How do institutions approach the use and preservation of videogames in their collections?

An exploratory study of different museums and academic libraries in the UK, US and Canada.

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Abstract

Videogames are one of the most popular forms of entertainment both internationally and in the UK today. In recognition of this popularity, museums are treating videogames as culturally, socially and technologically significant objects that visitors can learn about and enjoy. Similarly, many universities are now offering courses in subjects such as game design and videogame studies and as part of this, offer videogame collections to use and borrow from their institutional libraries. In the US and Canada, many academic libraries already have more established videogame collections built over the past decade, but in the UK, there are very limited examples of university libraries offering similar services. Videogames also provide a challenge for conservators and others interested in preservation, with issues such as physical decay, bit rot and the complex copyright nature of videogames needing constant solutions.

This project outlines a brief history of videogames and the current state of the videogame industry before going on to investigate how six different international institutions are approaching the use and preservation of their videogame collections. The institutions involved are The Centre for Computing History (UK), Living Computers: Museums + Labs, Videogames: Design/Play/Disrupt Exhibition (The Victoria & Albert Museum, UK), Fraser Library (Simon Fraser University, Canada), The Computer & Video Game Archive (University of Michigan Library, US) and Goldsmiths Library (Goldsmiths, University of London, UK). Interviews were completed with staff at these institutions and using coding, differences and similarities were identified in their approaches and discussed in detail, along with recommendations for areas of further research on this topic.
Acknowledgements

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Glossary

This glossary contains a list of technical terms and acronyms used within this project. Many of these are commonly known but included here for additional clarity.

**Acronyms and Definitions**

**AAA** – Within the videogame industry, a AAA (Triple-A) game is a term used to describe ‘blockbuster’ videogames that have been developed and published by a large developer and publisher.

**CCH** – The Centre for Computing History

**CD-ROM** – Compact Disc Read-Only Memory

**CRT** – Cathode-Ray Tube

**CVGA** – Computer & Video Game Archive (at the University of Michigan Library)

**DRM** – Digital Rights Management

**DVD** – Digital Versatile Disc

**EA Origin** – A digital videogame service developed by Electronic Arts (EA) that allows users to purchase, manage and play videogames available through the platform.

**GOG.com** – formerly known as Good Old Games, GOG.com is a distribution platform for videogames with emphasis on selling videogames without DRM restrictions.

**GUL** – Goldsmiths University Library

**GVA** – Gross Value Added

**Independent/Indie Games** – In contrast to AAA games, independent (or indie) games are those that are developed by individuals and small teams without the support of a major publisher.

**itch.io** – A website that allows users to buy and sell indie videogames.

**LCD** – Liquid-Crystal Display

**LCM+L** – Living Computers: Museums + Labs

**Mac** – Popular name for the Macintosh series of personal computers.

**NES** – Nintendo Entertainment System

**PC** – Personal Computer

**PS** – PlayStation videogame consoles. Often abbreviated with the iteration of PlayStation (e.g. PlayStation 4 would be PS4).

**ROM** – Read-Only Memory

**SFU** – Simon Fraser University

**SNES** – Super Nintendo Entertainment System
Steam – A digital videogame service developed by Valve that allows users to purchase, manage and play videogames available through the platform.

Steam PC Café License/Steam PC Café Program – This version of Steam allows institutions such as PC cafés, libraries, etc., to access the service via the purchase of commercial game licenses.

USD – United States Dollar

V&A – Victoria & Albert Museum

VDPD – Videogames: Design/Play/Disrupt (exhibition at the V&A)

VR – Virtual Reality

Xbox – Xbox videogame consoles. This includes the original Xbox, Xbox 360 and Xbox One but is also used in branding for Xbox services such as Xbox Live, Xbox Game Pass, etc.
Introduction

Videogames\(^1\) are one of the most popular modes of entertainment and offer huge opportunities economically, socially and culturally for those engaged with creating and playing them. As a result, they are seeing more frequent use in both libraries and museums but along with this, come challenges on how to utilise and preserve these collections. To provide context on some of these issues, it is worth considering the history of videogames.

A Brief History of Videogames

Whilst it is debatable what is truly the first videogame, Randy Nichols (2014) makes the case that the game *Spacewar!* developed in 1961 should be considered the first. The rationale behind this is in the important distinction of the ‘video’ aspect of games. For example, the game *Tennis for Two* was developed in 1958 but as Nichols (2014) points out, it was completely reliant on solid state technology – *Spacewars!* on the other hand featured both a video display and computer processing, an important distinction. This creates a clear difference between the terms ‘computer game’ or ‘electronic game’ as these two types of game do not require a screen interface. In terms of how ‘videogames’ are defined, this is a key concept and supports our earlier definition of them as needing an audio-visual output.

Relative to many other forms of media, videogames are a somewhat recent phenomenon by contrast. The development of *Spacewar!* is significant in the early foundation of videogame history and whilst the game was spread and shared across computers, it was not until the 1970s that the videogame industry truly hit its stride. Atari was founded in 1972 by Nolan Bushnell and would go on to develop some of the most popular videogames in popular cultural memory such as *Pong* (1972), *Space Invaders* (1978) and *Asteroids* (1979) (Kent, 2001). The popular development of arcade games was highly significant in the legitimisation of videogames both culturally and economically and by 1974, there were 100,000 coin-operated videogames in use across the US, earning approximately 250 million USD a year (Donovan, 2010).

\(^1\) An important clarification to make is that across the literature – and society in general – there is seemingly no consensus on whether videogame should be spelt as one word (videogame) or two separate words (video game). For the sake of consistency, I will always refer to them as a single word when writing (videogame) but in instances where a direct quote, book title or any other reason use the term ‘video game’, I will defer to their own decision.
The Atari 2600 saw their foray into the home console market but again, significant developments in computing had a major impact on how these new videogame platforms worked. Worth noting is the development of the Magnavox Odyssey in 1972 by Ralph H. Baer – the ‘father of videogames’ (Simons & Newman, 2018). The Magnavox Odyssey was simple (or at least by modern standards) and the games that can be played still required manual scorekeeping and dice-rolling to determine who goes first. Whilst this sounds unimpressive, the Magnavox Odyssey was the first device that allowed an audience to change the games they were playing by changing the ‘game cards’ slotted into the device. This simple change is significant as it altered how we approached these consoles – the jump had been made from single-game-only platforms to being an overall videogame console – a conduit that allows you to play multiple different games on one device. The Atari 2600 followed shortly after in 1977, with the development of ROM (Read-Only Memory) cartridges which allowed for greater graphic and gameplay fidelity.

Following from this period of success, there was a major crash in the videogame industry around 1982 that saw many of the developers at the time wiped out. This was in part due to the rise of home computing and in the UK, this collapse was not felt as greatly as interest in videogames was heavily linked with the rise in personal computers. One of the most popular computers that led the way was the Sinclair ZX Spectrum which was launched in the early 1980s. With an incredibly low price point, the Spectrum allowed many people to get into computing and also saw thousands of games produced for the platform in its prime (Švelch, 2017).

In the late 1980s, the Nintendo Entertainment System (NES) was released as an ‘unashamed, out and proud games console’ and would dominate the US for years, almost creating a monopoly for itself at one stage (Donovan, 2010). Eventually, Nintendo would face fierce competition from the likes of Sega with the launch of the Sega Genesis (or the Mega Drive outside of North America) to challenge the Super Nintendo Entertainment System (SNES). Sega and Nintendo would dominate the market for much of this period but by 1994, Sony had launched its PlayStation console. The PlayStation proved popular with the US audience and was so popular in the UK that Sony had to redirect sales from Europe and Japan (Nichols, 2014). Significant features of the PlayStation was use of CD-ROM and the advent of 3D graphics in videogames. Disk drives would be a feature of many of the current best-selling consoles over the following decades, including the various iterations of PlayStation, the Xbox consoles developed by Microsoft and many of Nintendo’s platforms such as the Wii.

In more recent memory, two of the most significant developments have been the rapid development of the internet and storage capabilities. In 2004, alongside the release of Half-Life 2,
the much anticipated sequel to the original by Valve, users were required to install Steam, a software platform that would allow players to manage their games in addition to buying new games – to this day, Steam remains the most dominant online store for videogames (Donovan, 2010). Away from computers, home consoles were also launching online services such as Xbox Live, allowing players to play against each other online and purchase and download videogames for their consoles. Recent changes in consumer behaviour has even seen Microsoft launch a digital-only version of its Xbox One console, in order to target a “digital native” audience that does not purchase physical media at all (MacDonald, 2019).

It is worth noting that this has been a brief introduction to videogame history and does not even begin to cover the hundreds of platforms that have been and gone over the years. Nor does it acknowledge the handheld market and rapidly growing mobile game market which is currently so popular. What this introduction hopefully makes clear however, is the rapid changes that have affected the videogame industry.

Videogames – Where are we now?

In 2007, the global videogame industry was worth $35 billion but by 2018 this had risen dramatically and saw revenue generation hit $137.8 billion (Newman & Simons, 2018). In 2019, this would rise to $152.1 billion – a 9.6% increase on the previous year (Newzoo, 2019).

The popularity of videogames in the UK is reflected in the sales market, where game sales generated more revenue than both the music and video industries in 2016 (Entertainment Retailers Association, 2017). According to the UK Association for Interactive Entertainment (Ukie), the UK is the 6th largest market for videogames globally, a not insignificant rank to hold (Ukie, 2018). Given this popularity, it is not surprising that the UK has a flourishing videogame development industry, in addition to strong cultural and academic interest in videogames.

Videogames in Academia and the Academic Library

The desire to study videogames – whether as a subject of media studies or the game development process itself – has led to a significant proportion of further education institutions offering courses in this subject. At the time of writing, UCAS was advertising 467 ‘computer game’ courses across 139 different institutions (UCAS, n.d.). In addition, the intake of students on ‘computer games’ courses rose from 4,165 in 2014/2015 to 5,210 in 2015/16 – a 25.1% increase on the previous year which
follow a continual trend of growth in preceding years (Department for Education, 2017). In the UK, the videogame sector accounts for full time employment of 47,620 people and approximately £2.87 billion in Gross Value Added (GVA) (BFI, 2018). These numbers demonstrate that there is a significant interest in videogame-based studies at higher education level and also that there is a significant opportunity for employment in a growing sector for future graduates.

The information above demonstrates that the rising figures of students in higher education studying videogame-related courses indicate there is also interest at the academic level. The value of making videogames available to students and staff are numerous. As stated by Cross et al. (2016), it gives them the ‘ability to support related programs, [...] foster innovation in teaching beyond game studies and game development, and increased morale among library staff’. An excellent example of this interdisciplinary use of videogames can be seen from the Computer & Video Game Archive (CVGA) at the University of Michigan Library, where students used the collection to study the depiction of samurai in literature and other creative work (Carter, 2018). Both Buller (2017) and Farrell et al. (2017) cite the cost of videogames as being prohibitive for some students and therefore, having a videogame service in the library can make these materials accessible to those who might otherwise not have the opportunity.

Videogames in the Museum

As would be expected of such a popular mode of entertainment, in addition to the academic interest described above, the desire for the public to engage with videogames beyond their living room has seen a rise in popularity of exhibitions and events focusing on videogames in some form or another. There are permanent museums nationally that display and collect videogames such as the National Videogame Museum in Sheffield, which upon opening in 2015 as the National Videogame Arcade received 100,000 visits over a two year period (National Videogame Museum, n.d.). There is also international interest in videogames, such as the Computerspielemuseum in Berlin, The Video Game Museum of Rome (VIGAMUS) and The Strong Museum of Play in New York.

There are also computing museums that feature exhibitions on videogames such as The Centre for Computing History in Cambridge and the Living Computers: Museum + Labs in Seattle. Whilst computing is the main focus of these museums, their permanent collections also contain videogames and games consoles and host exhibitions on the historical aspect of videogames and their success, which recognises the popularity of nostalgia for childhood videogames and computers. This is also currently reflected in the commercial market, with the current trend of developers
releasing remastered versions of well-loved franchises from the 1990s such as Crash Bandicoot, in addition to the release of ‘mini’ versions of historical consoles such as the Super NES Classic Edition, PlayStation Classic, SEGA Mega Drive Mini and more (Newzoo, 2019).

The interest in videogames goes beyond historical and nostalgic interest. Many institutions are beginning to recognise that videogames are some of ‘the most relevant cultural and artistic products of our time’ (Muriel & Crawford, 2018) and are taking opportunities to appeal to non-traditional visitors by including videogames in their collections. The Museum of Modern Art in New York has held videogames as part of its collection since 2012. The Museum of London began collecting videogames that represent London in 2016, as an ‘alternative way to tell the story of London’ (Aravani, 2016). Game On 2.0 is the current iteration of an international exhibition that aims to tell the story of the adaptations and developments in gaming history, from 1962 to the present day. Featuring more than 150 playable games, this exhibition has been touring since 2002, featuring at the Barbican Centre in London and the Science Museum (Barbican, n.d.).

Most recently, there has been the Videogames: Design/Play/Disrupt exhibition at the Victoria & Albert (V&A) Museum, running at both their London and Dundee sites across 2018/19. This exhibition explored contemporary games from mid-2000 onwards and looked at how videogames – from indie phone games to AAA blockbusters – are designed, their cultural, social and political impact, and how videogames are played and how technology has changed the way we play them (V&A, n.d.).

Beyond the few museums mentioned above, Naskali, et al. (2013) have included a comprehensive list of recent videogame museums and exhibitions in their article on how videogames can be used in museums.

The Challenges of Preserving Videogames

The videogame industry is fast moving and as James Newman (2012) puts it, ‘each new gaming system, each new game, takes part in a process that replaces that which came before it’. This is part of a trend of planned obsolescence that follows both commercial and technological patterns that see old games and their platforms quickly disposed of by the professional industry and consumers in lieu of modern developments. In terms of videogame companies, research shows that they have little regard to preserving their own work and their own preservation practices vary in quality (Bachell & Barr, 2014).
The most obvious challenge for preserving videogames is the simple fact that the physical items themselves become damaged or degrade over time. As each generation of videogames becomes obsolete, the challenge increases as these systems are no longer manufactured or supported, impacting the ability to repair and replace damaged machines (Newman & Simons, 2018). In a competitive market, many games are also only playable on one platform and as a result, whole swathes of one system videogames could theoretically be lost if the devices themselves become unplayable. This also includes the various peripheral items involved in playing videogames such as controllers, memory sticks or other more niche paraphernalia. For instance, to play a game such as *Duck Hunt* (1984), in addition to the NES (Nintendo Entertainment System) console, you would need to have a copy of *Duck Hunt*, the specialist NES Zapper and also maintain having a CRT (cathode-ray tube) television as the technology is not compatible with modern televisions. Whilst this is an older example, there are plenty of other modern accessories that already face relative redundancy – the first iteration of Microsoft’s Kinect – a motion sensing accessory – only came into existence in 2010 but by 2015, was already being discontinued by Microsoft.

Another significant risk is the danger of bit rot, which is the ‘irrevocable degradation or loss of digital information when the infrastructure (the hardware and software) required to access, interpret, view, and use this information is no longer available or executable’ (Kosciejew, 2015). In the context of videogames, this could be an aging CD that has over time begun to decay; by the time this has been noticed, the game may no longer be playable as the data cannot be read on the disc anymore. Specifically, the estimated lifespan of a floppy disk is approximately 20 years, which would put any game stored in this format at potential risk (Newman & Simons, 2018).

One of the most popular and controversial methods of videogame preservation attempts to alleviate the perils of physical and data degradation, by ‘migrating’ the data available to a more secure storage platform or via the use of ‘emulators’. An emulator can be defined as a piece of software that can run a videogame on a different platform – often a PC – to that which it was originally designed for. (Conley, et al., 2004). This is a popular practice amongst videogame enthusiasts and emulation of obsolete platforms is seen as a fairly victimless crime, following the logic that a ‘failed commodity’ is an economic irrelevance but to enthusiasts, is a valued creative object (Deeming & Murphy, 2017). At the amateur level, whilst it is not likely that individuals will be caught out, copyright law is applicable to videogames and there is room to interpret that migration and emulation practices could infringe upon these protections, although there does seem to be some flexibility around this (Lee, 2018).
Nintendo clearly see emulation as a significant challenge and provide a strong rebuttal to emulators via their corporate website:

‘The introduction of emulators created to play illegally copied Nintendo software represents the greatest threat to date to the intellectual property rights of video game developers. As is the case with any business or industry, when its products become available for free, the revenue stream supporting that industry is threatened. Such emulators have the potential to significantly damage a worldwide entertainment software industry which generates over $15 billion annually, and tens of thousands of jobs.’ (Nintendo, 2019)

Reflecting this attitude, Nintendo sued the operators of two popular ROM websites, LoveROMS.com and LoveRETRO.com, and as of December 2018, a settlement had been reached amounting to millions of dollars (BBC, 2018). This highlights the great risk that is taken by fans of videogames that make attempts to preserve the very material they often love.

Whilst Nintendo maintains the legal right to aggressively pursue litigation in protection of their intellectual property, it does raise a few moral and ethical questions. If one individual is able to put hundreds of other ROMs onto these NES Classic consoles, then what is to stop Nintendo from doing so themselves other than to inflate their own profits and create demand through scarcity? Whilst there is no doubt many individuals participate in the use of emulators and ROMs and the majority will not be caught, the case above demonstrates the high risks involved with the sharing and use of emulators. When this heavy-handed approach is being applied to individuals circumventing copyright law, it is clear why professional bodies and institutions would also avoid facing such risks to preserve and use this content.

Research Focus

The initial concept for this research subject was focused on copyright and stemmed from an in-class discussion on copyright. During a session ran by Dr Jane Secker, a senior lecturer in Educational Development at City, University of London, the class considered a variety of examples of objects that could be affected by copyright; this led to an in-class discussion on how videogames are affected by copyright. In turn this prompted me to consider the subject from a library perspective. For example, as complex products containing music, video, computer coding, original artwork and so on, how are videogames affected by copyright? How would older games, often where the copyright holder is not known, be affected by this? How can a library prepare its collection to ensure it is copyright compliant?
An early step in my research (and part of my first objective) saw me identify a handful of institutions that are currently using and collecting videogames in their collections. Every institute I visited seemed to have a different approach to how they displayed, used, collected, preserved and managed their collections. Along with this variety of approaches, most did not seem overly concerned with copyright issues and from what I could tell, had little reason to be concerned.

In addition, little has been written on the specific subject of copyright and its impact on videogames in libraries and museums (both for preservation and usage). At the time I was conducting these early visits, I also began to read around the subject and a few things stood out to me. First of all, in the US and Canada, many university libraries offer videogame collections as part of their service. In fact, much of the literature on this topic has been published in the US and Canada and this is discussed in greater detail in the literature review. Within the literature, it is notable how the UK hardly features on the topic of videogames in libraries generally, let alone academic libraries. The lack of literature on the subject reflected my own experiences of trying to discover libraries with videogame collections in the UK. Whilst a few offer videogames in some capacity, they are often not well advertised. Another common feature is providing a ‘Games Lab’ which is separate from the library such as at the University of Liverpool and University of Chester. Given what we have established in the background for this project, there is clearly a strong interest in the UK surrounding videogames at both an academic and cultural level, and it seemed strange that academic library provisions to support this subject were so limited. In addition, many of the libraries in the US and Canada also provide access to retro games as part of their collection, whereas in the UK, the majority of collections with older videogames are connected to museums.

Based on these early factors, I felt there was an opportunity to expand the area of my research. Whilst copyright was still relevant in some way, it seemed given the lack of UK-based institutions that featured videogames in their libraries and indeed, the lack of literature on the subject at all, that it was reasonable to broaden my research focus on to how academic libraries and museums in the UK approach videogame use and preservation. Whilst research has been written on the concepts of videogame preservation with reference to certain institutions in the UK such as the National Videogame Archive (Newman, 2009 and 2012), this is complicated by the fact that this project no longer seems to be in operation. It did not seem that an in-depth and detailed analysis and comparison of different institutions has been performed. The opportunity to compare British institutions to three overseas (US and Canada) institutions was also a potentially unique area of research, as their practices could be potentially different – or similar – to our own.
To conduct this research, I used a total of three museums (two in the UK, one in the US) and three academic libraries (one in the UK, one in the US, and one in Canada) as case studies. My choice of academic libraries in this multiple case study came around through a variety of factors. At Goldsmiths Library, they had only started their collection quite recently so it seemed likely that given how modern their collection is, they would be able to offer some contemporary relevance to the subject. The choice to use Simon Fraser University Library’s Games Room and Collection arose from a chance opportunity; I had discovered their collection in my research and as I was going to be in Vancouver during the summer, I took the opportunity to visit them and complete an interview about their collection. My final academic library is the Computer Video Game Archive at the University of Michigan Library – this collection does feature in the literature (Wood & Carter, 2018) but my initial discovery was via Eve Jamieson, Subject Librarian at Goldsmiths Library, who informed me she had consulted with the library when preparing their collection. As a result, I reached out to them and was also able to gain their input.

For museums, I was inspired initially by the Videogames: Design/Play/Disrupt exhibition at the V&A Museum, which I had attended around the start of this project. I also visited the Centre for Computing History (CCH) in Cambridge and identified the Living Computers Museum + Labs (LCM+L) in Seattle and established both as potential interview options. Upon reaching out to all three institutions, I was able to conduct interviews with staff – or receive written responses – from all three.

Worth noting is that there are many other libraries and museums that could also be used for this research but given the timeframe required to complete this project and the difficulties that can arise from establishing contact, these could not all be included. For example, one library I visited was at Sheffield Hallam University where they have a ‘Games Room’ in their main library for Game Design students to use. I also visited the National Videogame Museum in Sheffield (Figure 1) and the National Science and Media Museum in Bradford but unfortunately was unable to perform interviews about these institutions.
The information gathered in this research is of importance for a variety of reasons. Whilst research has been completed on the subject of videogame preservation and use in memory institutions in the UK previously, the focus of this particular project allows for a detailed comparison of how multiple institutions are approaching this. By establishing how international institutions in the US and Canada are approaching these challenges and comparing it to what is being done in the UK, there is potential to determine how the national approach in the UK could be improved or changed to ensure a strong future, similar to overseas collections. This project could also determine areas of future research that could also prove valuable to future researchers of this topic.

Figure 1. The National Videogame Museum in Sheffield is home to a vast collection of playable videogames across multiple generations but unfortunately, I was unable to contact anyone to take part in an interview.
AIM

Given that very little has been published about videogame use in academic libraries in the UK, this project is very much exploratory in nature. In addition, it is museums that are preserving videogames and displaying them in the UK, again with little research written on this topic.

With that in mind, the overall aim of this research is to:

- Develop an understanding of how different memory institutions – specifically academic libraries and museums – in the UK are approaching the use and preservation of videogames in comparison to their international counterparts.

OBJECTIVES

1. Identify which museums and academics libraries currently use and preserve videogames in their collection via published material (academic or otherwise) or through visiting appropriate institutions in person.

2. Explore what staff at these museums and academic libraries think about the use and preservation of their collections.

3. Assess the differences and similarities between museums and academic libraries and the challenges they face when using and preserving videogame collections, in particular with regards to differences in international approaches.

4. Establish whether this knowledge can be used to find links between these institutions and better support the development of their own practices.

5. Determine if there are any avenues of future research that may come about as a result of any findings made during this project.

Research Methods

To complete this research, I have conducted a literature review of what has been published to date on this subject (objective 1). The literature that has been published on this subject so far is somewhat limited but some key texts include prominent books on videogame preservation (e.g. Newman, 2012), the numerous journal articles exploring videogames in academic libraries (e.g.
Wood & Carter, 2018), white papers and reports that explore the subject of videogame preservation (e.g. Newman & Simons, 2018) and articles that consider the role that copyright plays in videogame use in these institutions (e.g. Lee, 2018).

After visiting and identifying potentially viable institutions (objective 1), I have made contact with individuals working at said institutions to invite them to take part in semi-structured qualitative interviews based around a questionnaire I have prepared (objective 2) to form part of a multiple case study. Upon completion of these interviews, I have performed qualitative data analysis in the form of coding to discuss my results (objective 3) and then assessed the results for any interesting differences or similarities between the institutions (objective 4). The methods described here are discussed in much greater detail in the following ‘Methodology’ chapter of this project. The research ends with a conclusion that summarises the findings and determines if there are any avenues for potential research in the future (objective 5).
Literature Review

For the literature review, I have separated it into a selection of categories that are relevant to the project and for which there is a reasonable spread of published material. These categories are as follows:

I. Videogames in Academic Libraries
II. Videogame Preservation
III. Copyright and Videogames

I. Videogames in Academic Libraries

Much of the literature that has been published on the specific subject of videogame use in academic libraries is predominantly in the form of academic articles in journals and is often presented as a case study written by the institution about themselves and the approach they took to collection development. See Kane, et al. (2007), Laskowski & Ward (2009), Miller (2014), Cross, et al. (2015), Buller (2017), Farrell, et al. (2017), Wood & Carter (2018) for examples of this.

One style of article that exists are those that do not necessarily focus specifically on one institution but consider the topic from a broader viewpoint, often referring to the literature written by others on the subject. Examples include articles written by Chadwell (2011), Robson & Durkee (2012) and Ferguson (2016), who have all written summaries and literature reviews based on existing literature about the use of videogames in academic libraries. These articles tend to offer little unique insight on the subject but in terms of broader reading, as there is already limited literature on the subject, should be considered as part of the literature on videogames in libraries.

Tappeiner & Lyons (2008) and Ratliff (2015) have both written on the subject of the relevance and suitability of videogames in the library. As a good introduction as to why videogames should be used in the library, Ratliff (2015) has written a fairly comprehensive text exploring the subject. This book contains clear definitions of videogame-related terms that would be useful to an unknowledgable reader on the subject and Chapter 7 of this – titled ‘Libraries and Video Games: Why?’ – explores some of the history between games and libraries. The chapter points out that games have been present in libraries for ‘a long time’ and videogames are a natural progression of this; it also explores further benefits videogames in the library can offer such as the development of literacy skills and more. Unfortunately, many of the libraries discussed and the tone of the book does seem to
predominantly focus on public libraries but nevertheless, the information presented is transferable across to other types of libraries.

In Tappeiner & Lyons (2008), the relevance of videogames in libraries was also discussed, but as their focus is specifically on academic collections, their insight is more useful than that offered by Ratliff (2015). Within their article, they explore videogames at a basic level, as though introducing the subject to a completely unknowing audience. Their recommendations for selection criteria include some novel ideas, such as purchasing games that use ‘small motor skills’ as these have been found to help medical students. This article is useful but as with some of the more focused case studies discussed below, it suffers from being slightly dated – for example, the discussion of potentially needing additional ‘memory cards’ or ‘wireless cards’ – and as a result, it can only offer insight on videogame collection development up to an older generation of console.

One of the earliest case studies that covers this subject was written by Kane et al. (2007) and is a case study of their experiences at the University of Santa Cruz, California in developing a videogame collection. They note that the ever growing popularity of videogames both recreationally and academically means that libraries need to address the development of videogame collections ‘sooner rather than later’. The article is an interesting case study but due to rapid changes in videogaming, already shows signs of limited application as we have passed multiple new generations of consoles and games since the article’s inception. Nevertheless, it is a highly referenced article in amongst the other academic writing on this subject, and the core ideas they establish make this article something of a ‘progenitor’ amongst the future literature. It is also worth noting that this collection is still in use at the Santa Cruz University Library and now include up to 40 consoles including the most recent platforms such as PlayStation 4 and Xbox One, demonstrating that they have continued to modernise and expand their collection (UCSC, n.d.).

A recent case study published in 2018 explores the University of Michigan’s Computer and Video Game Archive (CVGA). My own research involves interviewing one of the librarians – Valerie Waldron – who is involved with the management of the CVGA. This article was co-authored by Wood & Carter (2018), with David Carter being the ‘Video Game Archivist’ at the University of Michigan Library. The article discusses the development and processes behind the creation of the CVGA in detail and in their own words, ‘it could be considered a model for the implementation of video game collections at other universities’. The article provides an excellent description of the CVGA’s resources and development which was beneficial as supplementary material that is referred to later in my own discussion of the CVGA. Being published in 2018, this is one of the most recent articles on this subject and as a result it is highly relevant to this study.
Another detailed case study on the subject was published by academic and library staff from Carleton University and the MacOdrum Library in Ottawa, Ontario, Canada (Cross, et al., 2015). As with other similar articles, they explore the processes involved with development their videogame collection and the challenges involved. One of the more interesting parts of this article was the exploration of censorship. After purchasing a copy of the videogame Rage, the library received complaints from faculty who feared the game exposed students to ‘dangerous and insidious representations of militaristic violence and aggressive masculinity’ and wished for the title to be removed which was ultimately declined. The rationale and explanation from both sides of the debate provide interesting reading and can certainly be considered an important aspect of videogame use in the library and museums.

Many of the libraries mentioned in the literature are a reference collection and do not provide facilities for the borrowing of videogame consoles. Buller (2017) has written a case study exploring the development of a console lending service at the University of Denver’s University Libraries. In his case study, Buller outlines the decision making process, the development of policy and the challenges of operating a loanable console collection. The recency of this article makes it relevant to this study in addition to the unique circumstances portrayed. In discussing the benefits of an in-house versus loanable collection, Buller notes how ‘space is limited’ in their current format as a library, a theme that will be recurrent in my own research. He also notes some positives of a loanable collection such as students being able to use ‘hardware in its designed setting’ as opposed to a library environment. These are interesting observations about how videogame use can be affected by the environment they are being used in which is also discussed later.

Farrell et al. (2017) performed multiple semi-structured interviews with academic staff and graduate students in order to assess what their needs were at the University of Minnesota Libraries. This article is unique in multiple ways – its focus on the requirements for teaching and research by staff has not been done before or since as most published material focuses on the needs of students. They are also the only article that performed significant qualitative data gathering to form the basis of their article, where many other articles opt to focus on telling the story of their experiences with videogame collections. They recognise the shortcomings of doing a localised exploratory study such as this in terms of wider applicability but nonetheless, it is a useful article that reveals interesting results. For example, they determine that graduate students are at a ‘major funding disadvantage’ – especially those from an arts and humanities discipline – and this can ‘impede access to game technology required for research’. Through their interviewing process, it is interesting that they have been able to learn about challenges that affect their user base at the University of Minnesota and it would be interesting to see if this is also applicable across the wider sector for instance.
Another unique case study was completed by Miller (2014), wherein she completed focus groups with game design students at the University of Chicago on their information behaviour. She aimed to find out how these students find resources such as videogames but also including web resources, print resources, social interactions and other relevant information. The study is limited as it only included eleven students but is the only publication that features qualitative data from its target user group explicitly exploring what they use and how they use it in the library.

Where many articles focus on developing videogame collections based on concepts such as current relevance, popularity, and staff or student recommendations, Thomas & Clyde (2013) posit a somewhat more novel approach – assessing and choosing videogames based on ‘discipline specific knowledge’. They explore a handful of World War II games and assess their suitability as a historical source of knowledge. Ultimately, they conclude that none of the games discussed ‘function as a scholarly history’ but could possibly serve a purpose in an academic library as ‘secondary or tertiary sources’. Whilst their approach is different, I am not certain its application is plausible for many academic libraries. Other literature demonstrates that the main targets of videogame collections are those interested in the development process and playing of videogames, not their factual accuracy. Nevertheless, Thomas & Clyde’s (2013) approach would be interesting to see in practice if an academic library had the capacity to do so.

II. Videogame Preservation

The efforts of McDonough et al. (2010) are an early example of a significant attempt at preserving a large-scale digital only game. This project is often cited in videogame preservation literature and this is largely due to the comprehensive nature of the project. Whilst ambitious, in their own words, the attempt to archive Second Life is ‘at best extremely partial’ and a ‘static representation’ of the original. This was due to a series of factors such as technical challenges but the biggest challenge they faced was from a legal perspective. Obtaining permission from users for their user-created content proved to be time consuming, sometimes negative and as a result, only 10% of those contacted allowed permission to be given. Copyright and intellectual property rights are a frequently cited difficulty when it comes to preserving videogames and their related material and this is discussed further below.

A frequently cited article on the subject of videogame preservation was written by Guttenbrunner et al. (2010). This article provides a basic introduction to videogame history and expands from this to explore various strategies of preservation such as backwards compatibility, migration and
emulation. Guttenbrunner et al. (2010) seems to favour the emulation model of preservation and analyses the capability of different emulators. They deem emulators to be a ‘successful strategy to interpret game software from obsolete console video game systems on modern computers’ but does acknowledge some difficulties; more recent videogames are more difficult to emulate – two games were ‘entirely unplayable’ on a Playstation 2 – and also recognised the complex legal barrier in place when it comes to emulation. This article is somewhat dated given the rapid development of new trends in videogames but many aspects of it still ring true. The same physical challenges exist for videogame preservation as in 2010 and there has been limited advances at the institutional, corporate and legal level on the matter – in this way, the article is still relevant. However, the digital landscape has evolved rapidly, alongside significant improvements in internet access changing consumer behaviours and game development and accessibility practices, so it is difficult to say how relevant its recommendations would now be.

Another article and project with interest in emulation as a preservation strategy has also been written by Pinchbeck et al. (2009). Their article discusses the Keeping Emulation Environments Portable (KEEP) Project, launched in 2009, which was an EU-funded project that intended to combat the problem of current emulators facing obsolescence and the ‘retention of existing emulation work’. This project ran until 2012 and it is difficult to establish how successful it was as there is no literature discussing it beyond this time period. Nevertheless, it adds to the other literature written on specific preservation projects.

One of the more prominent writers on videogame preservation is James Newman, a British academic who is written various articles relating to this subject, covering topics such as ROMs, fan communities and their approach, as well as the technical challenges involved in videogame preservation such as bit rot. In one article by Newman (2009), he discussed the development of the UK’s National Videogame Archive and the current landscape of videogame preservation. This article points out the ‘neglectful’ state of videogame preservation at a corporate level, an idea that is corroborated and discussed in further detail below by Bachell & Barr (2014). Ironically, whilst the article has relevant background information and ideas, the National Videogame Archive itself seems to have become obsolete and is no longer available online and it is not clear what became of this project.

The ideas in this article are explored in much greater detail in Newman’s (2012) book on the subject; he explores the challenges of videogame preservation in detail, first describing the various technical challenges that occur with videogame preservation. By the book’s conclusion, however, Newman has made an interesting proposition on the topic, suggesting videogames should be allowed to die
and their preservation as objects is not the key objective: ‘The capturing of games in and at play could and, I would contend, should be the core objective of game preservation’ (Newman, 2012). This is an interesting concept and should be considered as a viable aspect of videogame preservation. Newman’s approach to the subject is largely from a media studies perspective and not a library and information science approach, which is reflected in the interest of preserving how videogames are played as opposed to the actual games themselves; this is also one issue with the book being discussed as not all of it feels entirely relevant to the subject at hand, often focusing on subjects such as how videogames are reported upon, the media cycle and how retailers approach videogames. Nevertheless, the majority of this book is an excellent primer on the subject of videogame preservation.

Following on from this, Newman & Simons (2018) published a white paper on the sustainability of the videogame industry and the risks we face in terms preserving this material for the future. Much of the content is similar to that covered by Newman (2012) previously, but the white paper provides much of this in a more concise manner whilst also having interesting sections focusing on specific case studies, institutions and a section for their own recommendations on how videogame preservation could be improved. Some of the ideas put forward here are interesting, such as developing attitudes of game developers to take an interest in preservation: ‘Developers and publishers need to be given toolkits to help them preserve the work they have created in sustainable, extensible ways’ (Newman & Simons, 2018). Another useful white paper worth considering has also been previously published by Monnens et al. (2009), which contains a series of brief essays covering the subject of videogame preservation.

A previously mentioned article with a more unique perspective on videogame preservation – particularly in the UK – has been published by Bachell & Barr (2014). Their study focuses on the record management practices of independent game developers and combines quantitative data (surveys) with qualitative data (interviews) to build their study. The low number of responses they received does mean there are some limitations to the study but the responses they have gathered do make for some thoughtful discussion. Overall, they found that the record management practices of game developers are flawed:

‘[...] largely disorganised record keeping practices that are not governed by any overarching guidelines, with decisions made on an ad hoc basis by individual developers, only a small percentage of whom have formal training in records management.’ (Bachell & Barr, 2014)
They also identify that on game design courses, very little emphasis is placed on preservation practice – this could be a contributing factor as to why the industry-wide approach is poor. In addition the rapid changes in technology and the constant need to move on to new projects reflects on points made by Newman (2009, 2012), who also acknowledged that the wider videogame community also contributes to a lack of interest in preservation due to the rapid change cycle of videogames.

In an anthology by Swalwell et al., (2017), they have collected numerous essays on the subject of videogames and fandom. Of particular interest was the chapter written by deWinter & Kocurek (2017), in which they interview fans and archive professionals on the moment when a private collection is passed on for ‘professional preservation’. In the wider videogame community, fan efforts towards preservation and collecting of videogames are well documented – see some of the previous literature discussed for examples of this – but the rationale and discussion of these private collections becoming ‘professional’ has some excellent insight from both perspectives. In addition, they cover the complexity that arises from legal issues such as creators being afraid to share certain items as they ‘did not own their own stuff’ but instead, it is ‘corporate property’.

III. Copyright and Videogames

The subject of videogames and copyright is fairly complex and can be broken down in a few different ways. It can be considered from the perspective of the developer and how they protect the various aspects of the development process as game studios look to protect their intellectual property. Many of the articles mentioned in the previous section already discuss the challenges surrounding videogames and copyright in detail relating to their own experiences and projects – see McDonough et al. (2010), Guttenbrunner et al. (2010), and Newman (2012) for examples of this.

In addition to these articles, it is worth considering the wider context of intellectual property and videogames to help understand the topic in a more complete manner. Stein (2015) has written a useful introduction to the various ways videogame components can be treated as protected by copyright, e.g. as literary works, dramatic works, artistic works, copyright protection of characters and so on. This breakdown paints a picture as to why videogames are a complex copyright issue.

In a similar fashion, Grosheide et al. (2014) have completed a more detailed exploration of intellectual property protection and its application to videogames within the European Union. They identify the relevant directives that apply to videogames – the Computer Programs Directive 1991, the Database Directive 1996, the Information Society Directive and the Orphan Works Directive –
and explore how these are relevant to videogames. Of particular interest, Grosheide et al. (2014) consider how the Orphan Works Directive (OWD) impacts upon cultural institutions:

‘The OWD is meant to facilitate such use and display, by way of introducing an exception to the obligation of certain users to ask permission for their intended uses. However, the OWD’s scope is limited, both in relation to the types of works that it covers and with regards to the kind of institutions that it covers and with regard to the kind of institutions that will be permitted to use or display orphan works’.

Overall, this article is a useful introduction to the topic and provides useful examples to also put it in to the context, e.g. exploring the intellectual property aspects of Minecraft, the popular game developed by Mojang.

Maier (2015) explores the challenges of preserving orphan works in even greater detail. This article considers whether the orphan work directive is applicable to emulated videogames and ultimately feels this is ‘questionable’. Going further, Maier (2015) concludes that the difficulties of legally protected technical measures ‘pose the main obstacle to preservation efforts’ and believes that cultural heritage institutions should be given the legal capability to work around these measures. This is an appealing idea and many authors on the subject of preservation also discuss a desire to see a relaxing of laws like this for cultural institutions who desire to use emulation and migration to protect their collections legally.

Loney (2019) explores the difficulties that can occur with managing videogame copyright. As videogames fall under protection as so many different auspices such as computer programs, dramatic works, etc., he suggests it would make sense for videogames to have recognition as their own type of work for copyright purposes.

Two articles are written by Lee (2012) and Jungar (2016), both of which focus on a particular aspect of copyright and its application to videogames. Lee (2012) examines the topic of providing copyright protection for gameplay, in order to protect developers from ‘opportunistic competitors’ who may copy their game. Jungar (2016) on the other hand, considers whether the popular practice of streaming videogames on platforms such as Twitch and YouTube is an infringement of the game developers’ copyright. Both articles provide thought-provoking insight into the legal complexities surrounding videogames, and whilst they are both more interested in the legal side of the discussion rather than preservation, they are worth reading for a deeper understanding of the subject.

Of more specific relevance to the topic at hand, Lee (2018) has written an article on the challenges that copyright law presents to heritage institutions when it comes to using migration and emulation to preserve videogames. In the article, Lee describes these concepts and explores some of the
relevant case law before concluding by suggesting possible ‘pockets of flexibility’ that could be used as ‘a starting point’ for heritage institutions to potentially work from. This is a fairly succinct article on the subject, but as it is also the most relevant and most recent work published on this very particular topic, it is therefore a valuable resource for this project.
METHODOLOGY

Introduction

Beyond the written works that have been discussed in the literature review, the need to complete active research on this subject is a necessity to achieve the aims and objectives of this project. The empirical research will hopefully contribute to all four objectives listed: by identifying appropriate institutions and analysing their approaches; by interviewing relevant people at these institutions to discover what knowledge they have of this subject; using a ‘coding’ method, assess the institutions for similar or unique themes that occur; using this data to then establish potential areas for further, more detailed research.

The need for field research on this subject is based on the limited availability of already published work on British institutions specifically. Whilst it would be possible to gauge some understanding of how certain institutions use and preserve videogame collections from published material, this would be predominantly North American centric analysis – many of the articles written on this subject are also a few years old now and the videogame industry is a rapidly evolving field that can change drastically with technological innovation (i.e. an article written in 2009 may still be relevant but is not likely to consider digital gaming as strongly as the present). Based on this, it seemed appropriate to conduct my own research on the subject by visiting institutions and interviewing candidates based on their current experiences.

This chapter will present my methodology in a structured breakdown of the component parts of my methods, exploring the decision-making process involved with my choices in the following logical sequence:

1. Explaining my choice of Research Design Method (Multiple Case Studies).
2. Summary of the Case Studies being used.
3. Exploring the interview method being used.
4. Explanation of the sampling method chosen.
5. A discussion of the limitations of this research.
6. An explanation of ethical decisions and approval.
7. An explanation of the framework I will be using for data analysis.
Research Design Method – Multiple-Case Design/Multiple Case Studies

The optimum way to complete this research seemed to be in the form of a case study – in particular, multiple exploratory case studies.

At the outset of this project, the initial focus was on copyright and how this affects videogame collection use and preservation in memory institutions but as my research progressed, the research focus shifted. Through the literature review process and also my own early excursions to certain libraries and museums, it became apparent that much of the literature on this subject is written from an American or Canadian perspective, which is perhaps reflective of the more established videogame collections in these countries. By contrast, there is little written on British institutions – museums or libraries – that collect and use videogames. As a result, the research focus expanded away from being exclusively about copyright and on to an exploration of how the handful of academic libraries and museums that are using videogames in their collections do so and how they preserve videogames – or if they do at all. This led to the conclusion this research should be an exploratory case study, as ‘an exploratory study deals with a subject that is clearly important but has been previously neglected for various reasons’ (Gagnon, 2010). In this case, the lack of literature on British institutions holding videogame collections in combination with my own research led me to believe that there is seemingly a gap in knowledge for this subject.

Yin (2009) states that a good case study should have a stated proposition in order to ensure a case study moves in the ‘right direction’. In the instance of an exploratory study however, there is legitimate cause not to have a proposition as the topic is being explored; instead an exploratory study should have a ‘purpose’ and criteria that will determine its success. Objectives 1 and 2 of this project are what led to the initial concept of forming an exploratory case study. In which case, the ‘purpose’ of this research will be in completing objectives 3 and 4. By assessing these various institutions (objective 3), it is hoped that notable patterns, behaviours and theories will become clear or stand out as varied and thus inform areas of potential research or development in the future for academics and practicing librarians to consider (objective 4).

Whilst academic libraries and museums are fairly different institutions, they are both being explored because within the UK, there are a limited number of universities that hold videogame collections but in museums, there is a greater number of institutions that use and preserve them. By exploring both, this research will hopefully discover why this contrast exists and attempt to establish if there is any potential for crossover.
In addition, some of the institutions used as case studies are based in the US and Canada. The establishment of videogame collections in libraries and museums in these countries is much more developed than it is in the UK, with multiple possible locations that could have formed case studies, even beyond the three in this project. It was my hope that by adding overseas institutions, the comparison provided to British institutions could help develop more prescient theories and areas of further study as to the state of British videogame collections in similar settings.

The Case Studies

This section will briefly describe the six institutions used as case studies. This consists of three museums and three academic libraries from Canada, the US and the UK:

**Simon Fraser University’s Surrey Campus, Fraser Library (SFU)** – SFU has three campuses across the Greater Vancouver area of British Columbia, Canada. The Fraser Library, based at their Surrey Campus, is home to the Games Room and videogame collection of SFU. This collection was established in 2004 and contains a collection of loanable videogames from contemporary platforms back to older platforms such as the Sega Genesis or NES. They also have a sizable collection of physical PC games from the early-2000s and their Games Room contains facilities to allow students to play games onsite. They also have a small collection of loanable boardgames that students can borrow. (Oh, 2019)

**Living Computers: Museum + Labs (LCM+L)** – Based in Seattle, Washington in the US, LCM+L was originally opened in 2012 as LCM and then later expanded to include learning labs, becoming LCM+L in 2016. The focus of LCM+L is on historical computers, in particular allowing people to experience using these computers. The museum has an archive which also contains items such as books, technical documents and other ephemera. The collection contains games and their platforms and they also run workshops on subjects such as creating videogames. (LCM+L, n.d.)

**University of Michigan Library, Computer and Video Game Archive (CVGA)** – Based in Michigan, the CVGA was originally opened in 2008 before moving to its current location in 2011. The collection originally contained less than 1,000 titles but this has since developed into a collection of over 8,000 videogames and other material such as soundtracks and boardgames. Their collection is a mixture of contemporary and historical videogame material, including the Odyssey 2 through to the current generation. (Ritenburgh, 2019)
**Goldsmiths University Library** – The games collection at Goldsmiths Library is a relatively new collection and so far, it consists of an arcade-style PC cabinet with games that students can play in the library, in addition to a PlayStation 4 and 60 games to play on it. The collection is currently usable only within the library but has a loanable boardgame collection. They have also run events for International Games Week that are open to the public. (Goldsmiths, 2019)

**The Centre for Computing History (CCH)** – Based in Cambridge, the CCH opened at its current location in 2013 with the aim of telling the history of computing, and its impact on society and culture. Their collection contains approximately 24,000 items, the core of which is 800 historic computers in addition to material such as technical documents, magazines and other ephemera. Videogames form part of both the exhibitions that are on display and part of the archive collection itself. In addition to general public interest, they host workshops and have a strong focus on education and public events. (Centre for Computing History, n.d.)

**Videogames: Design/Play /Disrupt at the Victorian & Albert (V&A) Museum** – This exhibition took place at the V&A in London from late 2018 to early 2019 and was also followed by a run at the V&A Dundee during 2019. This exhibition focused on games that have been developed since the mid-2000s, drawing attention to videogames that are notable for their unique design and cultural impact, ranging from AAA titles from major developers through to smaller independent games. The content of the exhibition contained videogame material such as original artwork, sketches, behind-the-scenes footage, interviews, fan-works and much more. (V&A, n.d.)

**Interviews**

For the interviewing process, I chose to conduct semi-structured interviews with the candidates in person where possible. I was able to interview four of the interviewees in person and received written responses from two other interviewees. I had originally identified at least one additional interview which unfortunately I was not able to complete.

Semi-structured interviews were an appropriate choice for a few reasons. One of the strengths of a semi-structured interview is that it allows each interviewee to be asked a core selection of questions (see Appendix B) that were relevant to all interviewees, ‘while simultaneously seeking to fully understand their unique experiences’ (Mills, et al., 2010). By following a semi-structured template, it was easier to identify if there are any common themes occurring between different institutions but also allowed for the flexibility to go further into a certain topic if appropriate.
Each interview took place in a neutral location such as meeting rooms or offices of the interviewees. Where possible, I had visited the institution first on my own to familiarise myself with their collections prior to interview, which allowed me to cater questions specifically to the individual institutions as the interview progressed. The interviews were all based around the same set of questions with slight changes to wording to reflect the specific institute (e.g. museum to library). Where a question was not relevant to a specific collection or individual, the question would be omitted – i.e. there is no point asking about the preservation of classic videogame systems when a collection only holds contemporary games.

The interviews all took approximately thirty to forty minutes to complete and were recorded on an audio recording device for transcription later.

**Sampling**

In order to select candidates for potential interviews, I chose to use a nonprobability sampling method. The reason for this is that the research focus is on a niche subject area (i.e. videogame collections in museums and academic libraries) and a random sampling technique would not likely provide any meaningful data. Instead, by using a nonprobability sample, it was possible to select candidates based on criteria such as expertise and experience of working with videogame collections in these institutions. In particular, I have used a purposive sampling method as it allowed me to select specific candidates who met my criteria. As Given (2008) states, ‘research participants are not always created equal—one well-placed articulate informant will often advance the research far better than any randomly chosen sample of 50’. This is certainly applicable to these case studies as my intention was to explore what professionals in this field think of the challenges of videogame use and preservation at their institution.

**Limitations**

The biggest limitations for this project revolve around issues of time and feasibility. Due to the limited window to complete this project in, it would have been impossible to visit and interview every institution that had a videogame collection in the UK, let alone similar institutions overseas. As a result, this study is limited to a small sample size of six institutions and should therefore be treated as an exploratory early study with aims to provide recommendation for further research in the future.
With regards to overseas institutions, I was unable to interview all of the interviewees in person. The two interviewees that I was not able to interview in person were both based in the US. As a compromise, both candidates were willing to provide written responses to my questionnaire instead. This did not allow for additional data that can be gained from a personal interview, nor the great depth that a person-to-person interview can often gather but their institutions still offered unique perspectives on how they preserve and use a videogame collection. Along with all the case studies, additional information and material that has been published or is accessible via their own websites will also be used to help with the case studies.

It is also worth acknowledging the potential drawbacks and criticisms that exploratory case studies are also exposed to. Exploratory case studies can be considered to lack focus due to the lack of probabilistic sampling that has been done. Given more time, a survey of professionals in these institutions could have been performed to obtain some quantitative data, or a survey of students and other user groups could also have been completed. However, within the constraints of completing this project, this subject is well suited as an exploratory study, where I have been able to set ‘realistic objectives’ and look at the research with ‘reasonable depth’ (Biggam, 2017).

**Ethics**

In order to proceed with this project, it was necessary to obtain ethical approval from the Library and Information Science School at City, University of London. This project is a low-risk project as can be seen from the ethics checklist in Appendix E.

For each interview, I provided the candidate with a ‘Participant Information Sheet’, an ‘Informed Consent Form’ (Appendix F) and a copy of the questions I would be basing my interviews around (Appendix B). These informed candidates that I would be recording our interviews and that in the future this dissertation could be placed on an open access repository. After the completion of the transcripts, I sent them back to the interviewee to review for accuracy. I also offered them the opportunity to suggest redactions for any sections they felt needed amending. As the interviews had the potential to touch upon complex subjects such as copyright, intellectual property and also their working relationships with others, this felt like an appropriate option to provide. Ultimately, no candidate asked to make any serious redactions, only offering corrections to small errors to data that were not significant. I also offered each candidate the opportunity to remain anonymous entirely – with the exception that their institution would not be anonymous – and again, no candidate opted for this option.
In addition to these ethical issues, it is important to acknowledge my own bias as well and the potential impact it can have on any research. Where possible, I have tried to remain objective during the process of completing this research but inevitably with analysis and discussion of qualitative feedback, I will have to make my own interpretations of the data which others may disagree with. My hope is that my assessment of each case study will be presented in a fair and balanced way.

Data Analysis

After completing the transcripts for each interview, I went through each of them and labelled sections of the conversation with codes where appropriate. Coding is a common and popular method of qualitative data analysis that allows ‘codes’ to be used to categorize data – this then allows for analysis of the themes and categories that arise from the data in greater detail (Miles, et al., 2020). The type of coding I opted to use is holistic coding which allows for the application of a broad type of coding to large portions of dialogue from my interviews. A full list of codes applied to each interviewee can be seen in Appendix D.

Following from this, I also applied second cycle pattern coding to these holistic codes, as a way of grouping together these codes into smaller themes or concepts (Miles, et al., 2020). Where a code has been mentioned by more than one institution, it has been kept in as part of the second cycle pattern coding process and I have noted how many different interviewees mentioned it (e.g. x3, x4, x5). The following pattern codes and concept codes were established from this process:

Working with Others – Internal staffing (x4), Videogame Developers (Collaboration x3), Memory Institutions (Research x5), Memory Institutions (Knowledge Sharing x4), Seeking Expertise (x3)

Collection Management – Modern Focus (x3), Non-Playable Items (x2), Documentation Related to Videogames (x4)

Preservation – Repairing Items (x5), Replacing Items (x4), Knowledge (x2), Professional Practice (x3), Migration/Emulation (x3), Considerations for Display (x3), Software Preservation (x3)

Usage – Outreach (x2), Unique Features (Value/Display/Playability x4), Support Research (x2), Students (Users x4), Enthusiasts (Users x3), Leisure (x2), Teaching/Education (x4), Modern Focus (x3), Accessing Material Online (x2), Interdisciplinary (x2), Events & Workhops (x2)

Challenges – Availability of Space (x5), Funding (x5), Digital Games (x3), Damage (x3), Obsolescence (x4), Becoming Irrelevant (x2)
Whilst this process of coding is valuable in the establishment of patterns in the data, there is also value in the coding that did not lead to a pattern or concept and was only mentioned once, as these could show unique practices and ideas that other institutions may not be considering. As a result, I will also discuss unique data from each institution where appropriate.
Results and Discussion

The following section will first explore the individual interviews in a stand-alone capacity and analyse the key points raised by the interviewees in isolation. Following on from this is a discussion of the overall results, with focus on any patterns or differences that have been established. Transcripts for all interviews in their complete capacity can be found in Appendix C.

Analysis

Adena Brons – Simon Fraser University Library (SFU), Surrey, British Columbia, Canada

Adena is a Liaison Librarian (equivalent role of Subject Librarian in the UK) at SFU for the School of Interactive Arts and Technology and is based at their Surrey Campus. The Games Room at SFU was established in 2002 and was a considered part of the library when the main campus building was being built at the time.

During our discussion, we spoke of SFU’s approach to collection development and the main purpose of what their collection was used for. Adena’s approach to acquisition was fairly flexible and, in some instances, ‘a little bit ad hoc’ for the general purposes of collecting. This is supported by research into the topic by checking review sites and award lists to establish which games has a ‘buzz’ around them and in particular, ‘being noticed by awards because of innovations or unique characteristics’. This is also reflected in staff and student driven requests, as games are purchased based on their research interests which often include ‘independent games or games that are doing something interesting with storytelling or gameplay’.

The main use of the collection is to ‘support the academic programmes [...]’, the academic research and classes that are around game design’ but a frequently occurring subject discussed by Adena is the benefits of the collection as also a resource of leisure for students. The collection is open to all SFU staff and students with access to the campus, with the videogames themselves being loanable and in the case of handheld consoles and some older consoles, they are also loanable. From this perspective, Adena perceived the collection to be a great asset in terms of outreach to new students and as a successful way of demonstrating the library’s up-to-date credentials:

‘Well, I mean, I love it! I think it’s so interesting. It’s definitely something that I think is a really big draw for students, you know? It’s something they actually enjoy whereas I think a lot of times the library’s still struggling with the fact that a lot of library material is dry, academic, things students have to read for class and they have to read for a recent project, right? [...] it’s a hugely popular pastime and is really something that when I go into classes or do outreach or orientations, I can really talk it up as a great part of this campus and of this
library. I’d say that’s the biggest one, is just that it’s really accessible, friendly aspect of this library’.

As well as the positives of the collection, Adena discussed her experience of interacting with other institutions in a highly positive manner. She describes the network of libraries and librarians in Canada that also have videogame collections as a ‘small community but a very communicative one’. For example, when Adena had a query about boardgames in the library (boardgame collections are often collected alongside videogames in these collections), she received six responses within one day. Adena’s positivity about the collection and willingness of others to also contribute is largely reflective of my own personal experiences when contacting individuals for this project. The benefits to staff morale when developing a unique collection such as this therefore should not be ignored.

At SFU, there is little concern on the preservation of their collection, with the option for performing repairs in-house for certain items. The use of the games collection is ‘very forward focused and people using games that are really recent’, so whilst older platforms such as the Sega Mega Drive or NES are available, the contemporary focus of the students and staff make these lower priority.

One unique aspect of the collection that Adena did identify as a potential challenge – or opportunity – is with their PC game collection. At SFU, they hold a sizeable collection of physical PC games that students can install and play on the computers available in the games room (see Figure 2).

Figure 2. The image above shows a section of the SFU Games Room, with their collection of PC games displayed on the left and computers for playing these games on the right.
As many of these games run on older operating systems, there is a recognition that there is a potential security risk if these PCs were made open/online in the university IT network. This could lead to this collection becoming obsolete and understandably, whilst SFU have no plans to get rid of these games, this is an issue for the future. Adena did recognise the opportunity of using digital games in the library, identifying platforms such as Steam as being a viable solution, especially as this would give them access to independent games she believes are less likely to be available on consoles from Sony or Microsoft. She specifically identified the use of Steam’s PC Café License as being a viable option for this as she states, ‘we want to do this properly and have appropriate licensing for library use’. Adena also made an interesting comment here about the desire to work with the videogame industry to make support for libraries in terms of digital games a more viable option.

Another potential challenge Adena identified is how they can continue to ‘invigorate and keep current in the collection’ in order to avoid the risk of ‘becoming irrelevant’. For example, whilst she identified many positives for the collection, she mentioned how her ‘pipedream’ would be adding a virtual reality or augmented reality facilities to the library in some capacity but unfortunately, due to limitations of space and budget, this did not seem like a very likely option compared to say bringing digital games into the collection.
Amelia Roberts – Living Computers: Museums + Labs (LCM+L), Seattle, Washington, US

Amelia works as an Archivist at LCM+L and unfortunately, I was unable to visit Seattle, Washington to conduct this interview in person. However, Amelia was able to supply a written response to my questionnaire instead. Given that written responses are more limited in their detail, I will also be supplementing this interview with information from the LCM+L website to support some of her statements.

In terms of the collection at LCM+L, Amelia notes that they are the ‘world’s largest collection of fully-restored – and useable – supercomputers, mainframes, minicomputers and microcomputers’. Many of these items are featured in displays in the museum, such as the Totally 80s Rewind exhibition, where computers and videogames are being exhibited in mock-up settings such as a family basement or an arcade. As with other archives and museum collections interviewed, they collect documentation, technical drawings, software and spare parts as part of their collection.

Amelia identifies the main user group of the museum as ‘tech history enthusiasts, students of computer science and veterans of the computer industry’ and they use the museum by ‘experienc[ing] the systems on the floor’ in addition to using the catalogue for research. The exhibitions only account for 2% of the items in the collection but the rest of the catalogue is viewable online and open to the public (LCM+L, n.d.). In addition to Amelia’s response, LCM+L also operates educational programmes such as field trips and workshops for younger audiences (LCM+L, n.d.).

Preservation of the collection is an important theme in the responses I received from Amelia. LCM+L has an engineering department to handle the general ‘wear and tear’ of the collection and in addition, they use migration and emulation where original equipment is not viable. They have also given thought to issues such as bit rot with ‘development of Software Preservation processes’.

Preservation also plays a factor in determining what is displayed in the exhibitions of the museum:

‘Curation and Engineering work together to determine items that are working and fit with the narrative of the museum. Preservation plays a part depending on the item and its potential use or how it will be displayed.’

The impact of copyright on the collection is seemingly not an issue with LCM+L following ‘the lead of other institutions on guidelines of copyright’, and utilising ‘Fair Use’ guidelines for their exhibition material. There are some issues with Digital Rights Management (DRM) preventing the preservation of copies, which may affect the scope of the collection.
Some of the risks mentioned by Amelia are similar to issues faced by other institutions. Damage and obsolescence are a factor in the short term and the necessity to keep multiples of items for parts. In the long term, ‘lack of funding to provide the resources required for care’ is also a potential risk.
Valerie Waldron – Computer & Video Game Archive, University of Michigan Library (CVGA), Ann Arbor, Michigan, US

Valerie is the Manager of the CVGA at the University of Michigan Library. As with Amelia at LCM+L, I was unfortunately not able to interview Valerie in person but she was also happy to provide me with answers to my questionnaire in writing. I will also supplement this interview with information from the CVGA website and blogs where appropriate to support her answers.

Valerie’s answers go into some detail on all of the main codes established for this project. First of all, Valerie explains the contents of their collection, and how it contains 7,000 games (6,000 physical games and 1,000 virtual games), in addition to 250 board games and 35 tabletop role-playing books. In a blog post written by a student at the university, it can be seen that the collection has been steadily growing since its inception in 2008 and the provision for digital games has seen a significant increase in part due to the rise of Steam and EA Origin (Ritenburgh, 2019). Of note, Valerie points out that they prefer to buy their games via GOG (formerly Good Old Games) where possible, ‘since we then own a copy of the game installer, which can be downloaded and archived, as opposed to just subscribing to the game’. To explain further, GOG.com offer DRM-Free games with a “you buy it, you own it” philosophy (GOG.com, n.d.). By contrast, on platforms such as Steam, you are purchasing a ‘license’ that allows you to play the game but you do not technically outright own it. Given the challenges that DRM cause, this is an interesting proactive step to digital games. In addition to the videogames, they also collect ‘a variety of game ephemera and support materials, including game manuals, posters, art books, soundtracks, toys, peripherals, etc.’.

The collection’s main purpose is to support the ‘teaching and research interests of the university’, with the main user group being staff and students from across the university, although Valerie notes humanities-related classes are the predominant user. Wood & Carter (2018) expand on this further, stating that ‘frequently instructors and researchers focus on games as creative or artistic works, taking the games as texts to be studied’. It is worth noting that they are also open to the public which is a unique offer. As would be expected, the collection is used for the completion of assignments, with some professors using the space for ‘individual class sessions’. Valerie also acknowledges its use for ‘casually playing games’. This is reflected in the CVGA Use Policy which includes a unique policy (‘Super Smash Bros. Policy’) which limits the times that Super Smash Bros. games can be played in the library to a Friday aside from exceptions for research or pre-organised tournaments (CVGA, 2018).

Whilst the CVGA does fall under the remit of the University of Michigan’s Library services, its nature as an archive means that preservation and care for the collection is also of high importance.
Circulation rules are in place that prevent students from taking items out of the archive and limits their time to 1 hour per game station (CVGA, 2018). Due to its popularity, Valerie identifies ‘heavy use’ of the games and equipment as a short-term risk that requires repair and replacement to items. She identifies the preservation of knowledge of how to fix older systems as a longer-term risk to the collection:

‘The games are on formats that are decaying over time, and are playable only on systems that have or will fall out of popular use, hence the need to preserve the knowledge of how to fix older systems, where to find replacement parts for them, etc.’

The recognition of decay as a threat and indeed, the knowledge of how to counter this, reflects what has been written by Newman (2012) and Newman & Simons (2018). Their preservation practices are clearly also carried out to a high professional standard, with consideration being given to storing items in appropriate ways and also storing backups in case they are needed later. Valerie mentions that currently they are working on migration by ‘developing workflows for creating disk images of games originally on physical media, and how to package and store the game files […] using the university’s dark archive’. The challenges of ‘dark archiving’ have been discussed previously by Guttenbrunner et al. (2010) with regards to the Preserving Virtual Worlds project. They note that the commitment to preserve material in this way can require an incredible long term commitment if you are waiting for copyright to expire (unless permissions are sought).

Along with the general challenges involved with preserving and managing a collection such as the CVGA, Valerie also identifies that the collection is ‘limited by our collection budget and available space within the archive room’ as possible limitations to the service.
Eve Jamieson – Goldsmiths University Library (GUL), London, UK

Eve Jamieson is a Subject Librarian at Goldsmiths University Library for Computing, Music and Psychology, with the Computing department being the main department with interest in videogames.

The collection is relatively new to GUL and consists of a small selection of PS4 games, a selection of boardgames in addition to a collection of approximately fifty digital games on a Mac PC in the library. The digital game collection is predominantly games on Steam with some also on itch.io. One of the uses for itch.io is that students can upload their games to the platform and they can ‘use it to promote the student games within our collection so it’s a nice tie in with the departments’. The use of Steam gives them ‘easier access to Indie Games and games that have less wide distribution’. Eve discussed the Steam PC Café Licence in some detail and whilst this assuages any worry about potential licensing issues with using the platform in the library, Eve points out that there are issues as well because ‘some indie games aren’t on there and they have a more limited game selection’. In addition, the focus of the license is clearly commercial and as Eve points out, this is the main challenge and it would be ‘ideal’ if there was some sort of educational license. Another unique consideration for the collection that Eve mentioned was on building the collection from an ethical viewpoint: ‘We were trying, at the beginning, how we could be careful selecting games that had violence against women for example, how we’d deal with those difficult concepts with computer games’. Ethical issues are also discussed by Cross et al. (2015) who faced opposition when adding the videogame Rage to their collection from faculty. Aside from this, this subject is infrequently mentioned but clearly should be an area of consideration when establishing collections such as these.

When establishing the collection, Eve mentions the impetus came from an academic at Goldsmiths:

‘I was approached by Phoenix Perry, the programme co-ordinator – or programme leader – for the Independent Games Design MA at Goldsmiths and she had worked somewhere in at NYU that had a games library so we wanted to replicate something similar in Goldsmiths library.’

This reflects the literature around this subject and how interest from academic departments in the institution is often a driving force for the development of videogames in the library, such as at the University of California, Santa Cruz (UCSC), where the development of a new course focusing on videogames led to the desire to build a library collection to support it (Kane, et al., 2007). Eve also mentioned how it was initially an ‘uphill struggle’ when deciding on how to proceed with the
collection as ‘there weren’t other libraries you could visit and emulate’, a thought that reflects my own experiences of finding UK institutions with videogame collections for this project. As a result, Eve discussed how she received a lot of ‘useful advice from the Computer & Video Game Archive Manager, Valerie Waldon’. As Valerie was also a valuable source for my project, this again reflects my own experience.

Whilst the main user of the collection was intended to be the computing department, Eve states that they did not want to close the collection off to other departments (e.g. media studies) and as a result, the collection can be used by all students and staff. The focus of the collection is also strictly contemporary games and they ‘didn’t want to start a massive back archive of obsolete technology’, reflecting the interests of students and staff. The PC games are displayed in a stylised cabinet which Eve describes as a ‘nice visual cue […] that attracts attention and it engages people with the collection as it’s a physical representation of the games’. Students are able to find out games they need to play via their reading lists and will come to use the ‘cabinet’ but in addition, it also attracts those who are just passing by.

Given that the collection at GUL is so young, there was little to say about preservation or risks to the collection but Eve did identify certain other challenges. Space and funding as possible issues going forward. As the collection was launched as a pilot project, GUL aimed to keep it on a small scale initially. This was done by combining a DVD viewing room into a games library room where the PS4 games can be played, to reduce the impact of taking away space elsewhere in the library. Funding was also linked to decisions like these as the library were ‘trying not to spend too much money’ on a pilot project. Eve also identified staff time as being a possible issue, as managing the collection had to be integrated into the ‘existing staff structure’ and there was no possibility of a dedicated member of staff. Other universities have also faced staffing challenges such as the University of Denver’s University Libraries, where there was some resistance as ‘some staff felt that this was not an appropriate service for the library to offer (Buller, 2017). Whilst this was a different style of challenge, it does reflect how internal staffing must be considered when establishing a videogame collection.
Harriet O’Rourke and Jason Fitzpatrick – The Centre for Computing History (CCH), Cambridge, UK

I initially contacted Harriet, the Collections Manager at CCH, about an interview and she suggested that Jason, the CEO and also Curator of the museum, would be willing to join us and as a result, I interviewed them both together.

An interesting aspect of their collection is the separation between the exhibition content and the material that is archived at CCH. Harriet describes the archived collection as the ‘official collection of the museum’ that is ‘mostly the best examples, or only examples, of certain things in the museum. Those are the ones we work to collections management and collection cares standards for’. By contrast, Jason described the material on display in the main museum as not being ‘part of the collection as such. They are there to be used and we can keep them going, repair them, whatever’.

This is seemingly similar to LCM+L who only display a small section of their true collection as well. CCH also collect unique items such as ephemera, clothing, software, documentation, books and magazines if they are relevant to computing.

Their approach to collecting is largely donation focused and they generally accept everything. The logic behind this is often people will offer something general (for example, ‘I’ve got a Commodore 64 […] do you want this or it’s going down the skip’) but not detail everything they are offering. At CCH, their experience is that often they find valuable or rare items like this in amongst the common items. They often receive unique documents from developers and creators in computing as well and Jason values this material highly:

‘There’s handwritten documentation, so we have people that’ve been developing games in the past have given us their workings, notes about things, how it will lay out, that sort of stuff. [...] I’ve realised that a lot of that is more important than the machines themselves. The machines themselves are ten a penny...well not quite, but this documentation that shows the thought process in developing a game, or the thought process in building a machine or whatever, is unique. So an order of magnitude of more importance than the hardware that it represents so that sort of thing is something that’s really important to us.’

These comments were very interesting and I felt they linked to another key area of the interview – preservation. As shown above, the exhibition material is repaired and replaced quite freely as is common elsewhere (in Jason’s own words, ‘we repair the hell out of it. Because it’s not a museum piece, it’s a working piece of equipment that keeps the public happy so we do whatever we need to do to keep them going’). In addition, they discussed the material challenges of plastics in great detail, with Harriet pointing out, ‘it’s not a material that a lot of museum professionals or
conservators know how to deal with because obviously there’s so many types of plastics [...] and we just don’t know how they’re going to decay or react with each other. Both Harriet and Jason seemed knowledgeable on the material challenges they face with preserving older machines and mentioned how other conservators have visited them as they are ‘a really good example of plastics in museums’ and they are also involved a ‘plastics conservation seminar’. Above, Jason acknowledged the value of donors’ personal notes to the collection and during the interview, I suggested that they seem to have a great deal of ‘tacit knowledge’ within the organisation, amongst volunteers and staff. Tacit knowledge is a type of knowledge that is often held by individuals but is complex or impossible to communicate: ‘tacit knowledge essentially resides in the minds of the knower’ (Suppiah & Sandhu, 2011). Jason agreed and said they ‘got a lot of knowledge that we need to share’ but also they are a small team and have their ‘nose-to-the-grindstone’ just with day-to-day operation.

This links to some of the other challenges they face. Funding was mentioned at times, such as the desire to be able to ‘fund more work on the preservation side – more research work – to give us more information about how to look after this’. Location and space is another challenge acknowledged by both. Harriet discusses the environmental challenges of their store (for example, ‘it’s very hard to control the temperature but we are trying to control the humidity’) and how it can affect how machines operate; however, as Jason puts it, ‘your buildings are your buildings’ and their approach is very much to do the best they can with what they can.

Figure 3. At the Centre for Computing History, console videogames are displayed in a chronological timeline that allows visitors to try games from a variety of generations.
The museum exhibitions feature many usable computers and playable videogames, with a sizeable section focusing ‘on gaming from the 70’s through to modern day’ as shown above (Figure 3). The games features are the more ‘common’ consoles and the timeline is largely the ‘high-notes’ of the genre. Jason points out they ‘try to strike a balance between having the machines that everybody recognises to keep it nostalgic’ to ensure general public interest but also use rarer machines that ‘collectors and people with a real interest can see’. In addition to the general exhibition, the museum runs frequent events such as a ‘Retro Computer Festival’ and demonstrations of older machines will also see ‘a lot of people turn up’. A significant focus of the museum, however, is seemingly on education. Academic interest ‘is definitely growing’ but the big focus is ideas such as school visits where they run workshops, teach programming and electronics. During one of my visits to the museum, a school group was taking part in a workshop and as part of this, I saw students touring the museum and playing on the computers and videogames available but as Jason points out, they’re [the workshops] very structured [...] and we rotate them around different areas. So the programming workshop, the games area’ and so on.

Our interview ended with a brief discussion of copyright and its impact on the collection. Jason had mentioned a programme they are hoping to run ‘where we can go around and get data off of media before it dies’. CCH follow migration practices for archival and preservation purposes but are quite clear that this is not for public consumption. One interesting example Jason provided is they recently received a donation of an original prototype for the Sinclair Spectrum computer. After receiving permission from the original developer, they were able to share the ROMs for this computer and this was of great benefit to the community of enthusiasts interested in the Spectrum, as Jason points out:

‘There’s actually things to be learned from going through that code and understanding the process of development. Where there is a benefit to doing that, it’s not something we can do ourselves – well we can, but we don’t have the time. When we can turn it over to the community that can do that – great, because everybody will benefit. If we have that permission, I think it’s great for people to get in there and study it and see how it developed – but only if we had the permission.’

This instance is fortunate that they were able to contact a developer to receive permission and shows how beneficial this can be. It also highlights how complicated this can be if the developer or creator is not known or is disinterested in being altruistic to the wider community.
Kristian Volsing – Videogames: Design/Play/Disrupt (VDPD) at the Victoria & Albert (V&A) Museum, London and Dundee, UK

Kristian is a curator at the V&A Museum and had worked alongside others in bringing about the VDPD exhibition. Given that the other institutions in these interviews are permanent collections and many have an archival focus, I felt that this interview would be able to offer some unique insight into how museums are using videogames in a non-preservation, contemporary event.

The exhibition itself was split into ‘three levels’ focusing on contemporary games from the mid-2000s onward and featured a mixture of gameplay footage, design material, fan works, playable games, original artwork and many other aspects throughout the exhibition (Figure 4). Kristian stated, ‘the V&A is a museum of design and we wanted to show the design and process of videogames and not just the finished product’. From this, the ‘design’ section of the exhibition, I mentioned to Kristian how the games seemed to come from a wide array of options, such as AAA games from big publishers through to a mobile game created by one person. He explained that their choice was based on if there was ‘something really ground-breaking about the design process of the game, or the topic they were talking about’.

Figure 4. This image shows an example of how the ‘Design’ of the videogame No Man’s Sky was displayed. The contents include videos, gameplay footage, design notes, original artwork and other ephemera related to the design process.

In terms of who the exhibition was targeted at, Kristian felt the obvious target audience would be ‘young males, 16 to 35’ but was keen to point out this was not their main intention (despite
attracting these audiences). He described the purpose of the exhibition as getting people to understand that ‘videogames are not what they think really’ and whilst videogames are considered a ‘boys thing [...] there’s no reason for it to be and we wanted to try and get that sense across to our visitors’. The traditional V&A visitor is an ‘older, middle-class, white woman’ and whilst this exhibit attracted a new audience, he also hoped that their regular visitors would ‘appreciate it.’

One of the unique features of the exhibition was that despite being an exhibition about videogames, there was actually limited opportunity to play any games. This came up when I was asking Kristian about whether any other museums or exhibitions helped inspire their exhibition:

‘For us, the best way of playing a videogame and to really understand it – that takes 30 hours – it’s to sit at home and play it by yourself for 30 hours, right? You’re not going to get that in a public space, so that was where we start to think, we want to show those kind of games but the way to do that isn’t just by letting people play them, you can go and do that anywhere.’

This is an insightful observation that I think reflects on one of the challenges of using videogames in a library or museum well. Whilst the experience of playing in a museum can work and is enjoyable, it does alter the experience for the user compared to a home setting. This concept is discussed by Nylund (2018) for museums and by Buller (2017) in academic libraries. This leads me to think should academic libraries consider how videogames should be played beyond offering a service – playing games at the library, or in a museum, is an inherently different experience to playing at home.

Where videogames were featured as playable, it was often the case that in a brief time of playing, ‘you get it pretty, pretty much almost immediately, whereas you can’t do that with a really long narrative game’. Games that were playable in the exhibition include a game called The Graveyard (Figure 5) and in the final ‘Play’ section of the exhibition, there were many custom arcade style cabinets that have quick games that feature unique features such as QWOP (Figure 6).
As part of the exhibition, it was necessary to work closely with developers and publishers in the videogame industry to gather material for the exhibition and Kristian’s experience was largely positive in this regard. Speaking of Nintendo, whose game Splatoon featured in the exhibition, he explained that he felt the exhibition was ‘something really successful that revealed a lot more about them than they usually would do in the past’. It does seem as though other studios and publishers may have been more complex to work with as well:

‘Some understand what we wanted to do immediately, and others were very wary of what we wanted to do, particularly some big name studios who are all wary of anyone getting hold of their IP. And some studios that we were interested in working with who did not understand it at all, and others did but were very complicated.’

Figure 5. (Left) A photo of how The Graveyard was displayed in the exhibition.

Figure 6. (Right) Custom arcade cabinets were designed to allow for the display and playing of games such as QWOP.
Within the preservation community, the secretive nature of videogame developers is well documented, with Bachell & Barr (2014) noting how despite growing interest in sharing records to memory institutions, many developers are still wary of this option. The success of the exhibition does demonstrate though that where opportunities are taken advantage of by the videogame industry to work closely with cultural and educational institutions, there is the potential for great benefit.

In terms of copyright, seeking permission from game makers in the ‘Play’ section and the developers and publishers in the ‘Design’ section was conventional. The major consideration for the V&A was the fan works section of the exhibition. The exhibition featured a movie section demonstrating ways that fans create and share content (‘player-as-creator’); this required Kristian and his colleagues to try and obtain permission from inactive YouTube accounts and artists of fan works online with mixed levels of success. The exhibition ends with a large acknowledgements board thanking the various contributors (Figure 7) but I imagine many of the features were treated as orphan works, or as Kristian put it, ‘the kind of content we were showing has already been publicly shared and the lengths of clips that we were showing, [...] there was enough leeway in copyright law that it wouldn’t be a problem for us’.

One last thing to mention is Kristian was largely positive about the exhibition and did not seem to perceive too many risks or challenges. This may be a reflection of the temporary nature of the VDPD
exhibition or any other reason. One challenge that did get mentioned a few times was regarding the space they had available for the exhibition. *VDPD* has featured at the V&A Museum in London and also at the V&A Dundee site later in 2019, and Kristian felt the space they had in Dundee improved the ‘environmental experience’ of the exhibition. During the design process, they also had to reduce the amount of games that featured in the ‘Design’ section and ‘really argued in the end to have 8’.
Discussion

The user groups for the academic libraries questioned is unsurprisingly the students of the respective institutions. Within the museums interviewed, the appeal was generally much broader, with interest coming from enthusiasts and the general public, with attention paid to education groups as well.

However, the material that people at each institution are using varied, likely reflecting the differing focuses of their user bases. Many of the people interviewed made statements implying their main focus is on using contemporary material in their collection as this reflects the interests of their user groups. Becoming irrelevant was a possible risk identified by interviewees. For example, Adena at SFU mentioned how an inability to ‘invigorate and keep current in the collection’ could cause difficulties if it no longer became valuable to the faculty and students that needed it. This is also reflected by Eve, who notes that at Goldsmiths, it was not plausible to start a ‘back archive of obsolete technology’ and they ‘wanted to have a small collection that was really relevant’. The V&A exhibition also had a focus on videogames ‘since around the mid-2000s’ with the idea of focusing on how ‘we engage with videogames and the way that we talk about videogames’.

Given their interest in the contemporary, talking points around preservation were not as prominent at the three institutions above. The easiest option for library videogame collections does in fact seem to be ‘replacing damaged games’ with some remit for repair – this reflects the current availability of modern games in general. The remaining three institutions (CCH, CVGA and LCM+L) also followed practices around repairing – and replacing – where appropriate. All three institutions seemed confident and competent in their answers surrounding the issues of maintaining their collections in these ways.

All the institutions also all use migration to preserve software in one capacity or another in order to combat obsoletion and bit rot, where possible. In Newman (2012), he makes the case that ‘the creation of a documentary record of gameplay, audio and visual performance must be a predicate for an emulation – or software-based strategy’, or in other words, videogame preservation should focus on documenting how games are played over the original games themselves. This is a novel idea and an argument could be made that this is the case; however, of the three institutions (CCH, CVGA and LCM+L) who are preserving videogame and computing software, they all to some capacity are more interested in preserving the originals where they possibly can. All three institutions also collect a variety of ephemera, personal documentation, technical manuals, etc. related to the material in their collection and value these highly. This does somewhat support Newman’s (2012)
idea that some of the most valuable material is not necessarily the videogame itself but in addition, I feel that the knowledge of the individuals working and volunteering for these preservation focused institutions is also a highly valuable asset and work should be completed to ensure that this knowledge is also documented for future use.

A recurring theme across the institutions in this research was the difference in approaches they take to displaying their content for use. In the permanent collections of the CCH and LCM+L, they both provide opportunity to play a variety of retro (and modern) games to visitors. By contrast, at the V&A exhibition, with its focus on contemporary games, Kristian suggests that they felt playing the game does not always work. He also cites the example of the Game On exhibition that featured at the Barbican and elsewhere as being ‘very successful in a way’ with up to 100 games you can play. However, the circumstances in which you can play these games are not effective in his eyes: [about The Shadow of the Colossus game] they don’t know how to play it – it’s got a complex control system; they haven’t got any background apart from what they read on a label. To me, that isn’t successful in an exhibition’. This is an interesting comment and is reflected in some of the literature, such as Nylund (2018), who points out playing Max Payne (2001) ‘on a modern LCD monitor [...] is a different experience from playing the game at home with a CRT monitor when it came out. The exhibiting process also changes the game giving it new meanings as a cultural heritage artifact’.

At LCM+L, the Totally 80s Rewind exhibition is an interesting juxtaposition to this, offering displays that emulate the settings videogames were played in. The points raised by Kristian and by Nylund can also be considered in how academic libraries are using and displaying videogames. When deciding whether to allow for circulating videogame consoles in their collection, Buller (2017) points out that by allowing this, it ‘would allow patrons to use the hardware in its designed setting and take advantage of the different capabilities of the hardware’, again emphasising on how and where users can play videogames. Within the library is not necessarily the most logical or comfortable place for patrons to do this – similarly, when passing through a museum exhibition. By contrast, Valerie does identify that the CVGA is used to ‘casually play games’ and as stated by Wood & Carter (2018), ‘a conscious decision was made to allow for the indiscriminate playing of the games within the confines of the CVGA space’. Adena at SFU also identifies that ‘lots of our students come and play them because they enjoy videogames’. It is possible that users may not be as bothered by the location that they can play videogames in so much as having the provision to play them. At the V&A exhibition, the section that does allow for the playing of games is filled with custom arcade-style cabinets and the games that were playable within are all pick-up-and-play style games which is attractive and easy to use (Figure 8). At Goldsmiths, Eve speaks positively of the way that their PC collection (Figure 9) is also displayed like this: ‘the casing around the Mac is a nice visual cue so it
looks like a stylised cabinet and I think that attracts attention and it engages people with the collection as it’s a physical representation of the games’.

**Figures 8 and 9.** Similarities can be seen between the custom arcade cabinets used in the V&A exhibition (left) and the stylised look of the ‘Games Library’ cabinet at Goldsmiths Library (right).

This is an interesting way of displaying videogames in an academic library and could support the idea that how videogames are displayed is an important part of how users engage with them as part of a collection.

This is not to say that there is a wrong or right way to ‘display’ videogames and for them to be used; what is highlighted by this is that the approach of all of these institutions and how they use and preserve their games is not that simple and two issues were mentioned by all the interviewees – space and funding. The way that videogames are collected, managed and used can all be affected by the space afforded to you to work in as well as the amount of money that can be thrown at a problem. This could be a long-term consideration such as a lack of funding for the management and preservation of a collection, through to ensuring they have the funding or space to buy resources that are currently popular. For example, both Adena at SFU and Eve at Goldsmiths mentioned virtual
reality (VR) as something they would like to see in the library but is not currently feasible for both space and budgetary reasons. At CCH, Jason mentioned how if they had the funding, they would love to ‘fund more work on the preservation side [...] then we could share that information with others’.

This notion reflects on both another challenge but also a strong positive and potential solution that is seemingly apparent from the interviews. A major strong point for each interviewee seemed to be their effectiveness at collaborating with external parties, as well as those with internal interests. Of the three academic library case studies, all three of them found their origin when an interested ‘art professor’, or ‘programme co-ordinator [...] for the Independent Games Design MA’ or ‘School of Interactive Arts and Technology’ approached the library and proposed adding videogames to the collection. Granted, this is a small sample size but this was an interesting pattern that came up and I think much can be learned from this. Clearly there is academic interest and support from across a broad spectrum of disciplines that are interested in working with videogames – this is also reflected in the literature, such as in research completed at the University of Minnesota Libraries interviewing faculty across the university about their use of videogames (Farrell, et al., 2017). I think it would not be unreasonable to suggest that any librarians wishing to add videogames to their academic library should be willing to reach out to the appropriate departments at their universities to make such an offer.

At the V&A, Kristian’s experiences of working with the videogame industry were a unique insight into the challenges and benefits of being able to do this. Eve at Goldsmiths mentioned that during their ‘International Games Week’, they used this as an opportunity to ‘promote [their] collection’, which included inviting speakers from the British Library and from industry to discuss designing games. Given the competitive and secretive nature of many videogame developers, it seems that opportunities to work with the industry are not always viable so any opportunities to do so should be taken. The CCH also seemed to have good collaborative experience with external organisations who were interested in their work and vice versa. For example, a conservator from the University of Cambridge Museums organising a ‘plastics conference’ contacted CCH as they are a ‘really good example of plastics in museums [...] so they’re coming here for a tour during the conference’. Opportunities to work with others seems like a potential area of use for research, knowledge sharing, cultural and even possibly financial benefit.

Finally, for issues surrounding copyright, there did not seem to be much variance in how institutions approach the subject. I would note that there was a general level of caution in most of my interviews on this topic in comparison to the rest of the interviews which is perhaps telling in itself as to the complicated nature of copyright. Within the museums interviewed, seeking permissions and
applying fair use to their collections seems to be standard and does not seem to cause many issues beyond those already known. As pointed out by Lee (2018), ‘there remain flexibilities within the current copyright regime that potentially allow the cultural and heritage sector to engage in at least some videogame preservation projects’. Perhaps the best hope for clarity on the issues of copyright, migration, emulation and orphan works relies on legal reform though how likely this would be is not easy to say. Perhaps a more likely (and cynical) option is for the videogame industry to realise the economic benefits of collaborating with the preservation industry (Bachell & Barr, 2014).

For the academic libraries interviewed, one of the biggest potential areas of interest is the use of digital games. Adena at SFU spoke of a desire to implement digital games and mentioned the Steam PC Café License as a way of doing this. At Goldsmiths, Eve is already using this platform with what seems like mixed results: ‘some indie games aren’t on there and they have a more limited game selection’. Eve also acknowledges that the Steam PC Café License is not really set up with libraries in mind and expresses in the idea of an ‘educational license’, a sentiment shared by Adena at SFU: ‘Come on videogame producers – there’s a good market for you!’. From the Steam website, they state that the PC Café Program ‘is suitable for any location that provides access to the Internet which includes but is not limited to Cybercafés, PC Bangs, retail shops, coffee shops, schools, libraries, hospitals, theaters, airplanes, cruise ships, buses, trains, subways, etc.’ (Steam, 2017). This is quite a broad remit so their frustrations can be understood. Going forward, whilst exact numbers are difficult to come by, the growing ‘popularity’ of subscription style programmes such as the Xbox Game Pass could be another avenue of potential for libraries but again, there are also likely to be questions around licensing here.

The data gathered from these interviews hopefully gives some idea of the differences and similarities on the way videogames are being used and preserved in academic libraries and museums. The scope of this project had also set out with the intention of identifying whether there were any comparisons to be made between UK institutions and those based in the US and Canada. Whilst there are some minor differences, overall, the international approach to this subject does not seem altogether that different, with institutions from both sides of the Atlantic sharing similar practices and ideas regarding how to use and preserve videogames in their collections. The research gathered here is only small in scale and no doubt, if there were scope to expand this research beyond the six institutions used as case studies here, there might be more noticeable differences. However, some reassurance should be taken that there is seemingly consensus internationally on how many of these issues are approached.
Conclusion

This project set out to answer the question of how different academic libraries and museums were approaching the use and preservation of videogames as part of their collection. After introducing the subject with a look at the history of videogames and the state of the current videogames market and industry, the following aims and objectives were established:

AIM:

Develop an understanding of how different memory institutions – specifically academic libraries and museums – in the UK are approaching the use and preservation of videogames in comparison to their international counterparts.

OBJECTIVES:

1. Identify which museums and academics libraries currently use and preserve videogames in their collection via published material (academic or otherwise) or through visiting appropriate institutions in person.

2. Explore what staff at these museums and academic libraries think about the use and preservation of their collections.

3. Assess the differences and similarities between museums and academic libraries and the challenges they face when using and preserving videogame collections, in particular with regards to differences in international approaches.

4. Establish whether this knowledge can be used to find links between these institutions and better support the development of their own practices.

5. Determine if there are any avenues of future research that may come about as a result of any findings made during this project.

In the early stages of this project, I identified many museums and academic libraries that currently held videogames in their collections. Eventually, I narrowed this down to focus on six institutions, consisting of three museums and three academic libraries from the UK, US and Canada. Following this, interviews were completed, using the methods outlined in my methodology, with staff at each of the institutions I had selected to determine how they are approaching the use and preservation of videogames within their collections.
Based on these interviews, I was able to establish the following similarities and differences between the various institutions interviewed:

- The main user groups for academic libraries is their student population, as well as academic staff for the purposes of teaching and research. In addition, many students use these collections for leisure purposes and this is seen as a significant benefit to the collection.
- For museums, their appeal was to a much broader user base, targeting the general public but with special interest also coming from enthusiasts and educational groups.
- There is a strong focus on supporting interest in contemporary videogames in academic libraries as students and staff have interest in these topics. In addition, the Videogames: Design/Play/Disrupt exhibition focused on modern videogames as they have more cultural relevance currently.
- The way that videogames are displayed in both academic libraries and museums has the potential to impact the way that their users interact with the collection and exhibitions.
- The most significant challenges faced by the majority of institutions were related to funding in the future and the (lack of) space they have available to work with.
- For academic libraries, issues of preservation are considered low priority; for museums and archives, this is a higher priority but is being managed in a way that is consistent with previous literature on the subject.
- Migration of software is identified as a key focus for future preservation work and documentation/ephemera about videogames are valuable components of the collection.
- The impetus for starting a videogame collection within the library often comes from the support or interest of an academic member of staff or department. Based on this, librarians should consider approaching appropriate departments themselves to start this process.
- Copyright is treated with cautious respect across all institutions. In academic libraries, the challenge of implementing digital games is complicated by issues surrounding licensing and DRM.
- Collaborating with others was a strong point discussed by all institutions. Whether working with other staff internally, volunteers or working alongside the videogame industry, these experiences were largely positive.
- The practices of UK, US and Canadian institutions does not vary that much, with examples of collaboration evident in interviews.

Overall, the most apparent issues were the challenges of ensuring future funding and limitations of space on the ability to use and preserve videogames. The most positive aspects of these
organisations are the organisational knowledge they hold and also their ability and willingness to work effectively with others. Whilst funding and space are two difficult challenges to overcome, I feel that the opportunities to collaborate with others – whether that be other memory institutions or the videogame industry – could go some way to finding solutions to these problems and should be considered. Within the UK sector, the majority of the preservation of videogames is being undertaken by museums, with academic libraries primarily less focused on older games. Whilst this is reflective of user demands, there is the likelihood that some students would be interested in retro-gaming, especially as this is a growing commercial market. Both museums and academic libraries are interested in outreach and opening their collections up in new ways – perhaps there is the opportunity to include speakers from other institution at a videogame workshop? Or running retro videogame events within an academic library? Or for university students to present the games they have created in a museum?

**Future Research**

As an exploratory multiple case study, this project did not aim to conclusively determine the answer to a specific problem – the aim was to broaden our understanding of how these institutions are approaching the challenges of implementing an ever increasingly popular format into their collections. Based on the results gathered here, it is hoped that this project has been able to contribute to our overall understanding of how videogames are being used in museums and academic libraries – especially in the UK, where little has been written on this subject, especially with focus on specific institutions. With this in mind, here are my recommendations for areas of future research that I feel could further contribute to this topic:

- One of the limitations of this research has been the limit to the amount of institutions it was possible to involve. Future research could be as simple as expanding on what has been established in this project to new institutions. One more possibility is to perform a similar study but with the addition of public libraries, a sector that was not discussed in this project but is also an area where videogames are being used – see Ratliff (2015) for examples of this.
- Another limitation of this project has been its focus on the thoughts and feelings of staff working with videogame collections and not the people using them. A possible option for a research project in the future could take the form of interviewing or surveying users of videogames in academia or museums to see what they think – see Miller (2014), Bachell &
Barr (2014) and Farrell et al. (2017) for examples of studies that have focused on the behaviour of students, videogame developers and academic staff.

- An interesting topic that came up during my interview with Harriet and Jason at the Centre for Computing History was how complicated preserving different types of plastics are and very little is known about how these various materials all interact with each other. For someone interested in the preservation aspect of this research, looking in further detail at the challenges of preserving and managing plastics within a collection is an area of potential interest.

- Some of the most current issues facing both academic libraries and museums is how they use digital games in their collections, as well as ephemera related to videogames such as fan art. Literature on the subject of fan works in libraries and fan behaviours exists such as that written by Price & Robinson (2017a and 2017b) and could also be an area of interest.

- This project was predominantly interested in videogames but a recurring theme I came across is that most institutions that collect videogames also collect table-top games and board games. Unfortunately, this project did not have the time to dedicate to this subject but this is certainly a topic that is worthy of further study.

In summary, this project has revealed some interesting patterns in the way that some memory institutions approach the use and preservation of videogames. In particular, it has demonstrated that the UK approach shares similarities to the approach taken in the US and Canada, although the UK collections are in an earlier stage of development compared their North American counterparts. It also highlights potential areas for academic libraries and museums to collaborate and potentially learn from each other on this subject.
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