play, Rochester, NY.

Liz Evans is a lecturer in the School of American and Canadian Studies at Nottingham University. Her main research interests are film and television audiences but she is also interested in audience engagement with new media technologies, including games especially in relation to 'trans-media storytelling'.

Mathias Fuchs is a senior lecturer and course leader in the Creative Technology department at Salford University. He describes himself as “an artist, musician and media critic”.

Dave Green is a contractor for BAFTA and the Communications Director for the London Games Fringe. He is a journalist with years of experience writing about games and was the editor of Channel 4's games website for five years.

Ruth Kelly is the Head of UK Wide Policy and Planning at BFI.

William Kilbride is the Executive Director of the Digital Preservation Coalition.

Bo Kvamme is the host of the *c64 tapes* website, a site dedicated to the preservation of games for the Commodore 64.

Andreas Lange is the founder/curator of the ComputerSpiele Museum in Berlin.

Jim Leonard was the founder of *Mobygames*, an internet-available database of games information.

Alison Love is House and Collections Manager at Sudbury Hall and the National Trust Museum of Childhood.

Henry Lowood is Curator of the History of Science & Technology Collections and Film & Media Collections at the Stanford University Libraries. He is an advocate for digital game preservation and is a partner in the Library of Congress-funded project, 'Preserving Virtual Worlds'.

Esther Lutman is an assistant curator at the V&A Museum of Childhood.

Ronald Milne is the Director of Scholarship and Collections at the British Library.

Kevin Murrell is a curator at the National Computing Museum.

James Newman is Professor of Media Communications, Film and Cultural Studies at Bath Spa University. He is the author of various books on digital games including the BFI Screen Guide, "100 videogames". He is also part of the team involved in the launching of the National Videogame Archive.

Andrew Ostler is a former game developer at Sony CEE.

Dan Pinchbeck is a senior lecturer in the Creative Technologies department at the University of Portsmouth. He is also a partner in the European funded *KEEP* project.

Richard Price is Head of Modern British Collections at the British Library.

Derek Robertson is a development officer for Learning and Teaching Scotland. He was previously a primary school teacher and lecturer at University of Dundee.

Jamie Sefton is Section Manager of Game Republic, the games arm of Screen Yorkshire.

Iain Simons is the Director of GameCity, an annual games festival in Nottingham which is now part of Nottingham Trent University. He is also a writer on games and writes about games for the *New Statesman*.

Paul Wheatley is the Digital Preservation Manager at British Library.

Kieron Wilkinson is a volunteer with the Software Preservation Society.

Aylish Wood is a lecturer in the School of Drama, Film and Visual Arts at University of Kent. Her research focuses on inter-disciplinary approaches to moving image media, including cinema, digital games and gallery installations.

Tom Woolley is the Curator of New Media at the National Media Museum in Bradford. He is part of the team involved with the 'National Videogame Archive'.

5.1 The cultural significance of digital games

Understanding the cultural significance of digital games underpins this research and, despite their obvious impact and influence - as examined in the literature review, the interviews have revealed that digital games have an uneasy relationship to culture. In the literature review, it was shown that culture is a difficult concept to define: Williams, for example, suggests that culture is “one of the two or three most complicated words in the English language” (Williams 1987, p. 87). This is due to the fact that culture is not a fixed entity; it is a social construction and this means it is “a diverse and flexible concept” (Salen and Zimmerman 2003, p. 508). It is also recognised that its definition is often a function of those who use it. Cultural significance is therefore highly subjective and, as Kelly observes, it is often difficult to make decisions about what is culturally significant “without the benefit of hindsight” (Kelly [M]). However, cultural significance is also undoubtedly related to the individual’s particular interpretation of culture. In turn, this has a considerable effect on their attitudes towards aspects of popular culture, such as digital games.

The relationship of digital games to culture is an uneasy one: interviewees have difficulty in distinguishing it and the position of games as an aspect of popular culture makes it difficult for some to accept it. In the interviews, there was much discussion about the cultural significance of games but it became clear that defining it was difficult. Simons observes:

“It is obvious that games are interesting to any media literate person but it is not so obvious *why* they are interesting. You cannot explain it. There was, and still is, this kind of black hole of people who are interested in what is happening. It’s not just the money but something culturally is happening.” (Simons [A])

Similarly, Newman states that it is difficult to measure the cultural impact of digital games:

“I think it is impossible to measure as it really depends on from whose perspective you are asking this. It depends on how you are trying to measure what the impact of games might be. Clearly they have been influential in terms of form and aesthetics and style...in relation to literacy...They change young people’s attitudes. I think it is one of those things that is almost impossible to quantify.” (Newman [A])

These observations highlight the problem of expressing the relationship of digital games to culture. Therefore, in order to examine the perceptions of the interviewees, it has been necessary to dissect their statements and to unpick the different ways in which they evaluate the significance of games. This analysis of their perceptions can be broken down into four main areas: the relationship of games to other media; the relationship of games to people’s

lives; the growing academic interest in digital games; and a change in perceptions towards them.

5.1.1 The relationship of digital games to other media

In many of the interviews, the relationship of digital games to other media was used as a way to question what cultural significance means, which relates back to During's definition of how value is assessed. During states that value can be defined as "the abstract worth of a cultural object...in relation to other objects" (During 2005, p. 57) and the relationship between digital games and other media has been used as a measure of the cultural significance of games. This is a useful way to look at digital games; certainly, the Birmingham School would argue that cultural objects should not be viewed in isolation from other elements within culture and society. In the literature review, digital games have been examined as a 'cultural industry' (Kerr 2006) and the relationship of digital games to other cultural industries, such as film, television and music, was a recurrent theme in the interviews. As a creative industry, Newman [A] suggests that digital games should be "viewed alongside other media"; Best [I] talks about putting them "alongside film and television as another creative moving image art form" and, although Green [I] is hesitant to compare digital games to other media, referring to a "superficial" resemblance between them, he makes constant references to film and television as a means of comparison. Green is right that there is a superficial resemblance between them but, comparing them is a valuable tool for discussing their significance. In fact, drawing comparisons between them is used as a way to justify the value of games as cultural objects; for example, Newman remarks that if "games are not significant then we have to accept that a whole bunch of other stuff isn't" (Newman [A]).

The reflective and transformative influence of games on other media is used by some interviewees as evidence of the impact of digital games on culture. In the literature review, the impact of games on other media was explored in relation to art and heritage; and the film and television industries. Woolley [M] also alludes to their influence on the film industry, when he refers to film directors, such as Stephen Spielberg and George Lucas, looking towards the games industry for inspiration. Evans' research [A] has focussed on the emergence of games related to television programmes and the 'threat' that this new entertainment form poses for traditional media. Building the relationship between digital games and other media in this way introduces the argument for the acceptance of digital games as part of culture, because as Newman [A] states, more broadly, "they are as

culturally significant as any other media form". Certainly, in the literature review, the impact and influence of digital games on other media was highlighted as substantial and significant.

However, this comparison also highlights that there is a gulf between them: film and television have become widely accepted as part of culture but games are still considered a "poor relation" (Newman [A], Blyth [M]). Newman uses the different placement of film and game reviews as evidence of the differing status of games and film:

"We have film reviews in newspapers and, if they do have game reviews, they are separate rather than alongside things that are more valorised." (Newman [A])

This view is echoed by others. Green [I] states that games "do not have the same sort of recognition in mainstream culture as perhaps other media, such as film and television" and Evans [A] observes that digital games are not "accepted on the same level as great cinema or the more established cultural forms". This difference between the value attributed to film and television, as opposed to digital games, is further evidenced by a lack of preservation activity in contrast to the efforts to preserve film heritage, as shown by Lange's timeline presented in section 3.3.

It is interesting to explore the cause of this evident difference in the perceived value of digital games as compared to other media. Newman is uncertain of the reasons for this devaluing of digital games and compares this to the status of film heritage:

"I do not know why it has taken so long to see them as equal to things like film and television...things that we do valorise. We do not have a great problem with things like the BFI existing and film heritage." (Newman [A])

Fuchs and Lange also compare the status of games to early attitudes towards film and television; Lange states:

"In the same way that film was at first perceived as a 'fairground attraction', so are computer games." (Lange [M])

Evans makes a similar observation in relation to television; however, she remarks on how perceptions have changed:

"Television was considered a worthless cultural object and was going to turn us all into mindless drones. Now it is seen as something which produces very high quality drama, high quality factual programming and has an important place within every society and culture." (Evans [A])

Fuchs makes a similar reflection:

“I think that also happens whenever a new media tries to become a lead technology. When TV started to invade the houses of American society, there were many suggested negative effects from brain cancer to aggression, to kids not being able to read. The old media took their revenge! If you use this new thing, you will die in hell!” (Fuchs [A])

In a similar argument to those presented by Byron (2008) and Seldes (1957), Evans summarises how previous perceptions have been recycled in relation to games:

“Cultural debates are very rarely new, just a re-hash of what people were talking about in relation to something else. Shakespeare was the working class entertainment of the masses and now he is the most revered figure in English Literature. It is all a matter of perspective.” (Evans [A])

These arguments all allude to the fact that digital games are a ‘new media’. However, it is already fifty years since the development of the first computer game and within a similar time-frame, the cultural significance of film and television has already been recognised. This suggests that it is not just an issue of time: there are more significant reasons for the differences in the way their relative cultural value is perceived. These will be explored in more detail in the next section.

Despite this observation that digital games are considered less significant than other media, it is clear that the majority of interviewees, particularly the academic community, do not share this view. Digital games are viewed as, “as culturally significant as any other media form” (Evans [A]); “on the same cultural level as film and books” (Lange [M]) and “just as important as the Lumiere brothers films” (Best [I]). In fact, Best [I] suggests that digital games may potentially be “more significant than film in the history of the world”. Lange [M] refers to digital games as “the medium of our time” and Fuchs [A] remarks that digital games are the “lead technology” for this generation. Best suggests that digital games have now become the most significant art form:

“As far as existing art forms, film, television, even painting on canvas, nothing has significantly moved forward or ever can move forward. It is a very static, linear position. With an emerging art form, like games, where you are continually astounded by all sorts of technological changes, it is very hard to pull back and look at what has actually been achieved here. What you are looking at is an entire new form of communicating art - non-linear art.” (Best [I])

There is certainly a consensus that the development of digital game technology is leading to a new relationship between the different media forms, as increasingly, “media is going across television, the Internet and games” (Newman [A]) and they have become “inseparable” (Newman [A], Evans [A]). This is also something that was explored in the literature review. Evans observes:

“It’s becoming increasingly difficult to separate off TV, film and games from each other. Games are becoming such an important part of people’s engagement with traditional media that it is very hard not to talk about games.” (Evans [A])

In other words, as Woolley suggests, it has become “hard to now pigeonhole” media because “they overlap one another” (Woolley [M]). In addition to this relationship, Newman comments on the new relationship of games to people’s lives: he suggests that digital games have become “part of a broader media diet” (Newman [A]).

5.1.2 The relationship of digital games to people’s lives

Salen and Zimmerman’s definition of culture as “what we think, what we do and what we produce” (Salen and Zimmerman 2003, p. 508) implies a relationship between games and culture through their significance to people’s lives. Certainly, the relationship of digital games to everyday life was a strong theme in the interviews. Digital games, as objects of play, are recognised as having a significant impact on childhood, as Lutman, from the V&A Museum of Childhood, and Dyson, from the Strong National Museum of Play, acknowledge. This is also reflected in personal statements: Kvamme refers to digital games as “a big part of my youth” (Kvamme [PG]) and Evans admits that, for her, “[digital] games were always part of growing up” (Evans [A]). Evans reminisces about fighting with her brother over the computer and refers to this as one of “those very usual family interactions around the computer” (Evans [A]). For her generation, computing technology occupied as important a role as television for previous generations.

Other interviewees were conscious of this change in the significance of different media, especially for the younger generation. From a broader perspective, Robertson and Pinchbeck share the view that digital games are significant aspects of childhood and they refer to games as a “cultural reference point” for children (Robertson [A]). Newman suggests that digital games have become as significant as film to some:

“For a whole generation of people, games have occupied just as important a place [as film] in their childhood, their adolescence, in their explorations of self and identity, in their leisure time.” (Newman [A])

Pinchbeck sees digital games as “much more important to a younger generation” because they are their “primary media consumption” (Pinchbeck [A]). From a functionalist view of play, digital games are also seen to have value because of their relevance to the development of children: this was explored in the literature review in relation to the use of games in education. In relation to constructive play, Dyson sees parallels between children playing with blocks and playing Spielberg’s game, *Blocks* on Nintendo Wii (Dyson [M]) and

Lange observes that “all children will have their first experience of computers through these games” (Lange [M]). Newman also refers to this relationship between young people and digital games and the impact this has on their relationship with digital technology:

“They are often the first point of access to computers for young people. People have been looking at the ways they change children’s perceptions of what a computer might be. People of my generation and people who are older see computers as being a work thing: young people grow up with computers and they are playable, friendly and approachable things. This changes their relationship with technology more broadly.” (Newman [A])

These perspectives echo the evidence presented in the section of the literature review on the impact and influence of digital games.

However, the significance of objects related to childhood has often been overlooked, as discussed by Huizinga (1938), Caillois (1962) and Sutton-Smith (1971). This is also implied in Woolley and Kvamme’s observations:

“A lot of people don’t like games - it is something that their kids do or it is something that is just a toy.” (Woolley [M])

“Much of the reason for this lack of interest is because games had been, and still are, largely seen as a worthless past-time for kids.” (Kvamme [PG])

Newman’s comment is more explicit:

“We have a problem with language in that inevitably games and play are associated with childhood and anything associated with children in Western culture is denigrated.” (Newman [A])

This dismissal of games relates to Sutton-Smith’s theory of the cultural rhetorics of play. Outlining different ways of interpreting games and play, Sutton-Smith distinguishes between the various ways that people conceptualise games (see section 2.4); these differences have been discussed in the interviews. There is acceptance by some of ‘play as progress’ – for example, how children can learn through digital games (Robertson [A]) and how they have been shown to improve hand-eye coordination (Evans [A]) but there is acknowledgement of the notion of ‘play as frivolous’ (Woolley [M], Kelly [M]) which therefore, suggests that there is no long-term significance in games which are a mere entertainment. These different ways of framing digital games influence perceptions of their cultural significance.

In addition to this relationship to childhood, digital games are seen as having an increasing significance to people’s everyday lives because more and more people are

choosing to interact with them. This is certainly reflected in the current statistics, as shown in section 2.3 on the business and economics of the games industry. By contrast to the previous arguments, some interviewees suggest that digital games are no longer seen as toys for children, as Dyson observes:

“Electronic games aren’t just for kids. They’re for teenagers, adults, even senior citizens.” (Dyson [M])

This is echoed by Robertson:

“Mums and dads and grannies and granddads are now playing games and the consoles are being taken out of the bedrooms and into the living rooms.” (Robertson [A])

These comments are reinforced by statistics from the Entertainment Software Association, as well as by the new-style advertising campaigns of Nintendo, which represent a significant movement away from the typical image of games as “geeky and for young men” (Wood [A]). This transformation is also certainly affecting their current status. Woolley refers to digital games as “the most popular pastime in the country” (Woolley [M]) and Newman suggests that digital games have “the same resonance and meanings to people’s lives as other media” (Newman [A]). This also has an impact on the way games are portrayed in the media: this is explored below.

This increase in popularity has led to some interviewees seeing games as becoming an accepted mainstream entertainment. Woolley attributes this development to the success of the *Nintendo Wii and DS* (Woolley [M]), which is echoed by Sefton [I] and Dyson [M]. Other interviewees describe games as “a hip thing” (Evans [A]), or “vogueish” (Newman [A]), and Newman proposes that “it is becoming more acceptable to describe yourself as a gamer” (Newman [A]). However, Simons and Green disagree: Simons is adamant that “games are just not mainstream” (Simons [A]); and Green suggests that because digital games are less immediately accessible, they are still a specialist field:

“Video games have become part of their own world and because they have built on all of these shared understandings, they become less accessible to a mainstream audience.” (Green [I])

Despite these differing opinions, it is clear that the growing academic interest in digital games can, in part, be attributed to the rise in their popularity, as Wood states:

“I see it going on around me and the amount of people interested in it so I am fascinated.” (Wood [A])

5.1.3 Growing academic interest in digital games

It is partly the increasing popularity, and partly the influence they are having on people's interactions with media, that has led to a growing academic interest in them. Digital games are seen as a useful tool for understanding society and social interaction; there is an appreciation of their aesthetic value and there is recognition of their role as an "expression of our cultural development" (Koboldt 1997, p.4). Cortada suggests that academics are the first group to recognise the significance of a new subject area (Cortada in Lowood 2004). Certainly, with digital games, there is a strong awareness that they are something "with a culture worth studying" (Chaplin 2007); and the subject is "gaining an identity" (Pinchbeck [A]). Interest in digital media has grown and Evans suggests that "more and more places are looking at digital technology" (Evans [A]). Simons has witnessed this development too, suggesting digital games have become "academically acceptable":

"There didn't seem to be much acknowledgement in broader academia that these things could be non-trivial and used for other things if you took the guns out. It was a few years until this became academically, in a broader sense academically, acceptable." (Simons [A])

Although, Evans [A] suggests that there is not a significant network in place, Lange disputes this, claiming there is now "an academic network for game studies academics" (Lange [M]); and Newman argues:

"Looking back 10-15 years, it is easier to identify a group of scholars now." (Newman [A])

Certainly, the literature review has shown that, despite game studies' problems with its identity, digital games have been recognised as legitimate objects of study and its group of scholars are now represented through academic networks and organisations, such as DiGRA.

The study of games is identified as a 'forward looking approach'; Newman thinks this is because "games are sexy" and universities are hoping to attract students with these 'sexy' new courses:

"It is kind of institutional short-hand for forward-lookingness. They are certainly very voguish things." (Newman [A])

These views are supported by evidence of a growing number of games courses available at institutions and the development of new faculties, such as the "Faculty of Creative and Cultural Industries" at the University of Portsmouth. This is a clear sign that games are becoming recognised as a discipline in their own right. There is a move away from

traditional media studies departments and, as time passes, the new generation of academics “are games people rather than rejects from film departments” (Newman [A]). This was a change recognised by Mayra (2008). Pinchbeck also acknowledges this trend:

“The next generation of researchers have got an undergraduate degree in games studies before they do their PhDs. A lot of high level games academics come from a different media background but these younger scholars are coming up...” (Pinchbeck [A])

This is important in relation to the ways in which the academic community will use and access digital games collections. The different types of game scholars – the formalists and situationists – will have different needs in relation to game archives.

Many academics are interested in games as “cultural artefacts” (Lange [M], Wood [A]) and as Evans states:

“If there is a place for the study of cultural objects, and I personally believe there is, then games have to be a part of that” (Evans [A])

She suggests that “cultural objects are the things that people choose to be a part of and choose to interact with, be that games, TV, or opera or sculpture or a newspaper” (Evans [A]) and the study of these objects is a means to understand society. This relates to Best’s proposition, echoing Caillois’ theory, that games reflect “the social situation of the time they were produced” (Best [I]). There is interest in “the impact of games on social interaction, community life, and society at large” (Dyson [M]); “the big issues which surround games – so, how they affect social relations or how they affect learning” (Dyson [M]) and their connection to the development of digital technology as “part of the digital revolution in the globalised society” (Lange [M]). Ostler states:

“Things like the GTA [*Grand Theft Auto*] phenomenon are something that people are going to want to study in the future. So there is academic value.” (Ostler [I])

In other words, there is an understanding of the relationship of games to modern society and “the cultural significance of games, right through from education to the cusp of emerging technologies” (Best [I]). This awareness of the significance of digital games relates to Koboldt’s definition of cultural heritage as objects which are valued because they are “an expression of the cultural development of a society” (Koboldt 1997, p. 4). This represents a significant shift in perception because now, as Newman remarks, games are being accepted as worthy of study:

“We do not have to justify why we are talking about games anymore. It seems they are becoming less of a media non gratis and there is recognition that there is something interesting and different about them.” (Newman [A])

This acceptance of digital games in academia reflects their increasing significance but it is interesting to consider whether this extends beyond the academic community.

Despite the academic acceptance of digital games, there is an awareness of the negative perceptions of games: these were introduced in the literature review. Digital games are recognised as being considered “distasteful” (Evans [A]) or “a time-wasting activity” (Green [I]). Pinchbeck refers to the “hysterical debates which they ignite” (Pinchbeck [A]) and Kilbride acknowledges the “cultural baggage” which surrounds them (Kilbride [M]). Wood [A] suggests the negative image of games is due to the media’s representation of them: a view shared by the DTI in their report on the games industry (Spectrum 2002). Pinchbeck suggests that this representation is “the usual way with any type of media, for journalists to grab the sensationalist stories to sell newspapers” (Pinchbeck [A]). Newman agrees that there is a problem because of “the way they are marketed and presented in public” (Newman [A]) and there is general agreement that “there is a lack of awareness of the intellectual interest and research” (Wood [A]). Newman comments:

“Outside academia, there are probably still considered as childish pastimes that do not warrant study. They are on a lower rung than film and television. I tell people I am a film studies lecturer!” (Newman [A])

These types of representation are delaying recognition of digital games as culturally significant; and hindering their acceptance as a valuable aspect of cultural heritage.

In the literature review, the concepts of high versus low culture were introduced in relation to the theories of Adorno, Hall and Williams. In the interviews, it was shown that these debates are highly relevant in relation to digital games. Digital games are a popular form of entertainment and there was much discussion about how what is popular has often been disregarded as insignificant. There is a suggestion that games are overlooked because of their popularity:

“I think in a lot of ways games suffer because they are so popular... There is still a kind of snobbery around populist film and so when it comes to games, there is that element.” (Wood [A])

Wood acknowledges that what is popular is often disregarded because “some people just do not get it...it is not on their horizon...they only buy into the stereotype” (Wood [A]). From another perspective, Kelly talks about ‘cultural trash’ (Kelly [M]) and the need to protect only high exemplars of culture. She suggests that there is high culture - “with a capital ‘C’” (Kelly

[M]), and on the other side, there is “what our society is like” (Kelly [M]). With this interpretation of culture, it is clear to see that ‘Culture’ is assigned more importance than the popular cultural objects with which people choose to interact. Furthermore, the division of opinion in these debates underlines the difficulty of accepting that digital games are part of cultural heritage.

Another reason for this lack of acceptance is that games are not as accessible as other media and therefore, there is a barrier to understanding them:

“Videogames are comparatively more of a challenge to get into. All games require a bit more effort to get into their world and they require a lot more investment in time to reveal what is good about them. Video games have become part of their own world and because they have built on all of these shared understandings, they become less accessible to a mainstream audience.” (Green [I])

“People disregard games as an artistic medium - it would be impossible to convince them to sit down and play a game for three hours, you are asking a lot of someone to be open-minded about these things.” (Woolley [A])

Certainly, it is agreed that there is a certain level of commitment necessary to take part in an MMORPG, such as *World of Warcraft*, or to complete all the levels of a quest-based game, such as *Myst*. Yet, recent games for devices, such as the Nintendo DS and Wii, are designed to appeal to a more ‘mainstream audience’ and there are a wide variety of more casual games available for novice gamers. In addition, it is not necessary for someone to play the more complex games for them to realise their impact and influence: not everyone enjoys *Chess* or the music of Mozart but, they are still recognised as significant parts of culture. In addition, the impact and influence of digital games is evident from reading newspapers, watching movies or merely looking at the world around us.

5.1.4 A change in perception towards digital games

Perceptions vary and interpretations of significance change. As a diverse and flexible concept, cultural significance is not a fixed entity and in the interviews, there was much discussion about how attitudes towards digital games are changing. Kvamme foresees that “in the near future...it [gaming] will be accepted and regarded at the same level as film and music” (Kvamme [PG]). Sefton suggests that games are already “as much a part of popular culture as music” (Sefton [I]). Evans observes:

“You just look at the numbers in terms of the importance of gaming at the moment, in terms of the people who do it, the hours they spend on it, the communities which are

built up around it, the investment of the industry in it, the amount of money the industry makes with it.” (Evans [A])

Pinchbeck believes “it is becoming more difficult to write games off, to disregard them as ‘low culture’ because they are recognised as having a general cultural worth” (Pinchbeck [A]). Best uses the example of the *Grand Theft Auto* phenomenon to explain how perceptions have changed:

“...there is a major change of direction really in terms of the way the public perception of games is going. If you take for example, *Grand Theft Auto 3* when it came out - pages and pages and pages of things about how outrageous it is in the *Daily Mail*. This time, there was an example in the *Daily Mail* where they had one report on one page about how outrageous *Grand Theft Auto* was and then on the next page over, they had a full page spread on it being the best game released in the year.” (Best [I])

He attributes this change to the growth in popularity of games:

“You have also got the fact that so many people play games now in UK - 21 million people - that you can’t go around saying [negative] things like that because you are effectively picking apart their lives.” (Best [I])

Other interviewees agreed that there has been a change in perceptions towards games:

“You start to see reports that games help your hand-eye coordination and the *Wii* is fighting against all the negative connotations of gaming. So I think there is evidence of a shift.” (Evans [A])

The positive impact of games is an important factor in the change of perceptions towards them. In his work, using digital games in the classroom as a new teaching method, Robertson has received wide support from teachers, parents and education authorities:

“A lot of these people came in cynical - not knowing games, not playing games, and thinking they were just about *Space Invaders*, *PacMan* or shooting zombies or driving a fast car. This quickly disappears when I start showing them stuff that I have picked out particularly. It is clear to see there is a link between teaching and learning.” (Robertson [A])

Robertson acknowledges that attitudes would have been different in the past:

“I think if I had started this 3 or 4 years ago, there may have been more outrage. I think this is because computer games have been seen as a modern day folk devil, inducing moral panics. But people like Nintendo are coming out with gems and showing that it can be different... I think that is breaking down the barriers of concern and the moral panic that was there.” (Robertson [A])

Other work on the use of digital games in education, as examined in the literature review, has highlighted the positive impact of games; and the significance of organisations, such as

the Department of Trade and Industry, taking an interest in the potential of games cannot be over emphasised.

An increase in popularity is one aspect of changing perceptions but another factor, which is helping to break down barriers, is the coming of age of a generation that has grown up with games:

“It has changed - people are now of the generation who grew up with games and they understand it better than the generation before.” (Lange [M])

“Now because a generation has grown up with games, they have infiltrated everything - it is in South Park episodes, it is in the news...” (Sefton [I])

Digital games have become a familiar aspect of people’s lives, something they have grown up with, and “the wider population are quite happy to talk about games” (Newman [A]) and they are prepared to question their negative portrayal in the media (Best [I]). Woolley suggests that this will eventually have an effect on cultural institutions:

“I think as the generations who have always had games come into more powerful positions, things will change.” (Woolley [M])

The problem is that without a ‘comfort zone’, these changes in perception and the ‘coming of age’ of the next generation may be too late. Certainly, at present, there is evidence that many individuals within heritage institutions do not have an understanding of games, which affects their perspective; Kelly confesses:

“The problem is I am not young enough - that is the problem at the BFI - we do not know enough about games so we need to speak to people who do.” (Kelly [M])

With this kind of attitude, there is a very real chance that, if action is not taken now, it will be too late for digital game history.

On a positive note, there is some evidence that the cultural legitimacy of digital games is extending to institutions; Sefton discusses *Game Republic*, the games network for Yorkshire, becoming part of *Screen Yorkshire*, the regional screen agency:

“The games sector was something that *Screen Yorkshire* was very keen to get involved with so bringing *Game Republic* under the wing of *Screen Yorkshire* seemed like a really good idea... For *Screen Yorkshire*, games are right at the forefront. It is not like we are a little annex. Games are right up there. It is a very important industry.” (Sefton [I])

The commissioning of the Byron Report and the establishment of the All-Party Parliamentary Group on Computer Games are used as examples of institutional recognition of digital games (Woolley [M], Pinchbeck [A]). Woolley [M] and Best [I] also use the example of the creation of the BAFTA videogame awards as a sign of institutional acceptance of games. Best, who was involved in the foundation of the videogame awards, states:

“We started lobbying them to say that this is an important art form and to not address it would be conspicuously bad in the long term. In some ways, really dragging it back to its linear terms to really explain why it was important, why it is different to film and why potentially it is going to be more significant than film in the history of the world. Bright people get that - it just takes some explaining, just because we have a naivety about something new, it doesn't mean that we can't understand the principles of it. These were bright and intelligent people and they saw it quite quickly.” (Best [I])

However, Simons is critical of how people use these awards as evidence of the cultural acceptance of games:

“You talk about cultural legitimacy and the first thing people say is that they have their own BAFTA award ceremony. But it is so isolated. It is not enough. I don't think it's about celebrating games - BAFTA is not about to add a 'V' to its name.” (Simons [A])

Despite this criticism, it is an important development. It is a sign of recognition of the contribution of the industry and those that work within it to culture by a significant cultural institution and it raises the profile of digital games in a positive way.

Institutional acknowledgement of digital games was broadly considered to be linked to the economic significance of the digital games industry. Sefton uses an interesting example to emphasise the influence the games industry is having on other creative industries:

“There was an interesting moment at E3 this year when Microsoft had their conference and they brought up on stage 'The Beatles' – the surviving members - for *Rockband Beatles*. And then they brought up Stephen Spielberg to talk about NATAL, which is the new Xbox Motion Sensing Technology. For me, that was like the film and music industries recognising that games are actually really big and they need to get involved.” (Sefton [I])

Ultimately, if one aspect of culture is “what we produce” (Salen and Zimmerman 2003, p. 508), the status of the games industry as economically successful is important. The economic value of the industry is certainly seen as highly influential. Digital games are a “huge growth industry” (Evans [A]) and, as Sefton recognises, this has an impact on perceptions towards it:

“Our industry now has a lot more clout. I think a lot of it is to do with the fact that our industry makes a hell of lot of money for this country...The government are finally waking up to the fact that we bring in a lot of cash. I think games brought in £4 billion

into the UK last year. The government cannot ignore that: the Treasury cannot ignore that.” (Sefton [I])

However, economic significance does not immediately equate to *recognition* of the cultural significance of digital games; although as Lange observes in relation to the re-opening of the Computerspiele Museum, it is an important driving force:

“There is no industry in Berlin anymore, this all collapsed after the Second World War and in East Germany, after re-unification. So there is a need for the city to change and it needs a new perspective. The creative industries are seen as an attractive prospect for the city and games are part of this. So this is now a cultural thing and an economic thing. The museum will be a sign that Berlin is an innovative place, which welcomes the creative industries and game developers.” (Lange [M])

In this way, it is clear that economic significance can be hugely influential on decision-makers and this will impact on perceptions of cultural significance. Simons is rightly critical of the industry’s reliance of sales statistics to express significance:

“The way it expresses the cultural penetration of games and the cultural importance of games is through the amount of units sold and that’s it. They are incapable of expressing what is interesting and important about games other than we had a brilliant year and sales are up.” (Simons [A])

The economic value of the digital game market is often used as a way to justify the significance of digital games and although this fact alone is not sufficient justification, the economic significance of the industry is having an impact on how digital games are viewed. As the industry matures and its audience matures too, the impact which digital games have had on society are recognised more widely. There is a lack of awareness of these changes by those with a fixed view of cultural significance and what culture means. These people often have no experience or interest in games. These views are reflected in attitudes towards digital games as an aspect of cultural heritage and as a phenomenon worthy of preservation.

5.1.5 Summary

The relationship of digital games to culture is a key factor in the question of their preservation. It has been explored through the interviews in relation to four key themes: the relationship of games to other media; their relationship to people’s lives; the growing academic interest in games and discussion of a change in perceptions towards them. Digital games have been shown to have become a reference point in many people’s lives, which is an indicator of their contemporary significance. Furthermore, the growth of academic interest in digital games is directly related to their position as an “expression of the cultural development of our society” because researchers have recognised the contemporary

'usefulness' and 'aesthetic value' of digital games (Koboldt 1997, p. 4). For these reasons, there is growing acknowledgement that digital games should receive the same recognition and appreciation as other cultural and media forms; the comparisons drawn between digital games and other media highlight this.

Definitions of culture and cultural significance are based on the views of those who use them and although they are diverse and flexible concepts, it is difficult for individuals to have a diverse and flexible approach to their views. For some, digital games are as significant as any other media as examples of 'what we produce'; they are important because they represent 'what people do' and they are a reflection of 'what we think'. Others may question the cultural significance of what is popular; of mass-produced commercial products and, of objects which they think will have very little relevance to future generations. These differences of opinion are crucial to the future of digital game history and its preservation. In the next section, the relationship between digital games and cultural heritage will be explored in more detail.

5.2 Digital games as part of cultural heritage

In this section, the question of whether digital games are “something with a history worth preserving” (Chaplin 2007) is considered. Attitudes towards digital game preservation will be discussed in relation to the definitions of cultural heritage and preservation, as examined in the literature review. The significance of the preservation of digital games is explored in relation to the importance of the origins and context of the phenomenon; the research experiences of academics; and a discussion of the status of digital game preservation strategies. This will also include consideration of the interviewees’ interest in the preservation of digital games; the question of responsibilities in the digital environment and definitions of value.

For the purposes of this study, cultural heritage is understood to be a collection of tangible objects that have a contemporary significance and value but which also have a relevance to future generations who want to understand the origins of their present-day society. But, *how do digital games measure up against these criteria?* A growing academic interest in digital games is evidence of their contemporary significance. From the literature review, it can be seen that there is recognition of their aesthetic value as a new art form; there is an interest in the role they play in people’s lives; and there is awareness of their influence on other media and wider technologies. In conclusion, they are acknowledged as part of the cultural development of society. In addition, they are appreciated as a reflection of society. Kucklich affirms that digital games are “cultural products with deep roots in the culture they stem from” (Kucklich 2006, p. 104); Massonet refers to games as a “living mirror of any given society” (Massonet in Lauwaert et al 2007, p.91). Certainly, if the context of the early games is considered, it is clear to see the influence of the Cold War and the ‘space race’ in games such as *SpaceWar!*, *Space Invaders* and *Asteroids*. For these reasons, the impact of digital games and their influence are considered worthy of study and they can be framed as part of cultural heritage.

If digital games are accepted as part of cultural heritage, it becomes important that their history and origins are maintained. Kline observes that “historical perspective is vital to critical understanding” (Kline et al 2003, p. 79) and for this reason, it is seen as important that “people can see where the industry has come from” (Brown [PG]). Crawford suggests that this is only of interest to game designers, as they “need to be playing some of these

classic designs in order to realise the design heritage” (Crawford [I]). However, there is a broader awareness of the significance of game history because as Kent observes, “new technologies do not simply spring out of thin air” (Kent 2001, p. 2). In order to study and understand digital games, academics and researchers are conscious of the need to understand their origins because “games have a history” (Evans [A]). Brown sees relevance in preserving this history “so that people can see where the industry has come from” (Brown [PG]). Certainly, the development of contemporary games from the arcades and early consoles, as explored in the literature review, are an important aspect of understanding the phenomenon and perceptions towards it.

These developments, and the origins and history of digital games are at risk. Best feels that it is “depressing” that the origins of game history are being lost; he states:

“It is really depressing to think that any work done on the Spectrum ZX or something like that was not preserved so people can see the origins of what is going on.” (Best [I])

He suggests that these early examples are “unbelievably significant” in relation to future technological developments. This is echoed by Evans:

“They have gone from simpler graphics to far more complex graphics and game play and we have no way of tracking that.” (Evans [A])

Best comments:

“There might well be some mechanics or methodologies which were used in the past which no one has thought about at the moment which is lost. It is rather sad. In terms of how your industry develops, if socially you develop because of your history; then exactly the same could arguably be said about the games industry.” (Best [I])

It would be viewed as a tragedy if early music, films and television programmes had been lost: *will the loss of digital games be mourned?*

As part of cultural heritage, the context of games is also significant. Wood is interested in “tracing the history of how this stuff moves from being new to being normal” (Wood [A]). She observes:

“The marketing of hardware, the peaks and troughs and how this leads to a media frenzy is fascinating.” (Wood [A])

Best suggests that “like film, like any other art form, games represent the social situation of the time they were produced” (Best [I]). If it is accepted that games reflect the time in which

they were produced, the context of the historical development of the medium is extremely important. This is why this was included in the literature review of this study. Woolley [M] refers to “the overlap between games and film and computing technology” and he argues that it is important that this is recognised and preserved, which is echoed in Pinchbeck’s statement that “looking back is so important” (Pinchbeck [A]). This relates to Evans’ observation:

“Different media cannot be shut off from each other. There is a definite cultural context of what has come before and what comes after. I think knowing where it has come from and understanding its history, just like understanding the history of any art form, of understanding television, film, literature, drama, anything, I think it is important to study it.” (Evans [A])

In other words, the contemporary context of games can only be understood through its historical context - this seems to be acknowledged in relation to other media, such as television and film, as Newman observes:

“It is certainly different to the stories we are told about music, film and television. We cherish the old and we understand the meaning that new releases have in the context of the old.” (Newman [A])

In relation to digital games, it is clear that this recognition has yet to be achieved and ‘not cherishing the old’ can be seen as a potential threat to the preservation of the historical development of the phenomenon.

There is a question of whether there is any need to be concerned about the history of digital games and the issue of whether games need to be preserved was raised in the interviews. Green questions whether this is “a problem that does not exist” (Green [I]). He argues:

“The great thing is that if there was a medium that you had a good chance of being able to preserve quite easily it is videogames because the first 20 or so years are incredibly well preserved.” (Green [I])

There is no evidence that this is true; in fact, the reality, as the work of Gooding and Terras (Gooding 2007; Gooding and Terras 2008) and the exploratory work in this study emphasise, is that much has already been lost from this period. Green justifies his position, by stating:

“If you are trying to get hold of a commercial game from any period, you can. They were usually produced in large numbers and if you cannot find them on the Internet, you can usually find them on *eBay*. You have to pay a price on *eBay* depending on their rarity. Anything that was commercially mainstream is available on the internet or available on *eBay*.” (Green [I])

It is true that preservation groups use *eBay* and car boot sales to source original titles (Brown [PG], Kvamme [PG], Wilkinson [PG]); however, Newman rightly questions whether this is an appropriate way to secure the future of digital games:

“Obviously a lot of stuff is on illegal sites and you can get hold of this stuff on *eBay* or at car boots but it seemed crazy that this will be the mechanism whereby you preserve games. I like *Cash in the Attic* as much as anyone but this is not a solution to preserving our digital history.” (Newman [A])

This is not a preservation strategy and it would not be considered an appropriate way for other cultural objects to be sourced. Illegal sites are recognised as a useful source for finding older titles and Crawford suggests that this means that access to play these games is “not as serious an issue as it was 10-15 years ago” (Crawford [I]). However, as Pinchbeck observes, using illegal Internet resources is not a viable option for legitimate academic research:

“Some of my students use *Abandonware* sites - I think if a student does this it is OK but it is not acceptable for professional researchers to be downloading illegal media.” (Pinchbeck [A])

Moreover, these are not sustainable preservation solutions.

There is further evidence that sourcing original titles is not as straightforward as Green and Crawford imply; many academics have experienced problems, trying to access older titles:

“I was supervising final year students doing their dissertations and a lot of them are interested in the evolution of genres. So for example, if they are looking at survival horrors, I think they should play the original games like *Silent Hill* and the original *Resident Evil*. But a lack of access to these originals was hampering their research...Looking for material is a fundamental problem for those interested in games.” (Pinchbeck [A])

“We did the book, *100 videogames* for the BFI. One of the frustrations in compiling that list was that all of the games had become difficult to get. Most of the 100 already had not survived.” (Newman [A])

“As a researcher it is very frustrating...I have pictures of all the games so I know exactly what they look like but I can't play them. The only way I have about talking about playing them is from my memory. And it is very frustrating. You kind of learn to at least get a screenshot of anything interesting when you discover it, just in case it's gone again. Unless you are there in the moment and build up your own memory of them, you have no way of actually looking at this kind of stuff.” (Evans [A])

This is also reinforced by the work of Gooding and Terras (Gooding 2007; Gooding and Terras 2008). There is a strong perception that digital games are “disappearing” (Simons [A]). Evans is aware that innovation in the computing industry means that everything “changes so quickly and so rapidly that it is very hard to keep up and keep on top of things”

(Evans [A]). There is a sense of “frustration” (Evans [A], Pinchbeck [A]) that gaming history will be lost if nothing is done to prevent this. Kilbride compares this to the history of film:

“It is going to be a bit like those early films - we have something like...only 1 in 5 of the early Hollywood feature films survived. That looks to be the future in relation to computer games.” (Kilbride [M])

These experiences demonstrate that there are very real causes for concern for the future of the history of digital games.

The question of whether digital games have a history is also raised. Green suggests that a lack of preservation activity is caused by the fact that “compared to film, videogames are still a very new medium” (Green [I]). Section 2.2 of this study highlights the historical development of digital games – it is an industry which has developed at a fast pace and to describe it as a new media is unhelpful. Furthermore, as Lange’s timeline shows [see Section 3.3], people had already started to think about film preservation by this point in its lifespan. The loss of these potential research materials is clearly already affecting academics’ work. Pinchbeck sees accessing original material as a “fundamental problem” and Simons states:

“There is no place where we can actually look at this stuff and a lot of people are having this thought.” (Simons [A])

These experiences demonstrate that there is an awareness that digital games are at risk and the problems that this causes for research. This evidence is justification for Blyth’s fear that nothing will be achieved until “people realise how much has already been lost” (Blyth [M]). Certainly, the literature review highlighted that to date there have been insignificant efforts to ensure the future of digital games; and whilst people still see this as a “problem that doesn’t exist”, there will be limited progress.

Preservation is the means by which one generation can ensure the passing on of knowledge to the next. With the development of academic interest in digital games, there comes an awareness of the longer term significance of digital games and there is a consensus amongst most interviewees, in particular the academic community, that the preservation of digital games is important. Wood observes:

“If you take games seriously and have a desire to preserve your cultural heritage, then games are part of that.” (Wood [A])

Sefton remarks that “it would be criminal if a lot of the games which are part of heritage were lost” (Sefton [I]); Best suggests it would be “an absolute disaster” (Best [I]). These opinions are echoed by Evans [A], Simons [A] and Newman [A]. Kvamme comments:

“Most countries store copies - most have also started digitising projects - of books, music and newspapers to secure local culture/languages and the local history. In my opinion, computer software should be included among this material being secured for future generations...They have more or less completely ignored a large part of our cultural heritage.” (Kvamme [PG])

However, because of the commitment necessary to ensure the survival of heritage, decisions have to be made about what is worth passing on. This raises two questions: *who is responsible for these decisions* and *how is ‘worth’ assessed?*

Responsibilities are recognised as one of the key dimensions of preservation (Owen in de Lusenet and Wintermans 2007, p. 48). Yet, despite this consensus on the need for an archive, there is less agreement on where the responsibility should lie. Certainly, responsibilities are not as neatly divided out in the digital environment as in the analogue environment (Jones and Beagrie 2001). Evans suggests that there is a need for a national preservation strategy¹:

“In an ideal world, you would have some kind of museum/institution which becomes interested in them. Like a game equivalent of BFI or if the BFI had a decent budget. Some sort of national level institution which is there to recognise and catalogue these kinds of games.” (Evans [A])

In fact, the BFI are currently undertaking a collections review and the responsibility for the preservation of digital games has been raised as an issue:

“At the moment, we are undertaking a review of our collections policy and we are talking to different people and it seems a lot of people are very interested in games. So your study is very pertinent. The main question for me is what is the connection between games and film? ... Computer games may be worthwhile and interesting and it is possible that the BFI may go there but it will be focussed on how they intersect with the art, history and impact of film.” (Kelly [M])

Best suggests that the British Library should assume responsibility for the preservation of digital games:

“To be fair, this is something the British Library should be doing...I think this is part of the social heritage of the country so it should come under those sorts of things. They spend £65 million doing up the Royal Opera House but this is just as significant as that. It should be the kind of thing that comes through lottery funding and it should be done through organisations that have a heritage in this area because what is the point of creating something new to deal with it.” (Best [I])

However, traditional institutions have well-established remits and there is often a reluctance to make value judgments about new aspects of heritage. For practical reasons of resources and funding, institutions are concerned about taking on new areas of responsibility. The

¹ This interview took place before the announcement of the launch of the National Videogame Archive.

British Library, for example, has no interest in taking on responsibility for the preservation of digital games because, as Milne states:

“Games are outside the scope of our collecting policy...the British Library has never collected games - we have not collected games of any sort.” (Milne [A])

In fact, when it was suggested that there were some people who felt that the British Library should take responsibility for the preservation of digital games, Price was clear that this was not an option:

“What is the rationale for that? We all agree that someone should be doing this but that might not necessarily be an existing institution - it might be a new one. You cannot give an institution a new remit without making the funding available. We are all agreed there is a need for this but I would debate quite stubbornly that the British Library is not the place for them.” (Price [M])

Highlighting the need for collaboration, as discussed later in this chapter, he continues:

“I think before we all jump to conclusions and just say, ‘oh, the British Library can do it’, we have to see what is involved.” (Price [M])

It is clear from these comments that there is no agreement on where responsibility should lie: this will be a serious barrier to progress. Due to the importance of responsibilities, they are discussed in more detail in relation to the roles of different stakeholders in the next section.

The other question in relation to the preservation of digital games is: *how is ‘worth’ assessed?* Preservation decisions are based on the perceived value of an object. According to During, value can be broken down into three criteria: the worth of an object in relation to other cultural objects; the worth of an object as judged from within the institutions from which it is produced; and an individual’s personal taste and preferences (During 2005, p. 57). In the interviews, the relationship of digital games to other cultural objects, such as film and television, was used as a comparison to demonstrate their significance. Evans [A] and others use the argument that if film and television are worthy of preservation then so are games. Conversely, it was also used as a way to negate this significance – for example, Wheatley [M] and Woolley [M] suggest that games are not as important as books. This highlights how perceptions of value are subjective and decisions will be dependent on individuals’ interpretations.

During’s other criteria for value are equally problematic in relation to digital games. As discussed in the literature review, as products of a perpetual innovation economy, the industry does not actively promote the long-term value of their products. Digital games are

viewed as disposable commodities and there have been no moves to encourage the recognition of digital game heritage. The BAFTA videogames are an important development but this recent initiative has yet to have an impact on the culture of the industry. In relation to taste, the decision-makers' views of culture and cultural significance, and their personal knowledge and experience of digital games, will impact the value attributed to objects. It is clear from the interviews that personal tastes are having an effect on preservation decisions in relation to digital games – many curators, such as Kelly and Lutman, admit to having no interest in, or experience of, gaming. With these factors affecting preservation decisions, it is easy to understand how the preservation of digital games has been overlooked.

If cultural heritage is understood as a collection of tangible objects that have a contemporary significance and value but which also have a relevance to future generations who want to understand the origins of their present-day society; then digital games are an important aspect of this. They have a contemporary significance to people's lives and the context and origins of their history will have significance to future generations who are looking to understand their past. This is recognised by the academic community. Academics and researchers have firsthand experience of what has already been lost and there is sense of urgency about preventing further losses. Certainly in order for continued research into games, it will be essential that digital games become accepted by institutions as an important aspect of our digital and cultural heritage and that these institutions respond with preservation efforts. However, there is some scepticism about these issues from others, which delays action. In addition, there is no consensus on the significance of these losses from all groups. Decisions of value are highly subjective and the future of digital game history will be influenced by how these decisions are made and the interpretation of culture of the decision makers. In addition, there is a question over where the responsibility for this task should lie in relation to traditional institutional collection policies. The practical issue of roles and responsibilities is very important and the attitudes of the key stakeholders in the preservation of digital games, with regards to these, are discussed in more detail in the next section.

5.3 The stakeholders in the preservation of digital games

One of the objectives of this research has been to investigate the perceptions of key stakeholders in relation to the preservation of digital games. These stakeholders have been identified as the academic / research community; the preservation community; the games industry and memory institutions. The attitudes of these groups have been considered and will be discussed here; this will also include reflection on the roles and responsibilities of the different groups.

The academic community are important stakeholders in the preservation of digital games as potential users of collections. They have embraced digital games as “socially meaningful and academically legitimate topics of study” (Kline et al 2003, p. 42). Digital games are seen as cultural objects and there is recognition of these objects as “an expression of the cultural development of society” (Koboldt 1997, p. 4). This relates back to early periods of game studies and the theories of Caillois and Sutton-Smith, who observed that games “reflect [society’s] cultural patterns” (Caillois 1962, p. 83). As Kline states, “historical perspective is vital to critical understanding” (Kline et al 2003, p. 79) and for this reason, there is awareness that the origins and context of digital games are an essential aspect of understanding them. This has led to a realisation by academics that, in order to appreciate the significance of games and to continue to study them, there is a need to preserve and protect them. Having experience of what has already been lost strengthens this awareness and reinforces the need for action. As primary users of future game archives, it is extremely important that the academic community engage in the issues of preservation; speak out about its importance and lobby to protect this neglected part of cultural heritage. They will also have important roles to play in selection decisions and the consideration of the significant properties of digital games.

The game preservation community has a passion for games. Motivated by “nostalgia” (Brown [PG], Wilkinson [PG]), and a desire to maintain access to old titles, they have shown great commitment and dedicated their time and money to preservation activities. This is shown by the work of groups, such as the *Software Preservation Society*. These groups are recognised by most interviewees as undertaking the most significant efforts in the preservation of digital games. Sefton states that “it is the fanatics that have done the archiving for the industry to a certain extent” (Sefton [I]) and Pinchbeck suggests

that “50% of game preservation will be done at fan level” (Pinchbeck [A]). Crawford remarks that “the number of [preservation] volunteers out there is astounding. We will never run short of volunteers” (Crawford [I]). These groups have an awareness that “this stuff is going to be lost” (Wilkinson [PG]). Kvamme states:

“The industry failed to do this important job and the government and museums also failed to see the importance of doing this. We simply stepped up to do the work before it's too late...if we don't, who will?” (Kvamme [PG])

Their work is important because this community has “embraced emulation” (Pinchbeck [A]) and, as Sefton acknowledges, the “emulation scene has really kept alive so many games” (Sefton [A]). Yet, in spite of this, their efforts are vulnerable.

The legal status of these activities is doubtful due to the groups' haphazard approach to seeking the appropriate permissions. Green suggests that “one of the reasons people are doing it informally is that no-one else is doing it and the fact that if you are prepared to overlook these copyright issues, it is quite a straightforward task” (Green [I]). Although this view overlooks the complex issues surrounding digital game preservation, it does highlight the significance of the legal issues involved. Even though some publishers have allowed games to be preserved by these groups, there are many others who are unwilling or hesitant to allow this type of activity, as Brown comments:

“It gets a bit problematic when you have got companies which were operating in the 80s which are still in business, like your *CodeMasters*. Although they would probably allow distribution of the games if they could, on advice from their lawyers, they think it is better not to.” (Brown [PG])

Certainly, legal issues represent the biggest challenge, and threat, to the work of these groups, as Wilkinson [PG] acknowledges. Kilbride observes, “a lot of the work on preservation has been piracy” (Kilbride [M]) because without the appropriate permissions to undertake preservation, the legality of these sites is “a grey area” (Kvamme [PG]). According to the preservation groups, seeking permission for preservation is “time-consuming” (Wilkinson [PG]) and “not practical” (Kvamme [PG]). To avoid legal challenges, Kvamme runs “a low profile site, not to attract potential legal trouble” (Kvamme [PG]). Leonard has had experience with legal challenges:

“I used to be involved in preserving games - I was part of the abandonware movement. I developed something similar to *Mobygames* but with downloadable content. I wanted to pirate older stuff. I thought the companies would not mind so it was ok. Of course, this was never legal. In 1997, the IDSA sent ‘seize and desist’ letters to lots of people involved with these sites. They warned that we were

infringing copyright and that we had 24 hours to correct it. I took everything down.” (Leonard [PG])

He suggests that, because of strict IPR and copyright laws which protect publishers' interests, “preserving electronic entertainment history is legally impossible” (Leonard [PG]). He would like to see “an official exception for electronic media and games which states that after so many years it is ok to distribute this stuff” (Leonard [PG]). Kilbride also acknowledges that current IP and copyright laws are “undoubtedly a barrier to preservation issues” (Kilbride [M]). He and Pinchbeck [A] discuss the need for preservation exemptions for museums and libraries to collect digital material: these exemptions are without doubt an important step for the future of all forms of digital preservation. However, Kilbride recognises that the industry may not welcome these changes:

“If I was a big computer games company and an organisation, like a big library, came and told me I want to take a copy of your software and furthermore, I have the right to do it as the Deposit Library Act allows me to do it, I think I would be slightly resistant. It implies a loss of control of your work.” (Kilbride [PG])

Certainly, the industry's resistance to any changes will influence government's development of new policies.

Despite the fact that these efforts cannot be considered a legitimate resource for researchers, their work is extremely important. Firstly, they have assumed responsibility because they have observed, and become frustrated by the fact, that others are not willing to undertake this task. They have also provided a successful blueprint for digital game preservation activity and their work highlights what is possible and what is problematic. Lavoie and Dempsey observe that digital preservation responsibilities will “include decision-makers outside the cultural heritage community” (Lavoie and Dempsey 2004) and it is obvious that the preservation community will have an important role to play and should be considered as an essential stakeholder, and valuable source of information, in institutional efforts to take forward their preservation activities.

The culture of the games industry affects how it views its “cultural capital” (Simons 2009) and this culture is directly influenced by the industry's business models. Driven by perpetual innovation, there is a strong emphasis on new products and being forward-looking and, unlike as in other cultural industries, there is little recognition of the significance of its history. Blyth suggests that “they are not interested in heritage” (Blyth [M]) and Kvamme observes that there is “a lack of initiative and interest to secure their history” (Kvamme [PG]).

Certainly, as Kilbride observes, there is not “a strong drive from the computer games industry, specifically trying to engage [in preservation]” (Kilbride [M]). Price also comments that the industry has not “connected itself with the memory institutions” (Price [M]). Kvamme blames this disinterest from the industry for the indifference of official institutions:

“The main reason for the lack of interest from official institutions is the lack of initiative and interest from the game publishers and developers in working with official institutions to secure their own history.” (Kvamme [PG])

During suggests that quality, in relation to value, can be defined as “the worth of a cultural object as judged from the organisations from which it is produced” (During 2005, p.2003). Certainly, in relation to digital games, the worth the industry attributes to its products beyond their shelf-life is questionable which, in turn, affects the perceived value from outside the industry.

This culture has had a direct effect on how the industry perceives preservation. Lavoie and Dempsey argue that the industry should be “persuaded or enjoined to preserve the material in their custody” (Lavoie and Dempsey 2004) but it is apparent that the games industry does not want to take responsibility for the preservation of its own history. Wilkinson suggests this lack of interest is due to the absence of financial incentives (Wilkinson [PG]); this is echoed by Ostler [I] and Crawford [I]. After all, “games are a commercial industry - you can’t ignore that. They are there to make money” (Best [I]) and “the way to make money is to come up with the new improved version” (Crawford [I]). In addition, Best makes clear his view that “the industry will not get involved [in preservation] if there are costs” (Best [I]). However, it is not expected that industry undertake this role itself.

Jones and Beagrie suggest that the creators of digital material are the principal stakeholder in preservation (Jones and Beagrie 2001) because of the strict IPR and copyright laws which make it “legally impossible” (Leonard 2009) to preserve these objects without their involvement. It is unmistakable that the industry is an important stakeholder but it is more reasonable to expect that the “right to preserve” will be handed over to an external organisation with an established reputation and agreed upon, by “striking a balance between the interests of the content providers and collecting institutions” (Lavoie and Dempsey 2004). In addition, as Stapleton observes, it is better for an archive “to obtain the digital master which has been produced by the creator... [rather than] be reliant on lower-quality derivatives that have been produced for distribution purposes” (Stapleton in Hockx-Yu and Knight 2008,

p. 146). However, the industry's attitude to handing over this responsibility is unclear. Ostler [I] suggests that the industry would not have a negative reaction and Woolley's statement, in relation to the development of the National Videogame Archive, seems to reinforce this:

"I think that because they have not been approached with this kind of thing before they are all very enthusiastic. A museum saying that they want to preserve their history, I think a lot of them are quite flattered." (Woolley [M])

Simons notes that the reaction tends to be "apathy rather than backlash" (Simons [A]) and certainly, in some cases, companies have willingly given preservation groups rights to distribute particular games (Wilkinson [PG]). Best observes, in relation to IPR issues:

"They have no retail value after a period of time. So therefore, I would have thought the issues around that, if there are issues at all, will be for a very limited time around a title that has come out and not over a longer period of time." (Best [I])

He continues:

"I would be amazed if *Electronic Arts* were worried about a game which was released 5 years ago appearing in a library available open to the public for them actually to look at it. Where you might have issues is where you are in the same generation of technology or console. There are issues - I know Midway defends the right to use *Space Invaders* but it is different and of course, you would have to pay a royalty if you were to use it commercially at any point. This is different - it is for research, it is for understanding, it is for knowledge purposes. It is not to make a profit out of it so it comes under a different bracket. It would be a depressing world if they did think like that." (Best [I])

His overall conclusion is that the industry's support will be dependent on whether it has "a direct effect on sales" (Best [I]). Both Sefton and Best agree that support will be dependent on a respected organisation taking responsibility for this:

"If you are talking about take-up and scepticism about projects, which is always 99% of the problem with new projects - it's getting people to buy into it, you need a well-established organisation." (Best [I])

However, with the rise of retro-gaming, there remains a very real issue of whether preservation activity is considered a threat to the company's commercial interests. Sefton comments:

"Retro-gaming over the last few years has become huge. They have suddenly realised that they have all this fantastic IP that people love and they can whack it out on loads of formats." (Sefton [I])

Certainly, this raises a question about the industry's potential support for a digital archive of their games. Their lack of willingness to participate in this study reinforces this question.

There is divided opinion in UK memory institutions about digital games. There is recognition by some that games have a contemporary significance but many people are questioning whether there is a lasting significance which makes them worthy of preservation. Some of the memory institutions claim to have an interest in digital games. Lutman and Love both comment that games “are an important part of childhood” (Lutman [M]). Blyth observes:

“They are central to our audience and what they would expect to see at the Science Museum. They are recognised as important and are central to the subjects that we cover.” (Blyth [M])

Others, like Kelly [M], openly state that they have no interest in digital games:

“It is difficult to say whether we will glean something from games in the future but my hunch is not.” (Kelly [M])

Murrell admits “none of our curators are interested...no one is clamouring to do it” (Murrell [M]). As well as a lack of interest, there is also a problem of lack of expertise in this area. When discussing a potential exhibit of digital games at the National Trust Museum of Childhood, Love observes:

“The problem was I have no real interest in computer games so we did not know what the popular games were for the Nintendo.” (Love [M])

These attitudes are directly influencing preservation decisions and it is therefore clear that memory institutions are not doing enough to protect digital game history. Wheatley states that there are “a few institutions involved with computer games but no one is taking this on to a wide extent” (Wheatley [M]) and Pinchbeck criticises that institutions are “failing miserably to do something” (Pinchbeck [A]). Certainly, digital games are not seen as a priority, as Milne [M], Kilbride [M] and Wheatley [M] acknowledge. Wheatley states:

“We have a lot of digital content and there are other collections with have apparent higher interests to our users.” (Wheatley [M])

Woolley expresses a similar view:

“I think if the government said they were going to fund something like this and it was going to cost £100 million and it was all tax payers’ money, I think there would be an up-roar. There are things that are more important. Books, films, TV, radio - people would think they are more important.” (Woolley [M])

These attitudes relate to the issues of the traditional collection policies of institutions.

There is certainly no institution taking complete responsibility for the issue of the preservation of digital games: this is because the question of responsibility is “by no means

as established in the digital environment” (Jones and Beagrie 2001). Sefton comments on the preservation of games that “the problem is that the games industry is such a new industry and it is only just getting recognition and there are no traditional mechanisms set up to do this” (Sefton [I]). Certainly, digital heritage is presenting problems for traditional institutions: they are focussing on “trying to preserve what they already do but with digital means” (Kilbride [M]) and there is no room for new collections. Kilbride remarks that “developing a collection of computer games would seem quite alarming to many institutions” (Kilbride [M]). He explains that, because museums are pressed to cope with existing demands, “the thought of opening a whole new collection area is not an appealing prospect” (Kilbride [M]). Murrell’s statement reinforces this observation:

“We have enough to do without taking it on. Space is a limiting factor and funding.”
(Murrell [M])

A lack of resources to support the development of new collections is acknowledged as one of the reasons for an absence of activity in this area. Wheatley states the problem is “about having the resources to do it” (Wheatley [M]) and similarly, Blyth observes:

“We do not have the resources to do it. We know it is an issue but there is a need for a massive stream of funding to do it.” (Blyth [M])

This lack of resources may be ‘space and funding’ but it is also time, as Blyth suggests:

“There are 32 curators at the museum and I am the only person dealing with computing and information so at the moment, we are not doing anymore than keeping this stuff, storing it and displaying it. It is an issue and we know it is an issue.” (Blyth [M])

This issue of a lack of funding for public sector and charitable organisations to undertake additional responsibilities is certainly a valid reason for insufficient development in these areas but it is an issue that needs to be overcome.

For traditional institutions, especially museums, there is also an absence of expertise and knowledge about digital preservation. Despite the amount of work on digital preservation, this has primarily been undertaken by libraries and has focussed on text-based documents:

“I think libraries are fairly well advanced with digital preservation, particularly because they are mainly dealing with publications so they are fairly straightforward. Archives are a bit behind because of the objects they are dealing with and museums are nowhere.” (Kilbride [M])

Blyth agrees that this is true:

“Libraries are more aware of this digital stuff - they have e-journals, e-books and e-newspapers. Museums do not have the same culture.” (Blyth [M])

The nature of collections is changing and museums are finding it hard to keep up with these changes:

“The heart of museums is material culture: it is artefacts and it is difficult to know how we can change into a virtual or ephemeral collection...The other problem is expertise - we have experts who know how to conserve physical objects - plastic, metal, wood - but we do not have the expertise for this [digital preservation].” (Blyth [M])

Kilbride suggests that providing “access in the long term to computer games totally requires an emulation approach” (Kilbride [M]): however, the focus of institutions has often been on migration:

“The emulation approach whether it be the preservation of hardware or the development of emulators has been seen as a much lower priority for public institutions.” (Kilbride [M])

This is because of the types of material that institutions have been working with to date. The development of digital collections will require a change in processes, which will be problematic for many.

Museums have recognised that there is a problem. Blyth admits “we are not very well set up for dealing with software” (Blyth [M]) but, although there is acknowledgement of this, it seems little is being done. Murrell even suggests that museums are ignoring the problem:

“We have recognised there is an issue and asked the question about what will happen but we have sidestepped it...this is not something that is in our sight lines – perhaps it ought to be?” (Murrell [M])

Blyth suggests that it is government that is ignoring the problem:

“The government's ‘Digital Britain’ reports are focussing on the future and the importance of the digital economy. They are ignoring heritage.” (Blyth [M])

There is certainly a need for more support for these organisations to adapt to the changes to their roles and the growing digital heritage.

Deegan and Tanner comment that “collaboration is ubiquitous in the digital preservation community” (Deegan and Tanner 2006, p. 148). Collaboration between creators and curators has particularly been recognised as important in relation to complex objects. Certainly, there is awareness amongst the interviewees that collaboration will be key component of the success of preservation efforts in this new field. Blyth [M] recognises that collaboration between the different stakeholders is essential to the success of digital preservation initiatives but it is clear that this approach has not been fostered in relation to

the preservation of digital games. No institution has contacted the preservation groups despite their expertise in emulation (Kvamme [PG], Wilkinson [PG], Brown [PG]); Wilkinson states:

“This is not something that libraries were doing - we did talk to them but no one was really interested. It is difficult to motivate interest in this and get official involvement.” (Wilkinson [PG])

These groups have thought about how to get official support but they have been unsuccessful; Brown comments:

“I did get in touch with someone involved in the British Computer Society. It was more to do with sourcing tapes but that fizzled out to nothing. I did think about approaching the BL because obviously I have done work with UKMARC so I have met a few librarians in my time but I do not know if they would be interested. I thought about approaching the Lottery but that fizzled out. Someone I work with, their wife works on the local Newcastle lottery fund and I was pretty much told I was wasting my time.” (Brown [PG])

Green sees this is an oversight and is keen to see any official preservation efforts “working in conjunction with the amateur/informal activity” (Green [I]). Lowood also recognises the need for collaboration between enthusiasts and institutions, as he recognises the strengths and weaknesses of both groups:

“I think of the cultural institutions as big battleships and the individual enthusiasts are like PT boats. The PT boats can get around much quicker but it is much more difficult to steer a battleship in a new direction. However, the PT boats/enthusiasts are more vulnerable to attack and destruction whereas the battleships are more resilient. Cultural institutions have more experience of long-term preservation strategies.” (Lowood [A])

As well as working with preservation groups, there is a need for institutions to work together. Kilbride [M], Wheatley [M] and Blyth [M] are keen to see collaborative efforts between different institutions: Wheatley sees potential for collaboration and Kilbride and Blyth see a real need for it. Blyth states:

“My feeling is that realistically we need to set up a collaborative effort with institutions such as the BL, the BFI. We need to bring together these different skills and expertise and then this can be extended beyond games. My experience is that there are small initiatives run by an enthusiastic individual and then at the end of the 5 years of funding, people move on and things are not transferred. We need to get this on the agenda more and we need specific support for this.” (Blyth [M])

Price also sees the importance of bringing people together to discuss the issues of the preservation of games:

“I think we should be getting together and asking what games are and what they will be used for. The stakeholders need to come together and look at what computer games will be for in historical terms and then we can make a decision of where to keep them.” (Price [M])

Certainly, part of these discussions should include a decision about what are the significant properties of digital games and how these can best be preserved.

Collaboration is the way forward for digital game preservation. National and international institutions should be coming together to tackle these issues. In addition to the professional expertise of librarians, curators and archivists, academics will have a role in the selection of material; the preservation community will have a role in technical issues and the games industry will be important in relation to legal permissions for preservation and providing “digital masters”. It is widely acknowledged that these groups should be brought together to discuss the issues of digital game preservation because it is true that “the problem is far larger than one group or individual can solve” (Deegan and Tanner 2006, p. 148).

Through the interviews undertaken in this research, it has been possible to explore the perceptions of the different stakeholder groups in relation to digital games and the issues of preservation. For academics, digital games have become objects worthy of study and this interest promotes an awareness of the issues of long-term access. Preservation groups are the most active in the efforts to preserve digital game heritage but they are faced with legal challenges by working without the appropriate permissions from the games industry. The industry is disinterested in undertaking the role of preserving its history: their culture does not value the past and there is little financial incentive for them to do anything. However, the importance of their involvement cannot be overlooked. The institutions responsible for the protection of cultural heritage have been slow to respond to the new demands that the digital world challenges them with. They are hesitant to take on a new role: they are under pressure because of limited resources and expertise in digital preservation. Certainly, there is an understanding amongst many interviewees that people need to come together to discuss these issues more fully and to establish an agreed way forward. However, there has been no movement to coordinate efforts to preserve digital games and to get people together to discuss the relevant issues. This would be an important step forward to securing the future of digital game heritage.

5.4 The current status of digital game preservation

In this section, the current status of digital game preservation will be considered. This will include a summary of the attitudes of the institutions involved in this study and a discussion of the case studies. It will also include closer examination of other digital game preservation activities which were discussed in the literature review. These analyses will show the limitations of current digital game preservation activity and introduce some of the key challenges involved.

As discussed in the literature review, there are various internet-based digital game history activities, such as *Mobygames* and *KLOV*. These websites are documenting and providing access to valuable information about digital games and arcade machines. These will be important resources for digital games scholars because, as the example of the *Royal Game of Ur* demonstrates, documentation about games is vital to understanding them. These sites will also be essential sources of cataloguing material for digital game archives. However, they cannot be considered as preservation activities as they focus on information about the games rather than the games themselves.

Groups of enthusiasts, such as the *Software Preservation Society*, have clearly undertaken some of the most significant efforts to protect digital game history. However, this type of informal activity is unstable and vulnerable. Many of these groups are working without the appropriate legal permissions and even where these have been sort, the work is being undertaken by enthusiastic amateurs. Without legitimate support from the games industry and institutions, their activities remain useful and an interesting example of how things can be achieved but they cannot truly be recognised as significant preservation efforts. Informal, amateur groups cannot ensure they are able to carry out the “continuous processes” needed to enable artefacts “to live as long a lifetime as possible” (Deegan and Tanner 2006, p. 3).

From the interviews, it is possible to summarise the attitudes of participating institutions and the status of game preservation within these. The Computer History Museum is uninterested in digital games, preferring to focus on their existing remit. The

V&A Museum of Childhood and the National Trust's Museum of Childhood see digital games as a small part of what they do but are concerned by the practicalities of digital game collections. The British Library acknowledges the significance of games but does not feel any responsibility for their preservation and the British Film Institute is undecided about the relationship that digital games have to their existing mission. This reflects Owen's criticism that institutions are "defining the digital world in terms of the institution instead of defining the institution in terms of the digital world" (Owen in de Lusenet and Wintermans 2007, p. 48). The Science Museum recognises their relevance to their existing collections but does not have the resources, or expertise, to develop into new areas.

As part of this research, interviews were carried out with those involved with the prominent digital game preservation activities discussed in the literature review. Case studies are an effective method for gaining an understanding of the current status of a certain phenomenon and when carried out in combination with other case studies, these can be useful for comparative purposes. The case studies identified for the purposes of this investigation into the current status of digital game preservation were the Strong National Museum of Play in US, Stanford University; the National Videogame Archive in UK and the Computerspiele Museum in Germany. As the most significant institutional efforts to preserve digital games, these cases provide a valuable international perspective and, although the contexts of these collections are different in many ways, a comparative analysis reveals that there are many issues in common.

5.4.1 Introduction to the case study organisations

The Computerspiele Museum in Berlin was the "the first permanent exhibition of digital interactive entertainment culture" and its mission statement was "to increase the acceptance of the media and remove existing prejudices" (Computerspiele Museum). Its founder, Andreas Lange, is one of the key figures in digital game preservation and, despite the museum's closure in 2000, he remains an active supporter of game preservation initiatives via the website, the *Digital Games Archive* (DiGA). The museum's collections are currently in storage but are still accessible to researchers. There is now renewed hope that the museum will eventually re-open with official support, especially with the governmental moves to promote the growth of the creative industries in Berlin, as Lange observes:

“The museum will be a sign that Berlin is an innovative place, which welcomes the creative industries and game developers.” (Lange [M])

Stanford University has a high profile involvement with the preservation of digital games. Firstly, it is home to the Stephen M. Cabrinety collection – a historical collection of computer games from the 1980s. This collection was donated to Stanford University in 1998 by Stephen Cabrinety’s parents, after his early death in 1995. Having founded his own software company at the age of 16, Cabrinety had a life-long interest in games and gaming history. In 1989, he founded the non-profit organisation, the *Computer History Institute for the Preservation of Software* and “it was his dream to find a permanent location for his collection where it could serve as a museum, an educational tool and an archive for scholarly research” (OAC). Cabrinety was a graduate from Stanford and, as home to the Silicon Valley Archive, the University was seen as an appropriate location for his collection after his death. In addition to the historical collection, the University has a collection of post-1993 games in their media collection and 10 different game consoles available in their library. The Curator of the History and Technology collections, Henry Lowood, is one of the key voices in digital game preservation and Stanford University’s collection of digital games, games-related artefacts and material is “probably the largest collection in the world” (Lowood [A]). The collection is intended to support the growing discipline of game studies and the research needs of Stanford’s students and academics.

The Strong National Museum of Play, in Rochester, US, is the “only museum in the world dedicated solely to the study of play as it illuminates American culture” (Strong National Museum) and collects and preserves artefacts relating to the history of play. Founded in 1968, it has a collection of over half a million toys, dolls and other objects of play and is the custodian of the National Toy Hall of Fame. The museum has recently started to “aggressively collect” electronic games (Dyson [M]) and launched the National Center for the History of Electronic Games in 2009. As part of its mission to preserve the complete history of play, the Strong National Museum has recognised that digital games are an important new development with a close relationship to traditional toys and games:

“We... feel that there is a lot of continuity - games are revolutionary but there is a lot of continuity between play and games, pre-electronic games and play and electronic games and play. We want to explain that continuity...so what are the parallels and differences between playing Tennis and *Wii Tennis* or with constructive play, between using blocks and playing Spielberg’s *Blocks* on the *Wii*. Or playing ‘Cowboys and Indians’ in your backyard to playing *Halo*.” (Dyson [M])

With the re-branding of the National Museum of Photography, Film and Television to the National Media Museum in 2006, the museum began to consider “the things we were not really covering before, things we did not really have a voice about, things like the Internet and the history of computing, the history of computer games and mobile technology” (Woolley [M]). For the National Media Museum, digital games are seen as a “vital part of popular culture” (NVA) and an important aspect of new media, as Tom Woolley, Curator of New Media, remarked:

“The games collection - the games archive - that was just an automatic response to what new media is. Games are a huge part of that, falling out of the computing revolution.” (Woolley [M])

For these reasons, digital games are seen to be an important part of the museum’s remit and, in 2008, the National Videogame Archive (NVA) was launched as a joint project between the National Media Museum; Nottingham Trent University and Bath Spa University.

Through interviews with representatives from these institutions, which include Tom Woolley, Curator of New Media at the National Media Museum; James Newman and Iain Simons, academic partners in the National Videogame Archive project; Henry Lowood, a curator at Stanford University; Andreas Lange, Curator of the Computerspiele Museum and Jon-Paul Dyson, Director of the National Centre for the History of Electronic Games at the Strong National Museum, it has become apparent that there are various challenges and obstacles involved in the preservation of digital games. These can be summarised as the issues of the exhibition and interpretation of these objects; the problems of long-term preservation, including legal issues; and the selection of material for collections.

5.4.2 The exhibition and interpretation of digital games

As Salen and Zimmerman highlight, digital games are more than a combination of hardware and software. They are also, as Juul observes, more than rule-based systems. These views are reflected in the NVA’s statement:

“Videogames are more than digital code that can be dissected and emulated or systems of rules or representations.” (NVA)

Digital games are complex digital objects. They are both objects and activities and they are “composed of more than one type of component” (Hedstrom and Lee 2002, p. 218). This raises complex issues for their collection and preservation and new challenges for the institutions involved. Firstly, *how can games be exhibited and displayed to a museum*

audience? The NVA are particularly interested in “exploring and devising innovative and engaging ways to exhibit and analyse videogames” (NVA). In order to overcome this problem, the foci of the museums’ collections are “the stories of games” (Lowood [A]) – the cultural context of the games. The emphasis of these stories is slightly different according to the museum’s individual field of interest. The Computerspiele Museum is interested in demonstrating that “computer games are more than just toys” (Lange [M]). For the National Media Museum, digital games are an aspect of new media and they are interested in “how the community has consumed it” (Woolley [M]). For the Strong National Museum, digital games are a new development in the history of play and their interest is in games “as being part of a larger aspect of play and human culture” (Dyson [M]). These different approaches reflect the different types of academic interest, as discussed in the literature review.

Despite these differences of interpretation, there are commonalities between the museums’ approaches. Woolley suggests that “the way it has impacted society is the primary way which we will be examining the history of games” (Woolley [M]). Dyson expands on this idea:

“[We are interested in]...their impact on human culture and the big issues that surround games so how they affect social relations or how they affect learning; questions of addiction and violence in games. So the big questions that surround the videogames themselves.” (Dyson [M])

In order to achieve these objectives, the museums have to consider the practicalities of how to present games to a museum audience. The institutions are aware that building collections of digital games will include accumulating items other than just the hardware and software, as Newman observes:

“...it is tempting to just save the game - that is the object. But our reasoning is that the game is not the finite way to explain the object.” (Newman [A])

Dyson also acknowledges that their collection will extend beyond the games as objects; and Simons recognises that the objects will need to be displayed in relation to other aspects of their cultural context:

“The concern is how do we translate and codify the cultural importance of videogames and how do we explain what videogames are to someone who has not seen them before and in all likelihood, the thing that does that best is not the videogame.” (Simons [A])

Therefore, the collections will include, alongside the hardware and software, “indirect means [of interpretation] – whether it be oral histories...or paper game guides” (Dyson [M]) or, in other words, “the ephemera which surrounds games” (Simons [A]). They are interested in “those sort of things that get at the larger issues about how we experience games” (Dyson [M]):

“Here is an example. When I was speaking in Chicago, I met someone from the University of Wisconsin, who was looking at girls’ use of *The Sims* and she had some great poster boards that girls had made up about how they use the games themselves to work through issues in their own lives. There was one girl whose father had died and whose mother had recently started dating again and the poster beautifully showed how this girl was using her experience in *The Sims* to work through the emotions of this. To me, that is a wonderful artefact. It is one thing to have a copy of *The Sims* but to have something that tells us a human story around the game, how it is experienced, the emotions for the player and the impact on that player. That for me is a really important story.” (Dyson [M])

This example demonstrates the significance of user-generated content: it also highlights the complexities of capturing the significant aspects of digital game history.

Lowood states that “game preservation is more than just software preservation” (Lowood [A]). The approach of preserving the material around games, such as official documentation and packaging; as well as unofficial material, such as fan fiction, blogs and user-generation content, is intended to present a fuller appreciation of game culture and aims to overcome the problem that the games alone are “really bad at telling their stories” (Newman [A]). However, *do these materials without the games not become meaningless? What is being done to ensure the survival of the games themselves?*

5.4.3 Long-term preservation

Ensuring long-term access to digital games is a difficult issue for these collections. Digital games have a multifaceted structure because they are a combination of “text, images, graphics, audio, video, and executables” ((Hedstrom and Lee 2002, p. 218). They are ‘complex digital objects’ and, as such, there are many issues to consider in relation to their preservation. In the interviews with the case study organisations, the focus was on the efficacy of emulation. Capturing the authenticity of the experience of playing a game is considered by some as an important component of their preservation. Unfortunately, the

use of emulation as a preservation technique raises questions about whether this can be achieved, as Newman observes:

“If you are going play a game, I think you have to play with the original.... we tend to think that emulation is an exact copy - but it isn't. It is very much about the integrity of the experience - so it's really useful and interesting but it is not the same experience.” (Newman [A])

Dyson is also aware that there are issues with emulation but he recognises that the ‘integrity of experience’ is difficult to achieve:

“The ultimate problem comes with how you give guests an authentic experience.... We want to create as authentic an experience as possible but sometimes, it is not always possible.” (Dyson [M])

In order to address these issues, it is necessary for a consensus to be reached about the significant properties of digital games. It is interesting that significant properties were not specifically addressed by the interviewees. Although they allude to their importance through their discussions of the important aspects of digital games, they are not directly discussed. This is, in part, due to the social and cultural focus of this study; but it is also indicative of the participants' lack of experience with digital preservation.

The discussions about emulation and its suitability as a long-term preservation strategy demonstrate that the museums have a lot of unanswered questions in relation to the best way forward for their collections. It is clear that the museums are struggling to deal with the complex techniques of digital preservation. Woolley acknowledges that “it is a massive task... ...overwhelming” (Woolley [M]) and although Dyson recognises the significance of this method, he admits that the Strong National Museum has not yet started to address the issues of emulation:

“In preserving the games, I cannot say that we have been very active in leading any efforts in emulation - this is due to resources at the moment so it does not mean that we will not do it in the future.” (Dyson [M])

The solution to the problems of emulation as an effective strategy will certainly lie in hybrid collections which bring together physical collections and digital collections, including oral histories and documentation on the experience of playing these games, as well as related artefacts such as merchandise; packaging; instruction booklets and advertising material. This will without doubt need to include emulated versions of the games but it will first be important that agreements are made between stakeholders about the significant properties of games to “ensure authenticity and integrity (InSPECT)”.

In addition to the complexity of the task itself, there are legal issues ahead for museums as they start to investigate the digital preservation of games. The industry's reaction to the development of physical collections has been positive, but as Dyson observes, "emulation is a whole other issue and there are all sorts of issues that come up with that" (Dyson [M]). Simons recognises legal issues as a potential barrier for collections and he suggests, "there will be a big legal fight to come" (Simons [M]). Certainly, the legal issues involved suggest that there is a need for the active participation of the industry, or a change in IPR and copyright laws, to guarantee museums can maintain future access to these materials. The uncertainty of institutions about these issues is a potential threat to the long-term security of their collections.

5.4.4 Selection

Making predictions about what will be significant in the future is a difficult task because, as Leonard observes, "it is very difficult to know if something is historically relevant until we need it" (Leonard [PG]). However, the funding implications and costs of preservation activities means that active decisions have to be made about what should be preserved - this is acknowledged by Dyson and Newman:

"Because every game you take in takes time to process...you have to decide what the best use of our time is." (Dyson [M])

"It is not the museum of everything...I think you have to make decisions." (Newman [A])

The commitment necessary to ensure the longevity of preserved material is restrictive – not everything can be preserved, and therefore, museums rely upon strategic selection and retention policies: the National Videogame Archive is creating a collections policy to guide these decisions (Woolley [M]) and the Strong National Museum has developed a framework for collecting, interpreting and exhibiting electronic games (Dyson [M]). In fact, many of the decision processes outlined by these documents are very similar. Newman states that the National Videogame Archive has "a clear sense of what games are important in the early stages" (Newman [A]); Woolley suggests that the archive will focus on "landmark software" (Woolley [M]) and Dyson sees the focus of the Strong National Museum's collection as "popular games...pioneer games...games with a wider social impact" (Dyson [M]). In order to overcome the problem that these decisions are based on the value judgements of a limited group, the National Videogame Archive hopes to involve the games community:

“The board for the NVA is the people you would expect from the UK perspective and they are identifying the culturally significant and interesting titles that might be collected. But we are also hoping to work with the community as cultural significance is of course quite subjective.” (Simons [A])

Lowood is also hoping to involve the gaming community in selection policies. The original selections for the ‘Digital Game Canon’ were made by leading experts in the field of game studies, based on the significance and impact of the games; however, it is hoped that in the future these selection processes will be guided by the games community, with an Advisory Board to make final decisions (Lowood [A]). This is an area that partners in the ‘Preserving Virtual Worlds’ project are keen to develop because of the complex issues of selection:

“Do you want every version of the game? Like for *Doom*, do you want the Alpha or Beta version? The shareware version? The windows version or Linux version? What about player generated data? You have to consider carefully which versions to use.” (Lowood [A])

This statement raises important questions about the significance of different versions of digital games and decisions need to be made about these issues. However, despite the decisions made and the selection policies that institutions have in place, Dyson admits that museum collections are often dependent on donations and “there is always a serendipitous quality to what museums own” (Dyson [M]). This observation highlights the differences between a museum collection and an archival collection: selection versus a more holistic approach.

Some critics have suggested that a selective approach to the preservation of digital games is not a viable solution, as Duncan Best, director of the London Games festival, argues:

“To take an approach whereby people in their own time are making judgements about whether that is significant or not, is a poor, poor solution to this problem and it has been proved time and time again that this is a really bad way of doing this. It is an absolutely ignorant way of moving forward on something like this.” (Best [I])

The alternative approach would be a legal deposit type arrangement for digital games whereby one copy of every newly produced game was retained for preservation. The Strong National Museum, which has similar systems set up with the toy industry, is open to this possibility but Newman rejects this as a possible direction for the National Videogame Archive:

“We are taking the view that this stuff is in peril so it is necessary to do something. I think in principle, a British Library style approach [legal deposit], is not a bad thing at all. But we have given ourselves a particular job to do and that is not part of our immediate plan to move towards. I am not sure that even in the longer term that would be an objective.” (Newman [A])

There is no indication that there are any moves at present towards this as a solution, or any genuine desire for it in the future. The real issue here is whether this is the role and responsibility of the museums. In France, the national library has taken on responsibility for the preservation of games. There has been a legal deposit system for board games since 1983 and this was expanded to include digital games in 1994. Lange comments:

“They recognise games as a new art form and if it is French, they believe that they must care for it. The French have a much more open attitude towards games and they were perceived as culturally significant much earlier.” (Lange [M])

There are no similar schemes in place in the UK and to date, digital games are excluded from preservation programmes in Germany, as Lange comments:

“There is a move towards digital preservation [by the national library] but games are excluded from that and there is no one in government questioning this exclusion.” (Lange [M])

At present, there is certainly no institution that could cope with the workload of such a scheme: the National Videogame Archive is ill-equipped to undertake this role:

“We do not have the staff or space to do that. It would be fantastic if we could but it would not be humanly possible at the moment.” (Woolley [C])

This issue of selection and legal deposit is addressed in more detail in the following section.

5.4.5 Summary

The interest of these heritage institutions in digital games is important: it is evidence that there is recognition of the historical and cultural significance of these games; something that has been overlooked for a long time. However, digital game preservation raises complex issues and new challenges for heritage institutions and these case studies have emphasised the main issues of concern as the exhibition and interpretation of games; long-term preservation methods and the question of selection. At present, the focus of the museums is how they can best display and explain digital games to the widest potential audience but, is this the only responsibility of a museum? Due to a lack of resources and experience of digital preservation, little attention has been paid to the methods of ensuring the longevity of these collections. In particular, the question of the significant properties of these complex objects has been overlooked. The issue of the authenticity of an emulated experience and the legal issues involved provide further challenges for museums. These case studies have introduced the main practical challenges of digital game preservation. These challenges, and the barriers to game preservation, are explored further in the next section.

5.5 The barriers to digital game preservation

This section brings together the debates on culture and cultural significance, and the perceptions of the key stakeholders, to consider the barriers to digital game preservation. The experiences of the institutions, which were explored through the case studies, introduced some of the practical challenges of digital game preservation. These issues were further explored with other interviewees and the main themes have been identified as the selection of material for preservation; technical issues of game preservation; the practical challenge of exhibiting and interpreting digital games and the debate of the holistic versus selective approach to collecting.

Investigating cultural perceptions towards digital games has been one of the objectives of this study and the differences between how games are interpreted can be seen as a barrier to their preservation. Comparing digital games to other media, such as film and television, is an interesting way to highlight this disparity – on the whole, people do not have a problem with the existence of the British Film Institute but there has been no similar drive to recognise British games. There is an awareness of their cultural significance from the academic community but a blinkered approach from other stakeholders. From the perspective of institutions, the main issue is the selection of material: *should digital games be part of their collections?*

Heritage institutions have to make decisions about their collections – what to save and what to disregard. These decisions are based on institutional policies and they are made with the best intentions; although as Kelly observes, mistakes are made:

“Curators do their best - they are in the hot seat.... it is a Darwinian process. You have to choose, you might screw up occasionally, but you have to make decisions.”
(Kelly [M])

The problem for institutions is that “what warrants preservation expands with what is thought historically significant” (Lowenthal 1985, p. 387). Best uses the example of the lost BBC recordings (referred to in the literature review) to make this point:

“If you look at things like some of the programmes the BBC was making in the 60s and 70s which they got rid of. They thought ‘that is never going to be important in a few years time, why bother hanging on to that’ and they re-used the tapes. If you

use that methodology, it will come back and bite you on the arse. It really will.” (Best [I])

In addition, selection decisions are based on value judgements made by a group of individuals at a certain point in time; without the benefit of hindsight, it is difficult to know what is significant; this is echoed by Kelly and Pinchbeck:

“Cultural significance is becoming more and more difficult for me. It is difficult to define especially without the benefit of hindsight.” (Kelly [M])

“What do you archive? You need to live 500 years to know.” (Pinchbeck [A])

In addition to this, these value judgements are subjective, and as Wilkinson’s statement suggests, this may lead to a biased interpretation of culture:

“After all, one person’s treasure is another person’s junk.” (Wilkinson [PG])

Certainly in relation to digital games, the current decisions of institutions are affecting how future generations will perceive this phenomenon and there is a risk that they will “see the 21st century through the 20th century eyes of the heritage institutions” (Owen 2007, p. 48). There are a lot of excuses being made for a delay in decisions about the significance of digital games and the necessity of their preservation.

Digital games have been overlooked by museums and one of the excuses for this is that games are just “too new” (Best [I], Green [I]). Certainly, in the context of cultural heritage, games are a comparatively new phenomenon and their 50-year history does not seem very long in comparison with other cultural artefacts. However, if digital games are recognised as significant, a proactive approach to the digital problem is sensible. The lack of a “comfort zone” in the digital environment and the perpetual innovation within the digital games industry undoubtedly put them at high risk. Pinchbeck suggests a change of attitude is necessary:

“A lot of the older stuff is being collected: I think it is as important to collect more recent stuff like games for the N64. This stuff is not seen as history because it is too recent and it is easily available and cheap at the moment. However, in 5 years, it might not be the same.” (Pinchbeck [A])

In this way, the argument that games are “too new” becomes redundant. However, the fact is that hidden behind these statements about games being “too new”, other attitudes can be recognised. Love states:

“It is difficult at the moment because I think you need at least a 10 year gap. It is difficult to know what is important - fads come and go so you need a gap to identify what is significant.” (Love [M])

The implied suggestion here that games might be a 'fad' reveals the presence of a value judgement process and relates to a further comment that she makes:

"The problem is museums are usually associated with the very old not necessarily the popular." (Love [M])

This highlights that digital games have not been accepted as part of museum culture, or as part of cultural heritage.

Games are an everyday part of life and their proliferation could be an obstacle to their preservation: what is popular has an uneasy relationship with what is highly valued, as was discussed in the literature review in relation to theories of culture. The popular is often conceived of as "low-brow" (Woolley [M]) and in her discussion on preservation decisions, Kelly introduces the concepts of high and low culture:

"On the one hand, you have high culture - or culture with a capital 'C', such as opera and music. The other way, you can express culture as what our society is like therefore is *McDonalds* part of our culture and people's use of takeaways. Do we want to preserve *McDonalds*? There is a lot of trash in our culture and I think it is better to let it go." (Kelly [M])

The use of the word 'trash' is highly evocative and relates back to Wilkinson's statement about 'one person's treasure'. Kilbride [M] suggests that there is an "undervaluing of computer games contribution to creativity" and Lange observes, in relation to the Computerspiele Museum:

"There are a lot of cultural institutions in Berlin but there is no money. He [The Cultural Minister] has to make decisions about what to support and how.... He did not want to support a new museum, especially not a museum with a topic which was not generally agreed as a museum topic." (Lange [M])

In these ways too, it is clear that digital games have not yet been accepted as a significant part of cultural heritage and are therefore not within the collection scope of museums.

Some museums argue that they are interested in games but there are other factors which are affecting their collections. Lutman and Love refer to the fact that their collections are dependent on donations, stating "we rely on what is offered to us" (Love [M]) and "we will collect these things but only if they are offered to us and it is difficult to say how and when this will happen" (Lutman [M]). Lutman suggests "this is just not the generation which is donating" (Lutman [M]) and she recognises that there is a wider issue:

“It is difficult because people now keep less and less - it is a ‘disposable generation’.”
(Lutman [M])

In relation to digital games, this links back to Newman’s argument that there is an issue with games being seen as a disposable commodity, an attitude encouraged by the industry:

“The problem with games is their disposable nature - the supersession quality of games. The industry encourages gamers to dispose of the old as the new version will be better and this attitude needs to be changed.” (Newman [A])

Certainly, as discussed in the literature review, there are issues with an industry which relies on perpetual innovation and actively encourages the replacement of the old and outdated with the new improved versions. There is clearly a need for a change of attitude within the organisations which produce this material. However, blaming the industry is a way to attract attention from the fact that it is the role of memory institutions to actively work to protect and preserve digital heritage. Relying on donations of material is not much different to relying on eBay to source digital games, as discussed in section 5.2: it is not an effective solution. Institutions have a responsibility to overcome these problems.

Other factors are blamed for the exclusion of games from collections. It is acknowledged that current IPR and copyright laws are a barrier to digital preservation and preserving digital games without permission from the industry is not legally possible under the existing legal framework. However, as Kilbride suggests, the legal issues involved in the preservation of digital objects are often used as a barrier which museums can hide behind:

“[IP and copyright laws] are undoubtedly a barrier to preservation issues. I think some of the big national memory institutions are quite risk adverse and it is also a way of arguing about your list of priorities. If someone says, ‘well that area is a bit risky’, it can get put down the agenda.” (Kilbride [M])

In a view acknowledged by Kilbride, Woolley, Lange and Wheatley, there is a much wider problem with the recognition of the significance of digital heritage in UK. Blyth also makes this point:

“It seems that the Americans are better at acknowledging games than us. They recognise the importance of this heritage and in the UK, we downplay it. The Americans are more ready to celebrate their heritage as they see it as central to who they are. In UK, there is a negative opinion of our technological heritage.” (Blyth [M])

This view is reinforced by the evidence from the literature review that other countries, in particular the US, France and the Netherlands, are much further ahead in their recognition of the significance of digital heritage. These criticisms also emphasise the previous debate about how museums are struggling to update their collection policies due to a lack of support

for the new roles they must assume. Without doubt, the government's commitment to reviewing IPR and copyright law in relation to preservation will be an important practical development but there is also a need for cultural change and wider recognition of our 'technological heritage'.

The collection, and exhibition, of digital games presents new challenges for memory institutions. Firstly, digital games are different to typical museum artefacts because they are both objects and activities. It is widely acknowledged in the case studies and the interviews that digital games are "not generally agreed as a museum topic" (Lange [M]). In addition, there are implications in moving to "virtual or ephemeral collections" (Blyth [M]):

"Traditionally, museums have dealt with physical objects and they are good at storing, maintaining and conserving these. But with computers, this is a real issue as the objects do not even tell half of the story" (Blyth [M])

Indeed, there is a huge debate about whether digital games will work in a museum environment:

"The function of a museum is to show stuff...is there enough of an object with a game?" (Kelly [M])

Raising the debate of whether digital games are "enough of an object" relates back to Juul's observation that they are both objects and activities (Juul 2005, p. 43) and it is for these reasons that museums have typically focussed on a classic technological preservation approach and are collecting hardware and software (Woolley [M], Dyson [M]): this is because "the heart of museums is material culture" (Blyth [M]). However, it is clear that the memory institutions are going to have to adapt their thinking in relation to these new materials because, as Lutman observes:

"There is a problem with exhibiting these things. In a display case, they do not say anything. They are an important part of childhood but how do we display them? They have to be played and so games in a museum do not work." (Lutman [M])

Pinchbeck shares this view, suggesting that, "there is an issue with *just* compiling the hardware and software for people to see - it has to go beyond this" (Pinchbeck [A]) and Best believes that "the consoles themselves have really very little to say" (Best [I]). In short, digital games are designed to be played; in a display case, they become static objects and these objects will have little significance to future generations if the activities are no longer accessible. The physical artefacts of hardware and software are "merely the materials of which the games are composed" (Salen and Zimmerman 2003, p. 86). They are of course an important part of what digital games are; and will be relevant to some future researchers,

especially in relation to the history of technology, but it is the *content* of these containers that tells the real story about them; and the relationship between the game and the player and the environment.

In relation to collecting and preserving the content of digital games, saving hardware and software is not a suitable long-term preservation strategy because of the fragility of the original media. Blyth observes:

“We acquire quite a few games which are fine now – they play fine but in the longer term...in 100 years, what will happen?” (Blyth [M])

Pinchbeck observes, that collecting games “needs to go beyond this” (Pinchbeck [A]).

Murrell explains:

“Take an iPhone for example. In 20 years time, you will not have a working example of an iPhone in a museum. They are unrepairable. Built by machines, the components are too tiny to re-solder. They have built-in obsolescence...We will have the object but it will not work so we will have to rely on accurate copying, simulation or emulation.” (Murrell [M])

For these reasons, the original software and hardware should be considered as important parts of collections but technological preservation is not the solution to the preservation of digital games.

Emulation is seen as a digital preservation approach which overcomes the problem of technological obsolescence. Certainly, digital games are seen as “a strong case study for emulation” (Pinchbeck [A]). Kilbride states:

“The need to provide access in the long term to computer games totally requires an emulation approach” (Kilbride [M]).

However, before emulation can be undertaken, it is clearly necessary to make decisions about what aspects of the game, and the experience of playing the game, need to be maintained in order for it “to remain accessible and meaningful” (InSPECT). This was not an area which was explored in detail by the interviewees in this study: the emphasis was on the technical aspects of preservation. There was no direct consideration of the need to firstly identify the significant properties which highlights a lack of awareness of the wider issues involved in game preservation. Further work is definitely needed in this area and will include reflection on the definitions and classification of digital games, as discussed in the literature

review. It will also be influenced by the different types of game scholar and their different approaches to the study of games.

Emulation is also seen as the appropriate method to ensure that the interactivity of digital games is maintained. Interactivity is seen as “the key conceptual apparatus” (Garite 2003) for theorizing about games: the relationship between the game and player are upmost. However, despite strong opinions that emulation is the most appropriate method for the preservation of digital games, there are debates on whether this provides the ideal solution. These debates are caused, in part, by a lack of agreement on the significant properties of games. Woolley states that there is an issue with emulation in that you are not playing the original game and Newman also questions the authenticity of the experience:

“I am very dogmatic in that I think that the interface is very important part of the game. We are not only interested in code but we are interested in them as a playable object - the look and feel of it too. If you are going play a game, I think you have to play with the original. The versions you can download - they are easily available - they are a facsimile and we underestimate that at our peril. It is the integrity of the experience. Simple things like the timing - it looks like the game but it is not the game. It is an essence of the experience itself.” (Newman [A])

Dyson talks about how the Strong National Museum has tried to overcome the problem of how “you give guests an authentic experience”:

“We have a couple of different installations - a few running Atari games - one in our National Toy Hall of Fame running about 25 different games. We do not rig them to the original systems but we have tried a couple of times to let people use the original Atari joysticks and we found that they just didn’t hold up because we have such a large visitation and our guests are pretty hard on. Many things are hands-on and highly interactive and the original Atari joysticks are just too fragile. So after a couple of experiments with this, we found we had to go to more modern controllers and let kids/adults use shortcuts or different keys. That is obviously not recreating the experience as nicely but it is hard to get round.” (Dyson [M])

Woolley and Ostler agree that emulation is “tricky” (Woolley [A], Ostler [I]): the main issue is that “you can emulate the software but you just can’t emulate the hardware” (Crawford [I]). However, Best argues that this is unimportant because preserving the interactivity of the games should be the main objective:

“The really important thing is being able to preserve how it actually works and its interactivity. If you can either emulate that or do it in another way, it becomes less relevant. For example, if you read Chaucer’s work now, it is not made out of goatskin. It doesn’t matter - what matters is that the art is preserved. Packaging and portals are much less important - I get no less pleasure reading Chaucer on new Sony Ibook or paper. If you are talking about preserving 1000 PlayStation 3 machines in perpetuity and maintaining them, realistically that is not ever going to be possible...” (Best [I])

These arguments are important and there is definitely a need for a consensus on maintaining the significant properties of digital games. However, in conclusion, although emulation may not be the ideal solution to the preservation of digital game, it is at present the only viable option to achieving long-term access to this material.

It is recognised that emulation will not provide an ‘authentic experience’ of game play but it will never be possible to completely recreate the context and environment of the game. A player will not be transported back to the 1980s, with an understanding of the current social, political and cultural climate, when playing *Space Invaders*, for example. In order to find the best solution, it is therefore important that agreements are made about which are the significant properties of particular games. This lack of authenticity also means that the preservation of digital games will include the preservation of material *around* the game, as well as the games themselves. This will include fan fiction, fan blogs, different mods created by the gaming community, as well as stories/videos from players themselves about their experiences of playing the games. This has been the approach taken in the work of Professor Hosoi Koichi of Ritsumeikan University, as discussed in the literature review.

Selecting material for collections is always an issue for museums: this was raised in the case studies and is reiterated in Lutman's comment:

“Historically, we only need a few examples. We do not have an in-depth collection of anything. So the question will be, how do we pick? ” (Lutman [M])

In relation to digital games, decisions will need to be made about what types of games need to be preserved (console, PC, casual); as well as which specific titles need to be preserved. This will also include consideration of whether different versions of games, both official and unofficial – such as mods, need to be preserved. How these decisions will be made is dependent on the museum's objectives and its collection policies. Certainly, there is an argument, as highlighted in the literature review, that modding and user-generated content are important aspects of gaming culture. In relation to selection policies, Dyson, Woolley and Lowood refer to “landmark software” and building collections of “significant titles” but it is not made clear how these decisions will be made. As part of the Library of Congress funded *Preserving Virtual Worlds* project, the Digital Game Canon was developed. This is a list of “10 games to get things started” (Lowood [A]). These 10 games are being used as the project's case studies but it is hoped there will be further funding available and more games will be added (Lowood [A]). The original selections for the games canon were made by

leading experts in the field of game studies, based on the significance and impact of the games. It is hoped that in the future this selection process will be guided by the games community, with an Advisory Board to make the final decisions (Lowood [A]). Simons and Newman have also suggested that the National Videogame Archive will use an advisory board to help make decisions:

“We have a clear sense of what games are important in the early stages. We do not want the collection to be things that we think are interesting so that is why we have things like the advisory board and we will have a public appeal. The process of selection will be generated through this.” (Newman [A])

This process of selection will be similar to the approach taken by the National Toy Hall of Fame. However, there is a risk that this selective approach will focus on the ‘best examples’ – the most successful and popular titles. Kelly suggests this is inevitable:

“With architecture, only the best buildings survive so the only medieval buildings which remain are castles although of course not everyone lived in castles. Only the good ones survive - but does it matter?” (Kelly [M])

Certainly, this approach leads to a very one-sided view of history and Pinchbeck would prefer to see the focus being on the things which are most at risk:

“I think you can exclude the huge titles and target the most vulnerable material - the stuff that is most likely to vanish.” (Pinchbeck [A])

However, *is it not logical for museums to focus on high quality exemplars? Is Wilkinson right that “a little bit is better than nothing”?* (Wilkinson [PG]) *Would it be reasonable to have to select only one painting by Picasso, one novel by Dickens and one example of Chippendale furniture for preservation?*

Advocates for a more holistic approach to the preservation of digital games indicate concern about how these decisions will be made. Best is highly critical of these attempts to choose significant material. He accuses them of ‘big-headness’ and ‘ignorance’ (Best [I]). He suggests that it would be more appropriate to save a copy of every game produced:

“The games industry is small enough to do it that way. There are a lot less games produced in a year than there are books or songs. There is not like there is a space issue here. This stuff can be saved on a hard drive - it doesn’t necessarily mean that it has to be kept in its original form. It just needs to be available so that you are not shutting it off for future generations.” (Best [I])

Green also observes that the number of titles produced “is not enormous - compared with the hours of television or the number of books published each year” (Green [I]) and Pinchbeck recognises the potential of this approach:

“I could see a future where they [the National Videogame Archive] receive a copy of every game produced from now on” (Pinchbeck [A])

Many interviewees discuss the potential of an extension to the British Library’s legal deposit, as has been undertaken by the Bibliotheque Nationale de France. Milne and Price are hesitant to support such suggestions, recommending that a voluntary scheme, as in place for sound recordings at the British Library, would be more appropriate:

“Legal deposit worked well for pre-digital objects: I think the jury is still out in relation to digital. It is an extremely slow process. Since the Legal Deposit Act in 2003, there has yet to be a single enabling regulation....With the recording industry, there is an adhered to voluntary scheme and that works very effectively....” (Price [M])

“From my experience, I would say a voluntary deposit system is more likely to succeed. The BFI gets films on a voluntary deposit arrangement. The secondary legislation for the deposit of electronic material has been difficult in relation to web archiving. Voluntary deposit works best - of course, it will need safeguards in place as publishers are very protective of their copyright and IP.” (Milne [M])

In fact, this is something that the industry has approached the BFI about (Kelly [M]) but there is a lack of interest in the institution. The main issue for other institutions seems to be funding and resources for something on this scale: the co-ordinators of the National Videogame Archive initiative openly admit that there are “internal resource issues” (Simons [A]) and that this is beyond their capabilities:

“We do not have the staff or space to do that. It would be fantastic if we could but it would not be humanly possible at the moment.” (Woolley [M])

It is clear that a voluntary scheme will necessitate genuine institutional commitment to the collection of digital games and a review of copyright exemptions for preservation.

The barriers and challenges to digital game preservation have been explored in this research, mainly in relation to the social and cultural significance of digital games. Although the technical issues have been discussed in relation to the suitability of emulation as a preservation solution, interviewees did not discuss other issues, such as the significant properties of games. These will be, without doubt, an important part of technical preservation solutions. Technical issues are of course considered important but this research has identified that, at present, the main barrier to preservation relates to perceptions towards digital games; and one of the main challenges highlighted in this study is the collection and exhibition policies of institutions.

Making decisions today about what will be significant tomorrow is difficult but memory institutions have a responsibility to make these decisions. Digital games are at risk because of a 'disposable culture' but the evidence shows that contemporary values are hindering the development of the new collections necessary to protect this aspect of digital heritage. It is certainly clear that digital games are not "generally agreed as a museum topic" (Lange [M]) and there is no precedent for their collection and preservation. Museums have traditionally focussed on 'material culture' and they are experienced with dealing with objects. However, developing virtual collections creates new challenges. In addition, digital games are both object and activity and in order to exhibit and interpret them, museums will need to use new approaches. However, these challenges cannot be sidestepped. It is important that debates about exhibiting and interpreting games are taking place.

5.6 Summary of main findings

The key points from the findings are summarised below:

- Digital games have become a reference point in people's lives in a similar way to film, television and music for previous generations.
- The growth of academic interest in digital games is directly related to the significance they have to people's lives and their influence on other aspects of society.
- The origins and context of digital games are an essential component of their significance.
- There is growing acknowledgement that games should receive the same cultural recognition as other media.
- The current status of digital game preservation is inadequate. Academics and researchers are already experiencing the problems of technological obsolescence and a lack of activity to preserve the digital game heritage.
- Preservation groups have undertaken some of the most significant preservation efforts to date but their work is undermined by a lack of the necessary rights.
- The industry is disinterested in undertaking the role of preserving its history: their culture does not value the past and there is little financial incentive for them to do anything.
- Technical issues, although important, have not been identified as one of the most significant barriers to digital game preservation.
- Roles and responsibilities are key issues. It is unclear where responsibility for the preservation of digital games lies. Institutions are hesitant to take on a new role.
- Digital game preservation raises complex issues and new challenges for heritage institutions and they are already under pressure because of limited resources and expertise in digital preservation.
- Collaboration is important but there has been no movement to coordinate efforts to preserve digital games and to get people together to discuss the relevant issues.

Chapter 6: Conclusions and recommendations

Chapter 6: Conclusions and recommendations

The aim of this exploratory study was to assess the significance of digital games and the status and significance of their preservation. The objectives which have been addressed are:

1. To explore the social and cultural significance of digital games;
2. To investigate perceptions of this significance;
3. To review current preservation activities;
4. To assess attitudes towards the preservation of digital games;
5. To identify the key stakeholders and their roles and responsibilities in the preservation of games;
6. To identify any potential barriers to the preservation of digital games;
7. To make recommendations for future digital game preservation activity and research.

These objectives have been achieved through a combination of desk research; interviews with representatives from the key stakeholder groups which were identified through the literature review; and case studies of institutions involved with the preservation of digital games. In this final chapter, the original aims and objectives of this research will be reviewed in relation to the research findings. This will include discussion of the main outcomes of the study and any limitations of the research. From this, recommendations for the future direction of digital game preservation research and initiatives can be reached.

6.1 Conclusions

Over 50 years after their invention, digital games now have an unprecedented influence and they have permeated many aspects of society and culture. They have influenced the development of computing technology, as well as our relationship with computers. They are changing the way we experience television and film; and they are influencing what is perceived as art. In these areas, it is clear that digital games have had a reflective and transformative effect on society and culture.

Early games theorists saw games as a reflection of society: Caillois, for example, sees a “mutual interdependence between game and culture” because games are a “living mirror of any given society” (Massonet in Lauwaert et al 2007, p.91). Certainly, early digital games, which were framed by a political climate dominated by capitalism, consumerism and the Cold War and the era of space exploration, were a reflection of their context; with game titles such as *SpaceWar!*, *Asteroids* and *Space Invaders*. More recent game titles are influenced by popular leisure activities, such as *FIFA 10* (football game), *NHL 10* (hockey game) and *NBA 11* (basketball game); and existing successful franchises from other media, such as the *Harry Potter* game series and the various games based on the animated series, *The Simpsons*. In these ways, digital games are “cultural products with deep roots in the culture they stem from” (Kucklich 2006, p. 104).

Digital games are also having a transformative effect on society and culture. Their influence on wider culture is most evident in the film industry. Besides the influence of game characters on Hollywood, with the making of films such as *Tomb Raider*, gaming technology is also changing how films are made and the relationship between film and tie-in games. This connection is also noticeable in relation to television and there is now a real movement towards ‘trans-media storytelling’. The transformative influence of digital games is also manifest in other areas of culture and society. Digital games are changing the way we access art, heritage and politics; and their role in the educational development of children has also become a field of interest.

These factors demonstrate the social and cultural significance of digital games and it is a significance that seems to be increasing, in conjunction with the growth in popularity of these technologies. The environment, or the way games relate to culture, is important in relation to why and how they should be preserved but perceptions of this relationship are also significant.

The negative image of digital games links them to extreme acts of violence and social problems, such as obesity in young people. In this study, it was widely agreed that the games industry has a “poor profile” which results in “a lack of awareness and understanding” (Spectrum 2002, p. 20). Interviewees compared this negativity to the early criticisms and attacks on other new aspects of culture, including television and cinema.

Digital games are, in some ways, less accessible than other media. They require a commitment to learn how they work and it has therefore been more difficult to engage wider society. However, recent developments, such as the Nintendo *Wii*, are opening gaming up to a new audience and there are indications that perceptions are changing. Certainly, it would be interesting to trace these changes in perception by examining the representation in the media of digital games over the last 20 years.

Academic interest in digital games has been shown to be linked to perceptions of their social and cultural significance, in relation to the aspects examined above. The historical development of the industry, their economic success and their growing popularity are other reasons for this interest. However, in relation to views of culture, these are also reasons that digital games are not valued by some memory institutions: they are not that old; they are mass-produced commercial products; and they are an aspect of popular culture. From within the industry, there is little significance in games, beyond an immediate economic value, attributed to them. With these factors in mind, it is clear to see why games have been overlooked as aspects of cultural heritage and their preservation has not been widely researched. Yet, are these legitimate arguments against the value and significance of digital games?

Firstly, are digital games really not old enough to be worthy of preservation? Certainly, digital games have reached a similar place in their history to the period in which the preservation of film and television were implemented. As Lange's timelines indicate (**Figures 8, 9 and 10**), the formation of the British Film Institute took place around 40 years after the invention of the medium. The inclusion of television into the BFI's responsibilities was in 1961, which is roughly 40 years after its invention by John Logie Baird. It is now over 50 years since the invention of the first digital games so the argument that they are not old enough is defunct.

In addition to this evidence, can a time-scale really be put on value and significance? Certainly, as Lowenthal observes "what warrants preservation expands with what is thought historically significant" (Lowenthal 1985, p. 387). Yet, in the digital environment, there is less room for mistakes in relation to an appreciation of what are significant aspects of cultural heritage. There is "no comfort zone" (Jones and Beagrie 2001) and there is already clear evidence that digital games are at risk of loss if action is not taken now. The speed of development in computing technology is a genuine concern in relation to technological obsolescence.

What about the fact that digital games are mass-produced, commercial products? It is true that digital games are often dismissed as disposable, entertainment products and this is certainly an attitude which the games industry has encouraged. As mass-produced commercial products, digital games are positioned as aspects of popular culture. The concepts of culture and popular culture have been examined in this study and it has been shown that some views of popular culture undermine the significance of commercial products. The Frankfurt School's view of popular culture is that it is a "commodification of culture" and that the mass-produced products of the cultural industry are a barrier to innovation and creativity. There is also the view that popular culture is a manifestation of the "emptiness of mass culture" (Kline et al 2003, p. 42); in other words, there is little value in products which are mass-produced and widely consumed. These attitudes are elitist and there is a tendency to be too dismissive of popular culture, which can have a genuine significance as a reflection of society.

Despite these negative attitudes towards digital games, there is wide-spread recognition of their social and cultural significance, in particular amongst the academic community. The growth of academic interest in digital games is attributable to this significance and is demonstrated through an increase in digital games courses; the development of an academic network; and the upsurge in games-related conferences and academic journals. This awareness of the significance of digital games is also evidenced by current preservation efforts.

Current game preservation activity is inadequate, as is corroborated by the experiences of the researchers in this study and the work of Gooding and Terras (2009). To date, the majority of game preservation has been undertaken by enthusiasts and sites, such as *World of Spectrum*, the *Computer Preservation Society* and *c64tapes*, are the main sources for retro-games. However, these sources cannot be considered legitimate research resources because of their questionable legal status. The illegal nature of these initiatives also means that their sustainability is in doubt, as experienced by Leonard.

Institutional collections may provide a solution for researchers. At present, these are limited to a handful of collections at research institutions, mainly in the U.S. As physical collections, their accessibility is limited to the boundaries of the institutions which hold them. These provide localised support for research but with the growth of academic interest in digital games, these cannot provide a solution for the whole community.

The launches of the National Center for the History of Electronic Games at the Strong National Museum in the U.S. and the National Videogame Archive by the National Media Museum in the U.K. were significant events. However, the National Videogame Archive is at present only a project and these collections will only be a small part of the museums' existing remits. In addition, the focus of these collections is currently museum exhibitions and physical collections and the preservation of the content of the digital media is being deferred. There is concern that without greater support for the issue of game preservation, these institutions may be restricted to technological preservation; the projects may remain small-scale, or they may even face the same fate as the Computerspiele Museum in Berlin. Undoubtedly, the future of these initiatives will be affected by attitudes towards the preservation of digital games.

As anticipated, this exploratory study has revealed disparity in people's attitudes towards digital game preservation. Negative attitudes range from the opinion that game preservation is "a solution to a problem that does not exist" (Green, p. 129); through to "there are things that are more important" (Woolley, p. 139) and "it is difficult to say whether we will glean something from games in the future but, my hunch is not" (Kelly, p. 139). Each of these statements has been challenged by other interviewees.

Suggestions have been made that there is no need to be concerned about digital game history. Indeed, some interviewees have suggested that because of the ubiquitous nature of games and the ease of access to titles through sites such as eBay, efforts such as the National Videogame Archive are "solutions to a problem that does not exist". Abid suggests that "uniqueness of the object" (2007, p. 9) is often used as a criteria for need for preservation and the mass-production of items such as games would seem to deny their place in heritage institutions. However, contrary evidence from the experiences of researchers, such as Pinchbeck, Newman and Evans; and the results of the work of Gooding and Terras (2009), suggest that this is, in fact, a fallacy. Access to older titles is problematic so the argument that games are not worthy of preservation because they are mass-produced and therefore not 'unique' is unacceptable. These attitudes are however highly influential in relation to the selection decisions of memory institutions and relate back to the concept of the "uniqueness of the object" being a significant aspect of its value.

Other attitudes suggest that digital game preservation is not important. The negative perceptions of digital games have been discussed above and these have an influence on attitudes towards preservation. Digital game scholars, such as Aarseth and Kucklich, argue that games are the most fascinating cultural material of our time but, in the mainstream, they have not been accepted into people's definitions of culture and there is no recognition of their significance to cultural heritage. Recognition of significance often starts in the research community and this slowly permeates through to the heritage institutions. However, with little knowledge, experience or interest in digital games within these institutions, this is proving to be a slow process.

In relation to institutional preservation, there are many references to the issue of priorities. Digital games are not seen as a priority because there are things that are 'more

important'. Institutions have specific roles and responsibilities which have evolved from when the institutions were established. As there is no precedent for the collection of digital games, it is easy for the institutions to claim that they are not their priority, or even their responsibility. However, there needs to be a response to the changes in culture and society and roles and responsibilities have to be readdressed. Otherwise, there is a real threat that institutions will be misrepresenting society and not adequately fulfilling their roles as protectors of cultural heritage.

Collaboration is fundamental to the preservation of digital games because there is a need to "maximise the benefits of the technology; address issues such as copyright, and also to overcome the challenges cost-effectively" (Jones and Beagrie 2001). In order to address these challenges, there needs to be a cooperative effort between the key stakeholders. These stakeholders have been identified as the academic community, as potential users of the collections; the industry, as the creators and holders of rights over the material; and memory institutions, as experts in the preservation and selection of material. In addition, the significance of the work and expertise of preservation groups should not be underestimated.

Academics have a vested interest in the preservation of digital games. Having experienced the problems of accessing older titles, and therefore an appreciation of what has been lost; they have a responsibility to raise awareness of the significance of these losses and the potential issues to other stakeholders. As the principal users of prospective archives, they will also play an important role as advisors on the specific requirements of collections and the question of the significant properties of digital games.

The games industry cannot be expected to undertake the responsibility of preservation: their interests are in the commercial potential of their products. However, they have an important role to play as they will need to agree to "cede the right to preserve to another entity who is willing and able to assume responsibility for preservation" (Lavoie and Dempsey 2004). In order for them to comply with this, it is acknowledged that the industry would prefer an official, respected organisation assume responsibility for the task.

There is no certain answer to who should assume responsibility for the preservation of digital games within the current heritage structure. Existing institutions are already under pressure and have expressed concern about taking on extra responsibilities. The National Media Museum has committed itself to the development of the National Videogame Archive but, can they sustain this initiative without additional funding and support?

The government has a role to play in the preservation of games. In this study, the researcher was unable to obtain interviews with representatives from government. Although, the Department of Culture, Media and Sport; the Department for Business, Innovation and Skills and the All-Parliamentary Group on Computer Games were contacted: they declined to take part in this research. The absence of this level of engagement with this study is disappointing. However, it is clear that in order for the preservation of games to get on the agenda of the heritage institutions, the support and involvement of government is essential. They will have an important role in overcoming the barriers to game preservation that exist.

Owen suggests that there are three important dimensions of preservation - functions [the activities involved]; responsibilities and funding (2007, p.45). Much of the current research on digital preservation, in particular digital game preservation projects, has focussed on functions or the technical issues of digital preservation. This is because digital preservation is considered to be 'radically different' to traditional preservation activities due to the technical processes involved. However, this research has shown that responsibilities are one of the main problems for digital game preservation. There is a disparity between the needs of researchers and the engagement of institutions. Negative perceptions of digital games have damaged their reputation and delayed recognition of their cultural worth. This has hindered the preservation of games but perceptions are changing, as many of the interviewees have observed. The excuse for lack of action in this area is the capacity of institutions to undertake new responsibilities. But, this research has revealed a greater challenge: the need for cultural change within institutions.

Museums have traditionally focussed on material culture: they collect objects. In order to preserve digital games, it is also necessary to capture experiences. In the case studies, the question of how to exhibit and interpret games was paramount. It presents new challenges for curators, as "how do we explain what videogames are to someone who has

not seen them” (Simons [A]). The games as objects do not satisfactorily explain themselves and therefore, technological preservation, or the ‘museum’ approach, is unsuitable as the only solution to this challenge. Digital game collections will require hybrid collections which bring together physical collections and digital collections, including oral histories and documentation on the experience of playing these games, as well as related artefacts. This will allow the context of the games to be better understood but will require collaboration and greater support for the preservation of the new forms of digital heritage.

Another key question raised in this research has been selection. As part of the ‘Preserving Virtual Worlds’ project, the Digital Game Canon was developed in 2007. This list of the 10 most important games was developed by a team of game studies experts and game developers. This list would be a starting point for the preservation team and it was planned that 10 new titles would be added each year: this has actually not yet happened. The development of this list raises the question of how these decisions will be made. Curators are usually responsible for the selection of material for collections and institutions develop specific policies to guide their decisions. Without knowledge and experience of this new field, making decisions will be very difficult. To date, digital game collections have been ad-hoc, dependent on what people donate. This has raised concern and in this study, it has been discussed that the collection of games should be based on a formalised system, equivalent to legal deposit. Although legal deposit may not provide the solution, because of the complicated legal issues involved; there is definitely an argument for the development of a voluntary deposit scheme, in conjunction with the industry. This will help overcome the opportunistic approach of current preservation efforts. The feasibility of this will be dependent on a serious institutional commitment and the engagement of the industry with the proposal. There is definitely scope for more research in this area.

Although there are different activities involved in the preservation of digital games, the work of games enthusiasts demonstrates that technical aspects are not the biggest barrier to the preservation of digital games. This research has shown that, beyond the issue of responsibilities, the major barrier to digital game preservation is the games industry and the legal issues of game preservation.

In this study, the industry has been criticised for its obsession with unit sales but the industry's business models - with its 'razor and razor blade' relationship between its games and hardware and its high production and low reproduction costs - mean that the sale of games is of paramount importance. The success of the industry is measured in relation to sales statistics and the perceived worth of digital games is measurable in terms of profits.

As a cultural industry, the games industry is affected by the 'semi-public nature' of its products. This means that it is extremely vulnerable to piracy and illegal use of its products. Having invested big budgets to produce their games, games companies are extremely protective of their rights and are prepared to enforce them. This has made them suspicious of digital preservation, which may account for the lack of cooperation from the industry in this study. However, it is clear that the strength of copyright and IPR laws has rendered all forms of digital preservation 'legally impossible'. In order for digital game preservation to move forward, there needs to be a review of these laws, in particular an exemption for official preservation; or a formal agreement between institutions and the industry.

This study has explored the status and significance of digital game preservation. It has highlighted the inadequacy of current preservation solutions and a discrepancy between the needs of the research community and the commitment of heritage institutions. It also underlines the paradoxical position that digital game preservation is impossible without the support of the industry and that there is minimal interest in preservation from within the industry. In order to address these problems, and to improve the future status of digital game preservation research and initiatives, the following recommendations are made.

7.2 Recommendations

Through this exploratory study, it has been possible to identify areas where additional research is necessary; the specific challenges which need to be addressed in order for the preservation of games to be taken seriously; and the barriers which need to be overcome to ensure the success of future preservation activities. Recommendations in relation to these issues are discussed below.

This study has revealed an absence of communication about the significance of digital games and their preservation between the different stakeholder groups. In order to address the problems of the preservation of digital games, a dialogue between all the interested parties is essential, as Price and Blyth observe. Collaboration has been shown to be important in relation to digital preservation because “the problem is far larger than one group or individual can solve” (Deegan and Tanner 2006, p. 148). There is a real need to build relationships between the games industry, memory institutions and the academic community in order to take forward the preservation of digital games.

In particular, the engagement of the games industry in the preservation of digital games has been revealed to be central to the future success of these initiatives, especially in relation to the legal complications. The illegal, unofficial efforts of online preservation groups have been thwarted by their inability to engage with the industry. In this study, it has been suggested that the industry are not opposed to preservation but their support will be dependent on the role being taken on by an official, recognised institution. An important step for any preservation initiatives will be to approach the industry for this support.

There is a wrongful tendency to dismiss the skills and expertise of memory institutions. Although they may lack the specific experience of digital preservation, their knowledge and expertise in the areas of selection and providing access to collections should not be undervalued. In order to overcome the problems of a lack of specific skills, collaboration with other institutions, both nationally and internationally, will become important. This collaboration may also include people outside official organisations, such as the online preservation groups and games enthusiasts.

The work of online preservation groups should not be overlooked. It is disappointing that, so far, no attempts have been made by official preservation organisations to engage with these groups as they have hands-on experience of dealing with the issues of the preservation of digital games. Engaging these groups in official preservation activities will provide additional technical expertise and avoid the duplication of effort because they have already undertaken some of the technical processes to ensure the longevity of digital game materials.

The academic community will have an important role to play both in raising awareness of the significance of digital games; but also in the processes of selection, as they will be important users of potential collections. Selection is an important issue. According to interviewees in this study, what museums have in their collections is often a matter of chance, dependent on what is donated. Choosing material for collections has been an important aspect of the work of curators and archivists for many years; but a lack of specific knowledge and expertise in this area will mean that they will need to collaborate with potential users of collections.

A selective approach will therefore require the development of new, well-informed, publically debated criteria. The Digital Game Canon, the list of the ten most important games of all time, and being used as the starting point for preservation by the 'Preserving Virtual World' team, was decided on by a panel of game experts. Entrants to the National Toy Hall of Fame are voted on by the public, with a panel of experts making the final decisions. The National Videogame Archive is using a similar approach with the 'Save the Videogame' campaign, whereby members of the public are requested to nominate titles. This is an area where a collaborative approach will also be beneficial.

The launch of the National Videogame Archive is extremely significant: it demonstrates a commitment from an important official memory institution, the National Media Museum, to the preservation of digital games. It also has a good support network as it is based on a partnership between the heritage sector and the academic community. However, in order to see this move beyond the 'project' stage, there is a need for direct funding and further research. It is important to develop relationships with the industry and to consider in more detail the issues of the exhibition and interpretation of games. It is also

important that the National Media Museum makes the distinction between its collection as a 'museum' collection for the general public, and an archive for a more specific research audience. There is no reason that it cannot be both but there are different considerations and decisions to be made for each. These will require further research to support the long-term goals of this initiative and the future of digital game preservation in the UK hangs in the balance until these criteria can be met.

To a certain extent, this research has been impeded by a lack of co-operation from the digital games industry and a disappointing absence of interest from government organisations, such as the Department of Culture, Media and Sport. The industry's lack of engagement with this study is perhaps indicative of their attitudes towards preservation, as well as a demonstration of their caution about discussing their business practices with outside parties. However, more attempts to engage the industry with the issues of game preservation are necessary, as is discussed above. It is also important that moves are made to raise awareness of the importance of digital game preservation amongst the decision and policy-makers. This research is the first step towards this.

As an exploratory study, this research has presented a thorough investigation of the issues which surround digital game preservation. To date, there has been limited literature on the preservation of digital games and much of the research has concentrated on the technical issues. This study has been the first of its kind as it has focussed more on the social and cultural issues of game preservation and it is the first study to investigate game preservation in UK, by drawing on the international context. It is also unique as the first qualitative study of the status and significance of digital games and their preservation and it is through this investigation of the perceptions of key stakeholders that valuable conclusions have been reached.

The research has shown that there are insignificant efforts being made to protect digital game history. At the same time, it has provided strong evidence of the significance of digital games, not only as part of our digital heritage but also as a small part of our wider cultural heritage. This is evidence which will prove invaluable as initiatives such as the National Videogame Archive move forward because it can be used to lobby policy-

makers about the importance of digital game preservation. In this way, this research will have a genuine impact on the future of digital game history.

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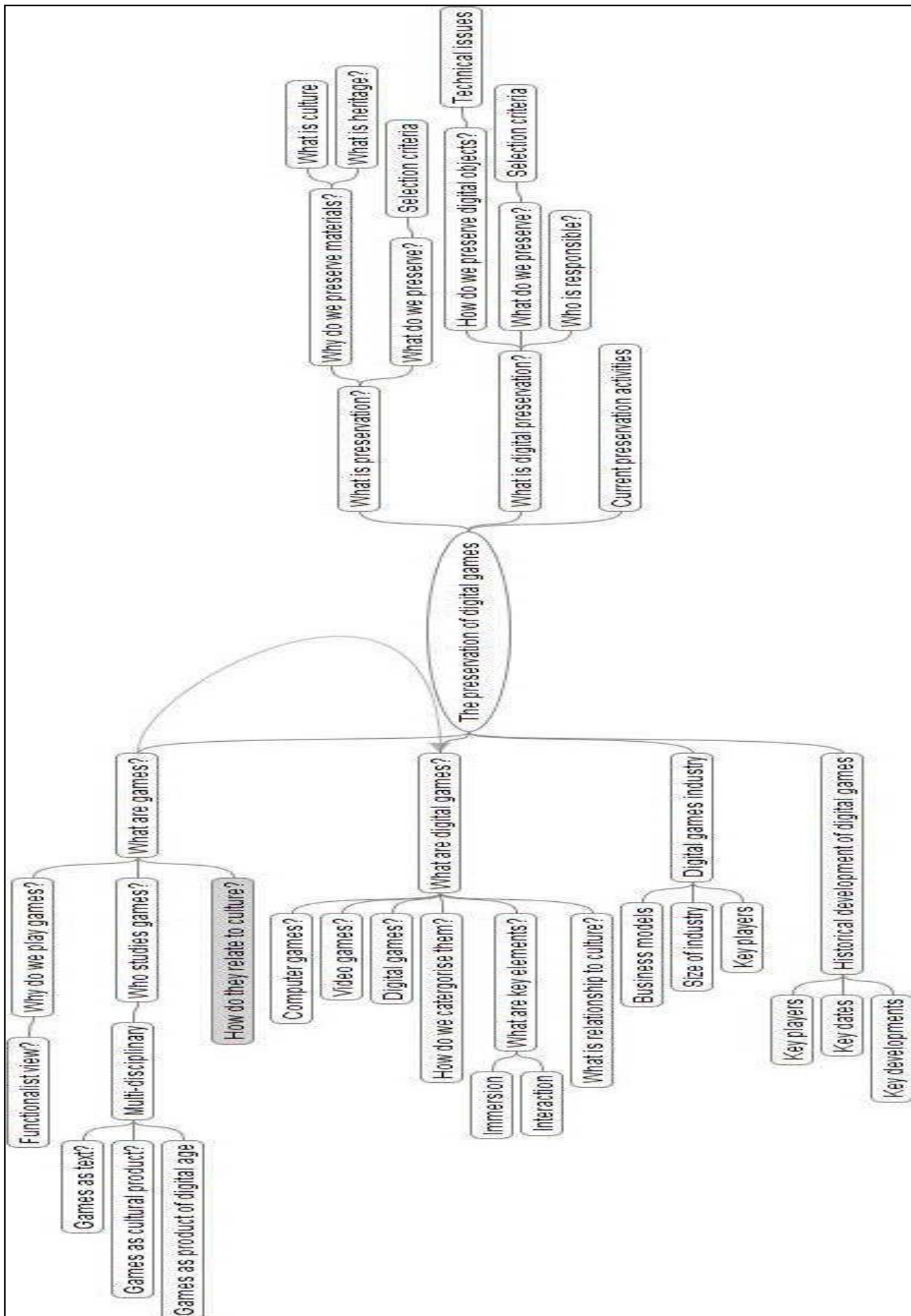
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Appendices

Appendix I: Mindmap



Appendix II: Personal game history

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- **The purpose of the personal game history**

Mäyrä states “the foundation of all true knowledge is self-understanding” (2008, p.11). In relation to research into digital games, Mäyrä recognises the importance of the personal gaming history as a means for qualitative researchers to recognise their personal influences and bias. He states:

“For a researcher of a qualitative phenomenon such as games..., self-understanding has an important double role: on the one hand, understanding the tilt produced by one’s personal history and background is paramount for any informed self-critique.” (2008, p.11)

According to Creswell, all qualitative “research is value laden and includes the value systems of the inquirer, the theory, the paradigm used and the social and cultural norms for either the inquirer or the respondents” (2007, p. 247). The personal game history is therefore used as a method to acknowledge the influences of the researcher’s previous experiences of the phenomenon of study. Furthermore, in transcendental phenomenological approaches to qualitative research, the researcher is expected to ‘bracket out’ their own pre-conceptions. In this way, the personal game history is used as a self-reflective tool which clearly outlines the researcher’s own experiences separately from the research study.

- **My gaming history**

Born in 1979, I have grown up alongside the development of gaming technology. In my childhood, I was first introduced to computer games in the mid-1980s through the *Nintendo ‘Game & Watch’* handheld games. Gifts from my grandmother, these were an important new development in gaming technology at that time. I collected various titles including this bright orange version of Donkey Kong, long since lost. I enjoyed the independence of being able to play on my own and the continuous challenge that they represented.



Image of 'Donkey Kong'

Source: Game and Watch Now (<http://www.gameandwatchnow.com/>)

Around this time, my family also purchased a *Spectrum ZX* and the game I can remember best is the title, *Horace goes Skiing*, which was part of a series of games released by Sinclair. The games were produced on a cassette and played through the television with a keyboard and/or joystick. This was an exciting new addition to the home but it was frustrating because it required a television set and, as we only had one television in the house, game-play was limited to certain times of day.



Images of 'Horace goes Skiing'

Source: World of Spectrum (<http://www.worldofspectrum.org/>)

In the early 1990s, I was given my first computer - an *Amiga 500* which my parents purchased after I convinced them it would be useful for school. I do not think it was ever

used for this purpose and I mainly remember playing games such as *Lemmings*, *Shadow of the Beast* and *Indiana Jones and the Last Crusade*. However, it was not long before I got bored by the limited variety of titles available.

In the mid-90s, I was given a *Game Boy* for Christmas and was soon addicted to *Tetris* and *Super Mario Bros* until I reached my teenage years and lost interest in spending time on these games.

A rectangular box with a thin black border, containing the text "Image of 'Game Boy'" centered within it. The box is empty of any other content, serving as a placeholder for an image of the Game Boy console.

Source: CyberiaPC.com (http://www.cyberiapc.com/vgg/nintendo_gameboy.htm)

At university, one of my roommates had a *PlayStation* and I would occasionally take part in competitive sessions of games such as *Tekken* but it was mainly the males in the house who dominated the console. In more recent years, my main game-playing activity has been limited to free-games, such as those installed on PCs (*Solitaire* and *Hearts*); games available on *Facebook* and the occasional time-killing game of *Black Deal* – a version of Black Jack – on my mobile phone.

- **Conclusions**

Looking back at these games leads to nostalgic feelings about my childhood. The games industry was at its peak in the 1980s and my memories and experiences will be similar to other people of my age. Talking about the games people remember from this period has often been a conversation of interest and it is these feelings that have sparked an interest in the research area of digital games and specifically in the question of preservation. However, this brief outline of my game playing history highlights that I am not a hard-core

gamer. Despite the connection of my childhood with the development of the commercial gaming industry, I am not a regular player. I do not own any game consoles now and have minimal experience of contemporary games.

Mäyrä (2008, p. 12) states that the secondary purpose of the personal gaming history is for the researcher to recognise their strengths and weaknesses. He suggests that in order to fully understand games, it is necessary to experience games and play them:

“On the other hand, in order to really understand the fascination of immersive gameplay, or to be able to make qualitative distinctions between games with very different look and feel, we need to experience games and play ourselves. Understanding what are the strengths and weaknesses of ourselves as a research instrument are important steps in making us better in evaluating, researching and developing games.” (2008, p.12)

This opinion is reiterated by Aarseth. He suggests that “as games scholars, we obviously have an obligation to understand gameplay, and this is best and sometimes only achieved through play” (Aarseth 2003). This was one of my weaknesses and therefore, as part of my research, I have been monitoring current releases through online sites and reading game reviews in the press. I have improved my knowledge of games by playing free versions of games, including *Football Manager Live*, and borrowing PC titles, such as *Myst*, *Grand Theft Auto 3* and *SimCity*. I have enjoyed this experience and understand the benefits for my research.

However, my relative neutrality to the object of my research can also be considered as a positive factor. My personal gaming history outlines my experiences with games and indicates that despite feelings of nostalgia for objects from my childhood, I have no strong relationship to a particular game or system. I can be more open-minded about others’ experiences because I do not have the same strong cultural reference points that they have and this detachment means that I can remain focussed on the opinions of my interviewees. This allows me to take a step backwards from their statements and analyse them from a more subjective perspective. This is an important aspect of research.

Appendix III: Preliminary data analysis

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Interview with Liz Evans (Academic)

- Who is this interview with?

Liz Evans is a lecturer in the School of American and Canadian Studies at Nottingham University. Her main research interests are film and television audiences but she is also interested in audience engagement with new media technologies, including games especially in relation to 'trans-media storytelling'.

- How were they selected?

Liz was contacted via the BFI's 'Moving Image Research Registry', a database of researchers in the field of film, TV and other moving image media, in the first round of email interview requests.

- When/Where conducted? How long?

This interview was held on 2nd September 2008 in Liz's office at Nottingham University and lasted around 45 minutes. The interview was recorded.

- Special circumstances/contextual issues?

Liz's main interests are TV and film which are the reasons for the repeated discussion of the relationships of these media to games. Her background in the Arts and Humanities lead to interesting discussions about culture.

- What are the major emerging issues?

Games are challenging (threatening) the position of other media and their relationship to the audience.

Nostalgia issues - Liz identifies games as vey much part of her childhood (different generation to James).

Liz identifies the history of a cultural form as an important part of its development and our understanding of it.

She views culture as the things people "choose to interact with".

- What issues need to followed up?

Are games culturally significant because they are popular?

What is the relationship between games and other media?

The loss of games directly affects research

Is the history of games important to their future?

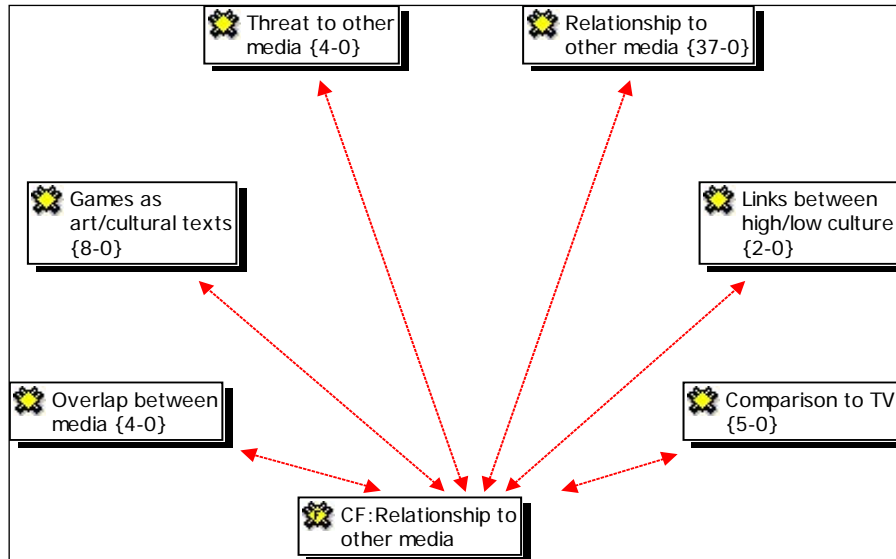
NEW CODES:

- | | |
|--------------------------|-------------------------------|
| - Multi-disciplinary | - Relationship to other media |
| - Loss of history | - Games as art/cultural texts |
| - Need for archive | - Games as part of childhood |
| - Preservation solutions | - Threat to other media |
| - Comparison to TV | - High/low culture |
| - What is culture | |

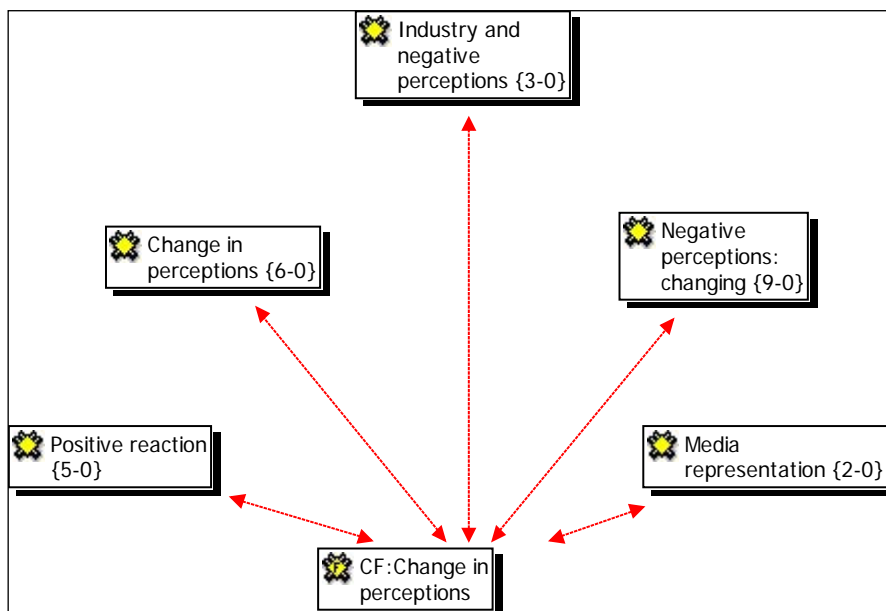
Appendix IV: Code families

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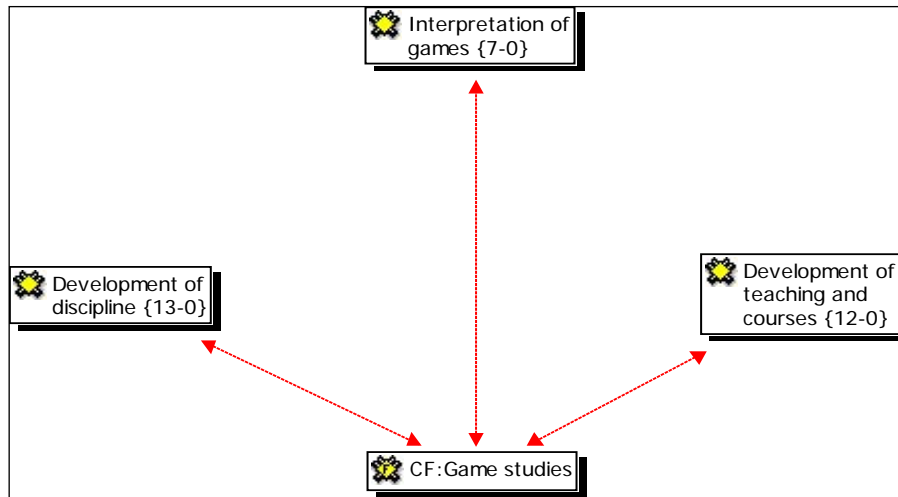
- Relationship to other media



- Changing perceptions



- **Development of discipline of game studies**



- **Preservation – loss of research materials**

