'Dusting Off the Data-Sets'

Creating a Framework for a Digital Archive to Become Online and Open Access.

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Declaration of Originality

This thesis is submitted by the undersigned to the Institute of Art Design & Technology, Dun Laoghaire in partial fulfilment of the examination for the BA (Hons) [programme name]. It is entirely the author's own work except where noted and has not been submitted for an award from this or any other educational institution.

Aindreas FV [Signature here]

Acknowledgements

Abstract

This research project aims to create a framework of solutions for some of the barriers that impede a digital archive from being accessible to the public. Digitization is a necessity for any archive as the data sets created serves a purpose as both digital backups and as a more flexible way of viewing the material. The research undertaken in this paper includes interviews with Dr Linda King, a professor in Digital Media Design in IADT, Dún Laoghaire, and Dr Ciarán Walsh, a freelance curator. Each of these contributors have experience in digitization and give better clarity to the process and the opportunities for understanding and research it can create. They also each have a background in post-colonial material which adds nuance when discussing the ethics of digitizing such items. Using various different key studies and research papers from archives dealing with paper manuscripts to film, we see that digitizing is a costly process and once digitized the material can be blocked from public view. Reasons for these barriers to the public can be the result of copyright and the changes in policy on private web portals. Moreover, they can be the result of the material in question containing sensitive material and being subject to data protection laws such as 'The Right To Be Forgotten' in the EU. With each of these problems we suggest potential solutions that could rectify these issues to allow open access for the data. The hope for the future of this research is that it may aid in research for archivists looking to improve their archive visibility and the methods outlined in this research can lead to further collaboration between archivists as technology progresses and more issues arise for open access.

Table of Contents

List of Figures

Fig 3.4. The accompanying cataloging information provided for the
for the 'Euro Children Holiday Scheme', 2024. pg. no. 38

"Euro Children Holiday Scheme" Interview by Eamonn Holmes. *Northern
Ireland Screen Digital Archive, 2000-,*
https://digitalfilmarchive.net/media/euro-children-holiday-scheme-2974

Introduction

The role of the archive is to provide a service that is not only appreciated in the present but shall be appreciated for future generations as the material it protects and preserves lasts. Madeline Ganges, a PhD candidate in the University of Florida, wrote of the archives as "places of quiet contemplation. There, one can commune with history through the documents and objects left behind by the dead or entrusted to the care of others."[1]. From libraries, to museums, to state records, an archive does not inhabit a single house but makes a home within any institution willing to put in the effort to catalogue and protect the work at their disposal. In the modern era and with the coming of the digital information age, the rise of the online, or digital, archive has taken place across the world as a new step forward. What will be referred to as 'digital' in this thesis is a physical archive that has been digitized through photographic or scanning means and made available through online access. This includes material displayed as part of an exhibition that would not be possible without digitization. The benefits of this service are clear as it alleviates the need to travel to a single building, or buildings, to pick through collections to find a treasure of the past. Instead, digitization allows the user to access entire collections at the click of a mobile device or digital access point. However, this invaluable access to the past is not always open to the public. The move to a digitized online archive creates its own problems in access whether it concerns legal boundaries surrounding sensitive materials or the ethics of colonial archive that is only available through digital means. The aim of this research paper is to analyze these issues across different archive types, and digital exhibitions, and thus create a framework of solutions to prevent future problems that will inhibit the open access of a digital archive. The future use of this research is that it could be used as a source for archivists to help their work survive in the public as long as possible.

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[1] Ganges, Madeline B., "Togetherness with the Past: Literary Pedagogy and the Digital Archive." *disclosure: A Journal of Social Theory,* vol. 27, article 19, july 2018 pp. 112-125. EBSCOhost https://doi.org/10.13023/disclosure.27.16

In the first chapter, the argument on the necessity of a digitized archive will be dissected and analyzed. The physical archive is a necessity for reference and cross-checking the archive, it helps provide necessary providence and reference for a digital archive. However, by allowing the physical media to be converted into digital data sets it can help create a backup of the copy and make the archive more flexible. For example, archives have evolved from physical collections to online data bases which can allow the user to search for the material they need via keywords. As a result, digital media can also be shared by the public through the internet which has democratized, to an extent, the process of digitizing and cataloging archives. This allows mediums like social media to play a large part in people's access to archives, as shown in the research by Jonathan Mukwevho and Patrick Ngulube with the South African National Archives[2]. Due to this there is also a new abundance of 'everyday archive' which can help preserve media such as home videos or local network television. The influence of this new access to everyday archives will be analyzed more in depth by Professor Ian Christie in his essay, *What are Film Archives For? (And Why We Need Them to Change) or; Adventures in the Archive World*[3]. The flexibility of digital data sets of archive material allows people to reclaim and create archive that might have been unavailable to them through colonial interest. From these different views we can create a clear need for the digitization of archive for the material stored inside to be best accessed.

Chapter Two will focus on the issues impacting the digitization of archive and the open access online system. The abundance of digital archive due to the internet means that powering an archive is an energy intensive process which can lead to digital archives having a large carbon footprint. The financial cost of

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[2] Mukwevho, Jonathon and Patrick Ngulube. "A framework for enhancing the visibility and accessibility of public archives in South Africa." *Archives & Records*, vol. 43, issue 3, winter 2022, pp. 297-315.EBSCOhost, https://doi.org/10.1080/23257962.2022.2031933.

[3] Christie, Ian "What Are Film Archives For? (And Why We Need Them To Change), or: Adventures in the Archive World." *Exploring Past Images in a Digital Age: Reinventing the Archive* by Nezih Erdoğan and Ebru Kavaain, Amsterdam University Press, 2023. pp. 23-37.

this overuse of energy also places the digital archive at a much higher cost than traditional physical archive storage. This chapter will be using data from a journal article, titled *Toward Environmentally Sustainable Digital Preservation[4]*, which covers the energy requirement of digital storage. Furthermore, the digital copies of archive, such as films, are often made by amateur archivists which means that it is often missing important credentials for cataloguing and cross-checking the archive. The crosschecking of archive is paramount to providing providence, and it is impossible to prove as such if digital archive replaces physical copies and the originals are destroyed. As Serkan Şavk explains in his essay from *Exploring Past Images in a Digital Age: Reinventing the Archive;* "The absence of descriptive information and metadata limits its archival use in a robust way"[5]. Chapter Two shall conclude with a summary of different ethical, financial and legal barriers to the open access of digital archives.

The final chapter will use the examples of the issues that have been developed in the second chapter, and from them create a framework of potential solutions. These answers are created through comparing case studies from the previous chapters find the best possible answer. In certain case studies such as the 'Right to Be Forgotten', the guideline for archives will be recommended but it is subject to future legal cases in the EU. The result of this chapter will create a framework of research that can provide a digital archive with guidelines for sustaining open access.

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[4] Pendergrass Keith L., Walker Sampson, Tessa Walsh, and Laura Algna. "Toward Environmentally Sustainable Digital Preservation." *The American Archivist,* vol. 82, no. 1, spring/summer 2019, pp. 165-206. JSTOR, https://www.jstor.org/stable/48659833

[5] Şavk, Serkan "How Social Media Platforms Replace Film Archives When There Is No Film Archives." *Exploring Past Images in a Digital Age: Reinventing the Archive* by Nezih Erdoğan and Ebru Kavaain, Amsterdam University Press, 2023. pp. 57-75.

Chapter 1

In this chapter, I will outline the importance of digitization in archive. The archive has existed traditionally as a physical entity for storing, cataloging and preserving work, deemed necessary by the institution, that must survive to the present. The typical goal of this preservation is in order that this work can be studied, observed and used in future research. With the rise of the internet and technological advances, digital archives are the next step for these institutions to survive and truly preserve their collections. While digital archives are not immune to failure or destruction, they hold fast as the future of the medium as it can garner more public access than previous traditional methods of single physical institutions or exhibits.

1.1 Digital Flexibility

Digitization allows for better flexibility to a piece, especially in showcasing it to the public. As part of this research paper, an interview was conducted with Dr Linda King, a professor in Digital Media Design in IADT, Dún Laoghaire, concerning her role in the RIT Congo VR Exhibit. This exhibition showcased a digital VR conversion of the '*Panorama of Congo'* painting commissioned for the world fair in Ghent, Belgium, in 1913. Using highly specialized cameras, they were able to photograph the entire canvas spanning 115 x 14 metres in size. Described by Linda herself, the project aimed to "bring The Panorama of Congo] to a broader public audience, so through digitization, more people could see it, and we could open up a conversation about colonial legacy and decolonization"[6]. Through the digitization of the piece, an immersive experience centered around the Panorama could be created that would not have been possible with just the physical original. In order to recapture the feeling of seeing the original piece, they used devices such as VR goggles to enhance the experience for the user. As Dr King describes:

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[6] King, Dr Linda. *Dr Linda King Interview. YouTube,* uploaded by Áindréas Fallon Verbruggen, 19 Feb. 2025, https://youtu.be/bOO-oVYH-tk

So what we did was we recreated a panorama, a physical panorama in the round which was 1/8 the size of the original one. And then we had the virtual panorama that you could see when you put your VR goggles on and you feel like it would have been in the early 20th century, like you had walked into this room and were surrounded by this painting. So the early panoramas were kind of a precursor to VR and we're kind of creating a VR experience of that.

This case study shows how using digitization creatively can help tell the story of an artefact in a way that traditional physical copies could not. The process of digitizing therefore creates a more flexible data set for use and research.

Fig 1.1: Panorama Of Congo VR Exhibit, National Museum of Natural History and Science, Lisbon, 2024.

Like with the RIT Congo VR project, digital archive can create a much more immersive research experience with the use of digital facsimiles of texts. Digital facsimiles are detailed and intricate scans of physical texts or manuscripts for research and study. The benefit of these facsimiles is that they be more widely available for students to benefit from their research than the possibly fragile

physical copies. While this is done for access convenience, it also provides a more "immersive" experience according to Madeline Gagnes. While a digital facsimile should not replace physical copies, she argues it provides a different understanding to the text for students through the detailed scans which "allows them the opportunity to more fully immerse themselves in the period in which the works of fiction were written, which can lead to a greater and more nuanced understanding of the texts themselves"[7]. The digital flexibility of this facsimile allows for an enhanced research perspective that can only be provided through digitization. Gagnes would argue that if archives provide a better perspective on materials and the times, they were created to enhance a student's understanding, "then it follows that digital archive are an invaluable resource for the literary pedagogy." Digital copies of physical material are not replacements for original copies but instead provide a whole different learning perspective when researching texts through digital facsimiles.
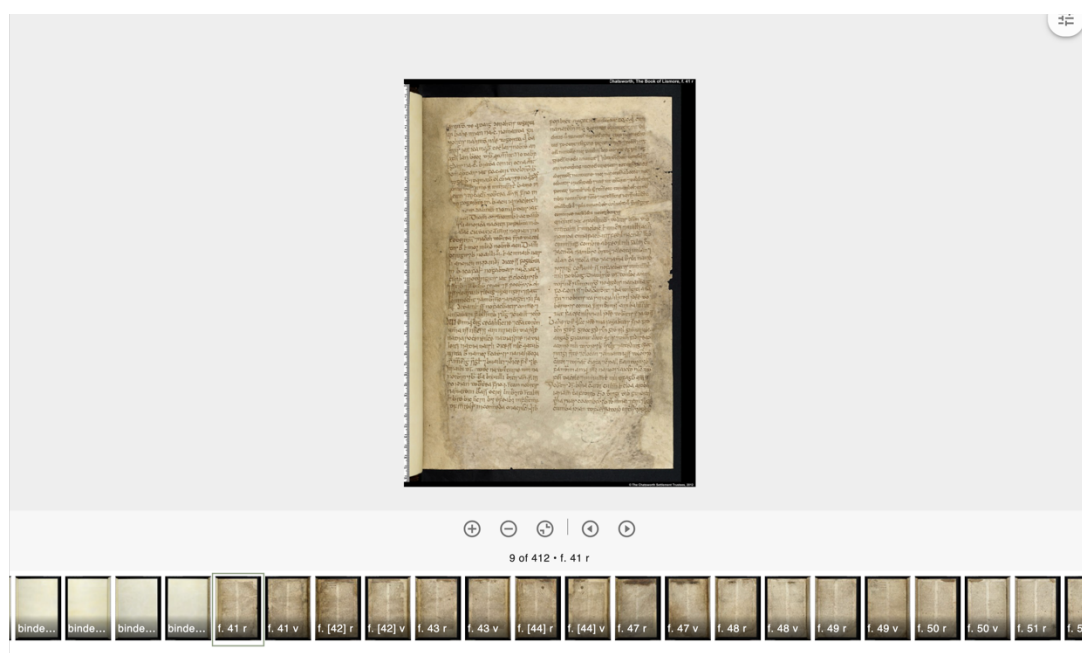

Fig 1.2 Digital Facsimile of the Book of Lismore, Glucksman in University of College Cork, 2023.

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[7] Ganges, Madeline B., "Togetherness with the Past: Literary Pedagogy and the Digital Archive." *disclosure: A Journal of Social Theory,* vol. 27, article 19, july 2018 pp. 112-125. EBSCOhost https://doi.org/10.13023/disclosure.27.16

1.2 Democratized Archive & Social Media

With traditional archive institutions, the value and quality of an archive is subject to the institution's priorities and storage capabilities. This can mean that archive pieces seen as unimportant can be lost to time and only viewed as valuable decades later. However, with digital archive and the internet, archive can be democratized for the public and an influx of material can be uploaded and stored on online servers. The idea of the modern archive and how it must adapt for the future is explored In Ebru Kavaain and Nezih Erdoğan's book of essays on the topic, *"Exploring Past Images in a Digital Age: Reinventing the Archive.".* Author and Professor of Film and Media History at both Birkbeck College and Gresham College, Ian Christie notes, that in relation to film archive, "The digital circulation of film has amounted to a pyrrhic victory for film within the structure of beaux arts: in becoming pervasive and more accessible than it ever was during the photochemical era (...)"[8]. The move towards a digital front for film archive means that not only can it be received by a greater audience, but it also can allow more people to contribute to said archive and create a wider library.

To elaborate on Christie's note that digital circulation of films is a "pyrrhic victory", he suggests that while there is now a continuous supply of content being uploaded that it may water down the quality of the material being archived. Through the internet, amateur archivists can submit and upload material such as home videos, local television and even historic photographs with much more ease than through creating physical pieces of archive to be catalogued and stored away. This has led to a trend of archives cultivating more local anthologies that would've been forgotten about before. This trend was most notable in English archives during the early 2000s, as documentaries and

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[8] Christie, Ian "What Are Film Archives For? (And Why We Need Them To Change), or: Adventures in the Archive World." *Exploring Past Images in a Digital Age: Reinventing the Archive* by Nezih Erdoğan and Ebru Kavaain, Amsterdam University Press, 2023. pp. 23-37.

films were created around local TV archive sourced from the web. Christie celebrates this as these digital collections are "underfunded and precarious by the standards of the "national archives", this has meant that they offer a rich resource for new forms of documentary and television focused on "the everyday"". These new collections would not have been possible without the digitization of film archives and websites such as YouTube, Internet Archive etc. so while Christie notes this overabundance of archive as a "pyrrhic victory", we have now this time capsule of archive from the public that might have been discarded by institutions before. This access can allow the 'everyday' to be collected and shown, but it can also be used to show stories from forgotten groups or minorities.

With enabled access to uploading material in digital archives, it creates an important area of preservation and storytelling for communities, as they save and record key parts of their culture and heritage through film, photographs or other texts. In 2023, Hanna Nordin, Teresa Almeida and Mikael Wiberg aimed to create a digital "Living Archive" for the Sami Community in Sweden in their journal article, *"Designing to Restory the Past: Storytelling for Empowerment through a Digital Archive."*[9]. This archive was not only meant to allow access to Sami artefacts digitally but also allow the Sami community to publicly add material to the archive. This archive is like that of a 'web portal' like YouTube or Archive.org, but also contained aspects of social media within it such as the use of "likes" and "comments" under archive uploaded. Similar to the trend of documenting local television that Ian Christie noted, however the significance of this archive for the Sami community was more than the curious delight of the English reaction to Local TV archive, it meant a new way of storytelling and preserving their history. As the researchers outlined, "we aimed for the implementation of a Living Archive deliberately designed to support 'restorying' the past while empowering futures and through functionality that supported and

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[9] Nordin, Hanna, Teresa Almeida and Mikael Wiberg. "Designing to Restory the Past: Storytelling for Empowerment through a Digital Archive." *International Journal of Design*, vol. 17, issue 1, april 2023, pp. 91-104. EBSCOhost, https://doi.org/10.57698/v17i1.06.

enabled the telling, sharing and storing of stories and related materials." This use of a social media like digital archive is increasingly becoming a more popular way to make archive access comply with the trends of modern day living.

Katri Jefremoff
Photo of Katri Jefremoff. Taken in Moskova, Petsamo.
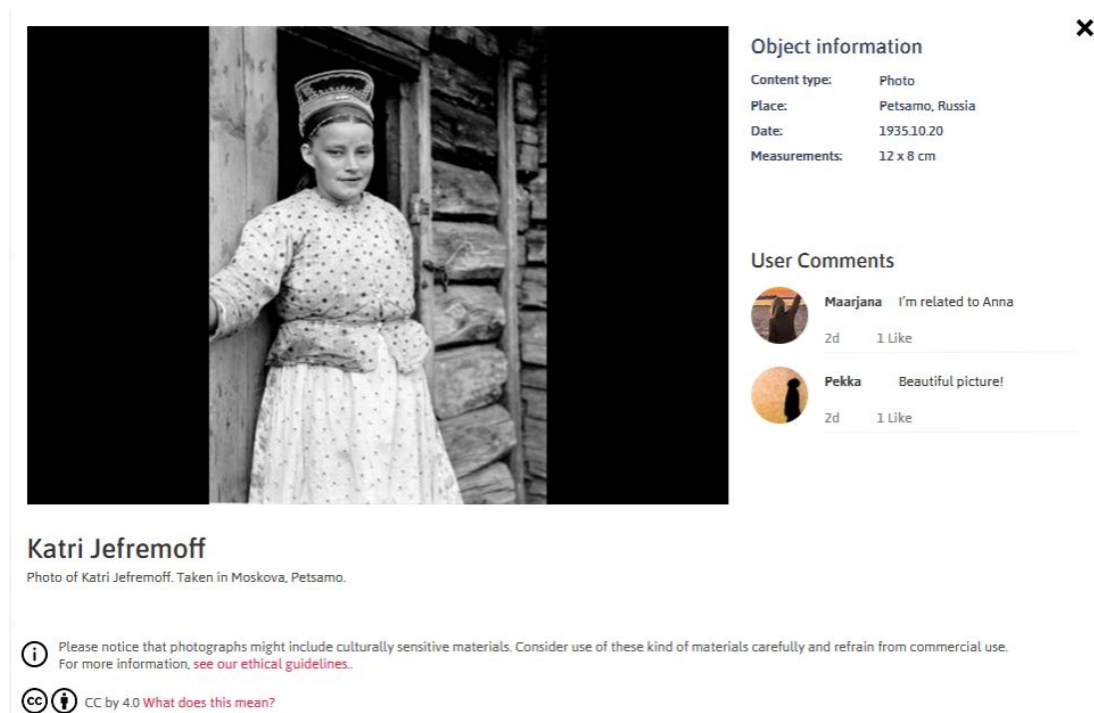
Fig 1.3. An example of a social media post on the 'Living Archive' created with the Sami Indigenous Community, 2023.

Social media is a powerful, albeit unstable, tool for archives to use. Social media can connect a huge number of users with your archive database in mere seconds of an upload, an incredible achievement that can only be made possible in the digital age. However, what is the effectiveness of using such a medium? Nordin and her team already used such methods in creating their Living Archive hypothesising that "The social features such as the comment section, "Likes", collections and archive material contribution, are features that may empower the user further with a voice to share their stories (…)". While this is promising, other archives, such as the South Africa Government archive, has sought to research how to they may create a framework model for interacting with archive through social media. Jonathan Mukwevho and Patrick Ngulube

carried out a joint research project by the Auditor-General of South Africa and the University of South Africa on how to improve the visibility of the South African Public Archives. Through their research they found that like Nordin, social media can enable archive users to access the archive in different ways, especially for students. In a particular study using social media to increase archive awareness among schools in Gauteng, South Africa, it "found that most learners and teachers thought that if the public repositories use social media such as YouTube, Facebook and WhatsApp, school learners may develop an interest in the archive."[10] This research into archive, especially among school pupils, shares a key insight that open access online platforms can help spread access to archive. However, these systems are developed for sharing content not for cataloguing and storing archive and thus could lead to issues when researching.

The use of these social platforms and web portals is a key reason as to why digitization of archives is a vital step in preserving them for future generations and allowing accessibility, however, as pointed out by Ian Christie these platforms are "precarious" and are not subject to the stringent cataloguing of regulated archives. In an essay by Serkan Şavk in *Exploring Past Images in a Digital Age: Reinventing the Archive,* Şavk reflects on the online presence of Turkish films on video-sharing platforms such as YouTube. Through using the example of a Turkish film production company, Yeşilçam, who uploaded their entire film catalogue onto YouTube, Şavk argues that YouTube does not fulfil the key tenements required to be considered a 'digital archive'. The evidence to support this is lack of insight by film archivists given to the release of these films shown by "missing credits, cataloguing information and digital metadata (…)". In Şavk's view, *"The absence of descriptive information and metadata limits it's*

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[10] Mukwevho, Jonathon and Patrick Ngulube. "A framework for enhancing the visibility and accessibility of public archives in South Africa." *Archives & Records*, vol. 43, issue 3, winter 2022, pp. 297-315.EBSCOhost, https://doi.org/10.1080/23257962.2022.2031933.

archival use in a robust way"[11]. The key missing details seen in such videos is not the only problem that hinders YouTube as a digital archive, there is also an issue in verifying originality in videos.

1.3 Physical Copies

Physical copies of material are imperative for an archive as they can be used in cross- checking. Cross-checking originality in digital material is a necessity of a digital archive. It is essential that originality is documented in archives as to provide provenance and context to the collection items. This is outlined in the Fédération Internationale des Archives du Film (International Federation of Film Archives (FIAF)) Official Manifesto in the statement:

> The film elements held in archive vaults are the original materials from which all copies are derived. One can determine from them whether a copy is complete or not. The more digital technology is developed, the easier it will be to change or arbitrarily alter content. Unjustified alteration or unfair distortion, however, can always be detected by comparison with the original film, provided it has been properly stored.[12]

In the digital world this can be achieved with the proper work of a trained archivist, however, Serkan Şavk notes that this is not always available to YouTube videos, or other archive videos posted online, there are often no details of the originality of the piece. There is no way to check the authenticity, or if the material is a copy, as you have no original piece to reference back to. This is a key reason as to why, in Şavk's opinion, 'YouTube is not a film archive, and it will never become one. It provides access to a huge bulk of films which were almost

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[11] Şavk, Serkan "How Social Media Platforms Replace Film Archives When There Is No Film Archives." *Exploring Past Images in a Digital Age: Reinventing the Archive* by Nezih Erdoğan and Ebru Kavaain, Amsterdam University Press, 2023. pp. 57-75.

[12] FIAF. "FIAF Manifesto Don't' Throw Film Away: The 70th Anniversary FIAF Manifesto." *International Federation of Film Archives,* April. 2008, https://www.fiafnet.org/pages/Community/FIAF-Manifesto.html

inaccessible until recently.' In the role that social media plays in enhancing the digital archive, it may be important to remember that while it may not replace the digital archive it can serve as a repository to serve alongside the digital archive in preserving material that will succumb to time or be forgotten about until it is too late to save them.

In 1911, Will Barker, a renowned British Filmmaker, announced he would film one of the most celebrated Shakespearean actors of the Edwardian era, Herbert Beerbohm Tree, playing *Henry VIII*. In order to garner promotion of the film, Barker announced that that after six weeks, all copies of the film would be recalled and burnt. As Ian Christie notes, 'Apparently, this incentive succeeded in generating considerable business around Britain, but when Barker duly kept his promise, it also resulted in the total disappearance of the film'[13]. This again speaks to the idea that Christie raises that 'almost no one thought films were worth preserving until nearly forty years after the first films were made – by which time it was too late (...)' This is not individual to film archive, there are many physical materials now lost to time due to a lack of means of archiving and foresight for preserving works for future generations. However, in the modern day, digitization could be used to stem the flow of lost material.

A positive point of the abundance of digital archive uploaded is that it means that it can create more room for archive online, or on compact hard drives, instead of in physical forms. The problem of archive storage for film has led to the destruction of crucial pieces of art, as outlined by Ian Christie, 'For better or for worse, film followed a ruthlessly commercial pattern of development, with cut-throat international competition shaping its destiny in the early years. And the logic of this competition as well as the material basis of film- using combustible cellulose nitrate stock until 1950 – militated against keeping old stock' This necessary evil meant that many film originals, and negatives, have

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[13] Christie, Ian "What Are Film Archives For? (And Why We Need Them To Change), or: Adventures in the Archive World." *Exploring Past Images in a Digital Age: Reinventing the Archive* by Nezih Erdoğan and Ebru Kavaain, Amsterdam University Press, 2023. pp. 23-37.

been destroyed as they were not considered useful, or significant enough, to archive until decades after they were destroyed. The issue of storage is something that can be rectified with online servers with digital archives, however, does abundance of material mean that it is material worth preserving?

Serkan Şavk argued that web portals are not truly archives as they lack the necessary data and authentication of originality to truly be a trustworthy archive. He posits that it would be more useful as a repository for video to coincide with the archive, to perhaps be researched and cultivated into a collection. This view of the digital archive is narrow considering the amount of material that is available now through the likes of these Web Portals. However, is the abundance of digital material a hinderance on the archive? Ian Christie argues that 'Just as digitisation has given archivists new techniques and affordances, it has seemingly robbed them of the scarcity that was a founding feature of early cinephilia.'[14] His point being that the scarcity of certain pieces gave it an "archival aura" instead of a machine-like reproduction of a constant flow of new material. This statement does seem to contrast with his earlier case studies on films lost to time and decades. In the past, archives prioritised certain relics for preserving, these texts were ones deemed significant enough to be kept for future reference. In the present, we now have an abundance of content being uploaded every day. The access to creating digital archive has meant that there is now an abundance of material that might not be worthwhile now, but few can say whether it may be valuable in the future? As Christie noted, "almost no one thought films were worth preserving until nearly forty years after the first films were made", and thus perhaps this everyday archive may be of use in another time.

To conclude this chapter, the digital archive has evolved and can create, and support, things that its predecessor cannot. Projects such as web portals,

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[14] Christie, Ian "What Are Film Archives For? (And Why We Need Them To Change), or: Adventures in the Archive World." *Exploring Past Images in a Digital Age: Reinventing the Archive* by Nezih Erdoğan and Ebru Kavaain, Amsterdam University Press, 2023. pp. 23-37.

despite their flaws, and "Living Archives" would not be possible without the need for digitising collections and making them more adaptable for new technology and ways of access. Exhibitions can give a new side to an artefacts story through the new data sets. And while the open access to uploading materials has now created now a flood of extra archive that varies in value, it also means that there are parts of everyday life that can now be preserved albeit without proper catalogue and reference. However, despite this leap there is much that impedes the digital archive and slows it's advance that will be covered in the next chapter.

Chapter 2

Digitizing archive has become a necessary step for archive accessibility. However, the process of digitizing the archive, and its subsequent availability to the public is prone to failure. The initial process of digitizing the archive is costly in both energy output and finances, both of which smaller archive institutions have in finite amounts. Once the archive is digitized, the process of open access is unfortunately not as straightforward as uploading the data onto an online platform. The legality of making certain sensitive material available can be subject to data protection and privacy laws that can revoke open access to them. There are ethical dilemmas as well when digitizing artefacts for open access use in digital repatriation, while the original copies remain in the institution of the colonizer. For digital archive to be made accessible to the public, it must overcome obstacles that threaten to keep the data-sets on the shelves.

2.1 Cost

Digitizing archive is a costly process, although cheap to maintain. The prices of converting traditional archives to digital can be more than any institution has the budget for and can rely on the passion of the archivists to work outside of their hours in order to make it possible. In an interview with Dr Linda King, she relays a similar experience she had with the RIT Congo VR Exhibition. They were given a 20-thousand-euro budget for the project, however, much of this money went on converting this archive into usable digital material and then buying the equipment necessary for people to experience the exhibit such as VR goggles. This meant that many of the academics on the project were not paid for all the hours they put in. King notes: "the number of hours I was given to work on this by IADT was fractional by comparison to the amount of hours I put into the project. So you're working weekends, you're working evenings, but you're happy to do it

because you're really invested in it."[15] Although it is clear that Dr King had a passion for the project, it is important examine how the cost of digitization as part of this thesis to understand how cost is an obstacle to digital archiving.

The upkeep of digital archives is an energy-consuming process which can lead to a large carbon footprint. Digital archives require hard drives and electronic servers to allow for best access. Keith L. Prendergrass, Walker Simpson, Tessa Walsh, and Laura Alagna conducted research in 2019 on creating more environmentally sustainable digital collections in an archive published in *The American Archivist* journal. The article was titled, *Toward Environmentally Sustainable Digital Preservation*. They analyse a range of different digital archives through different factors such as the way the media is stored, to the places that archives are built into. Digital archives rely heavily on Information and communication technology (ICT) to run their servers and data bases. The study looks at the environmental impact of these archives through the Life-Cycle Assessment (LCA) of their ICT devices. According to the article, "An LCA allows one to calculate the full price of a product based on its environmental impact, not just its purchase or recurring energy costs."[16] Through this assessment, the article states that "given the pervasiveness of ICT components and their complex life cycles – each requires raw material extraction and refining, shipping at multiple points, manufacture, electricity and cooling during use, and finally, disposal – the scope of ICT's environmental impact is staggering.". The reliance of digital archives on ICT equipment means that it has a severe cost on an environmental level in terms of energy and carbon emissions.

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[15] King, Dr Linda. *Dr Linda King Interview. YouTube,* uploaded by Áindréas Fallon Verbruggen, 19 Feb. 2025, https://youtu.be/bOO-oVYH-tk

[16] Prendergrass, Keith L., Walker Simpson, Tessa Walsh, and Laura Alagna. "Toward Environmentally Sustainable Digital Preservation." *The American Archivist,* vol. 82, no. 1, spring/summer 2019, pp. 165-206

2.2 Colonial Ownership

The use of digitization to make colonial pieces more accessible, like the *Panorama of Congo,* is a growing trend with museums and academic institutes. The significance of the RIT Congo VR project is that it was a collaborative project which sought to use digitization to educate people on the Belgian colonial legacy in Congo, and the propaganda that was created to encourage settlement. However, 'Digital Repatriation' is a much more ethically challenging use of digital archive. As described in his MA thesis titled, *Museum Digital Repatriation and Case Studies: Exploring Guidelines for the Future Practice and Digital Bridge to Cultural Continuity,* Yiyun Zhou describes digital repatriation as:

> Digital repatriation, the process of collaborating with indigenous communities and using cutting-edge technology to create and return digital surrogates for cultural heritage - digital replicas of cultural objects (such as three-dimensional models and database systems) - offers a compensatory solution to the practical challenges of physically returning cultural heritage.[17]

This has been criticized however as using digital accessibility to shy away from repatriating the objects back to the indigenous communities they were taken from. Digital data sets cannot be used as a substitute for physical repatriation of colonial objects.

During a research interview with Dr Ciarán Walsh, a freelance curator, he spoke about his feelings concerning digital repatriation. For context, Dr Walsh was a lead figure in the Irish Headhunter Project, which lobbied for the return of skulls taken from the Inishbofin Islands, Ireland, as part of a eugenics study in the 1890s and were then held in Trinity's anatomy department. Throughout the interview, Dr Walsh is very passionate about his work and how repatriating even

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[17] Zhou, Yiyun. "Museum Digital Repatriation And Case Studies: Exploring Guidelines For The Future Practice And Digital Bridge To Cultural Continuity." *Georgetown University,* april 19, 2024. https://repository.digital.georgetown.edu/downloads/6520bc6d-8a3c-402a-8611-6ff97c297d41

a portion of the skulls had an impact on the small community. He noted during a repatriation funeral for the skulls in 2023, that graves, especially in the west of Ireland, are seen as "archives of genealogy"[18]. The graves can say so much about a different time and heritage for the insular island community, that when the skulls were taken, "It was like someone raided a community archive right? And took away dramatic material". When asked whether digital repatriation could also be used to help in repatriation efforts, Dr Walsh claimed that in relation to human remains they "embody the power structures of colonialism, where subaltern people just don't matter. And retaining these remains in a collection is even at a subliminal level, retaining the idea that there are different classes of human". Digital repatriation can open up accessibility to objects in more ways, however, it still keeps control of the object in the colonizer's possession and thus, reinforces their material ownership over a people, or culture.

2.3 Convenience Vs Best Practice

Web portals like YouTube are private entities whose policies and regulations are ever fluctuating. The issue of copyright and ownership of videos that are posted on YouTube is something that is concerning the legitimacy of archive ownership. When uploading a video to YouTube it makes clear that you retain the rights to the content you have uploaded i.e. "what belongs to you stays yours"[19], however they also specify that YouTube gains certain rights to your material. These rights include granting "YouTube a worldwide, non-exclusive, royalty-free, transferable, sublicensable licence to use that Content (including to reproduce, distribute, modify, display and perform it)" Şavk points out irregularities in this agreement with YouTube as "according to the same terms of service grant

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[18] Walsh, Dr Ciarán. *Dr Ciarán Walsh Interview. YouTube,* uploaded by Áindréas Fallon Verbruggen, 19 Feb. 2025, https://youtu.be/Ri8QcM4dY3A

[19] YouTube. "Terms of Service". *YouTube,* Oct 6 2023, https://kids.youtube.com/t/terms

license to other users enabled by a feature of YouTube". The use of your content to be licensed by a third party puts the archive in a precarious position as the owner does not have full control. As a result there is scope for the archive to be deleted entirely if YouTube deems it be in violation or breach of their community guidelines. What is strange is that even if your content is removed, by yourself or by YouTube, some licenses still apply to your video despite it no longer being on the platform. For-profit web portals and their fluctuating stances and policies can be a hinderance to an archive if they wish to use it as an open access platform.

To contrast with YouTube, The Internet Archive is set up specifically for online archiving from National libraries to private collections. Beginning in 1996, it outlines its mission statement as, "Like a paper library, we provide free access to researchers, historians, scholars, people with print disabilities, and the general public."[20] It has been a key part of the move towards an online archive as it allows anyone with a free account to begin uploading media into their collections which can be accessed by anyone anywhere. It is a trusted source for many institutions such as the United States State Department and the Library of Congress to upload their material. However, like with all archives there can be concerns when analysing the terms of service of videos uploaded onto the site. Like YouTube, Internet Archive can remove your content, or collection, from their site at any time but more interestingly it includes a clause surrounding authors wanting to not be included in a collection. It states,

> While we collect publicly available Internet documents, sometimes authors and publishers express a desire for their documents not to be included in the Collections (by tagging a file for robot exclusion or by contacting us or the original crawler group). If the author or publisher of

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[20] *About the Internet Archive*. archive.org/about.

some part of the Archive does not want his or her work in our Collections, then we may remove that portion of the Collections without notice.[21]

While this does seem reasonable for the archive to include, it could become an issue. If someone does not want their publicly available work in the collection, could that be taking away information that could be in the public's interest? It also means that information in a collection can be altered by the website by request which threatens security of information kept available.
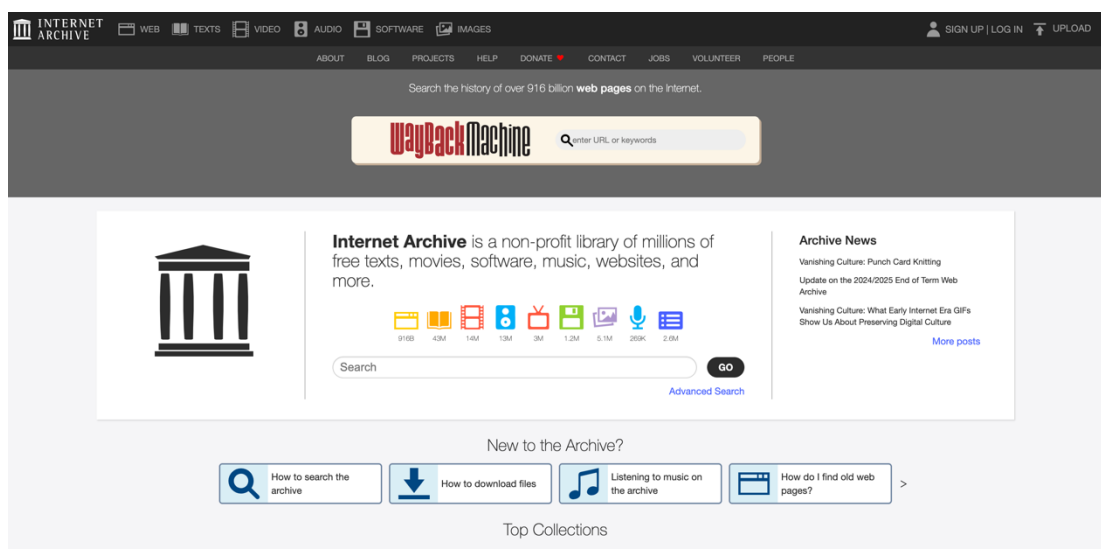

Fig 2.1. The home page of *Internet Archive,* a non-profit web portal for uploading digital archive, 2024.

Ian Christie cites copyright as a major problem for the digital archive space as while it is now part of a more widely accessible digital medium, archive is still in a vice over what rights it has over their archive. Christie observes that "Copyright regimes differ widely across the world, despite moves towards harmonization, with distinct national attitudes still embedded in contemporary practice"[22]. He

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[21] Archive, Internet. "Internet Archive's Terms of Use, Privacy Policy, and Copyright Policy." *Internet Archive*, 31 Dec. 2014, https://archive.org/about/terms

[22] Christie, Ian "What Are Film Archives For? (And Why We Need Them To Change), or: Adventures in the Archive World." *Exploring Past Images in a Digital Age: Reinventing the Archive* by Nezih Erdoğan and Ebru Kavaain, Amsterdam University Press, 2023. pp. 23-37.

elaborates on what he means by 'national attitudes' via taking the French copyright system which "'protects' material as old as the Lumière films, made over a hundred years ago, with the result that these foundational works remain less known today than many other early films.". The analysis of copyright by Ian Christie points to a problem over certain material being preserved by archives to the digital age, however, due to stringent laws, they are unable to be shown and appreciated by the public today.

2.4 'The Right To Be Forgotten'

'The Right to be Forgotten' is a right that has been granted by the European Court of Human Rights (ECHR) allowing individuals to be stricken from archive records if the matter is deemed appropriate. This has caused concern among archivists for the editing of archives and losing original information. In the book, *Archives and Records: Privacy, Personality Rights, and Access*[23] by Mikuláš Čtvrtník, Ph.D., an assistant professor in the Department of Archival Science and Auxiliary Sciences of History at the Faculty of Arts, at Jan Evangelista Purkyně University in Ústí nad Labem, Czech Republic. In the sub chapter on *The European Court of Human Rights: Archives, Privacy, And The Right To Be Forgotten,* Čtvrtník explores different case studies where this law has had an impact on archives. For example, in 2021, the case of Hurbain V. Belgium was brought to the court. In this case, the Belgian courts ordered the Belgian daily newspaper, *Le Soir,* to anonymize the name of the driver who caused an accident who killed two people. The person invoking the right to be forgotten claimed that he needed this right in order to return to society after serving his sentence. *Le Soir,* argued that they had the right to publish, and archive, his name under freedom of expression. While the court stressed that the there was a public right to be informed of past events in history through press archive, however, they balanced the cause of harm in relation to the loss of data and

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[23] Čtvrtník, Mikuláš. *Archives and Records: Privacy, Personality Rights, and Access*. Palgrave Macmillan. 2023

sided with the Belgian court. This decision is important for press archives as Čtvrtník states, "The judgement is particularly linked to the press and its role in the online space. On the one hand, the case refers to the principle of the public right to information, on the other hand, it underlines a balancing act." The Right to Be Forgotten is a pivotal ruling for archives as it can undermine the legitimacy of information accessibility if it can be redacted or censored, however, any loss of information must be balanced against the harm that available information in archives can do.

In conclusion to this chapter, digital archives are marred by a plethora of issues. The process itself is prone to huge financial costs and can invoke a large carbon footprint just to keep it stable and accessible. Once such requirements are met then there is the issue of provenance and copyright that hangs over the material within the archive, which hampers the accessibility to the viewer. Such material being archived for the preservation of future generations can also be subject to change and censorship if it can be proven to be more harmful than useful. While the use of web portals is certainly a great way to increase the volume of digital material, it can often hamper the archival process through its non-existent details of authenticity.

Chapter 3

The digitization of archive is prone to issues in attempting to make it publicly accessible. Any one of these issues listed in the chapter before has been a detriment to archive inaccessibility to the wider public. However, in this chapter we will discuss various solutions for each issue with the hope that these answers can form a framework for 'future-proofing' an open access digital archive.

3.1 Funding

During an interview with Dr Linda King, conducted by the author[24], she notes that while she gave a considerable amount of time towards the project she was not paid for all of that time. She goes on further to note that while they had a twenty-thousand-euro budget for the project, that went towards equipment and operation management. These issues of funds being available for archive digitization could be solved with the help of heritage grants for local archives. In my interview Dr Ciarán Walsh, he talks about how he uses the local heritage grants as a backbone fund for his archive research. In his research on how film archive can be better preserved for the future, Dr Walsh decided that this project was to be of interest not only for archivists but for the Irish Heritage Council. This started according to Dr Walsh when he was studying "a collection of community filmmaking that developed in and around Listowel from the 1960s onwards"[25], in which Dr Walsh discovered the collection of two filmmakers from the time Michael Mulcahy and John Lynch who set up a professional film production unit in Listowel, Ireland, in the 1960s. The two men allowed him access to his archive in exchange for him digitizing some of their old tapes as a sign of trust and good will in their work. The archive they allowed him access to was in his words, "essentially the makings of a museum of filmmaking and

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[24] King, Dr Linda. *Dr Linda King Interview. YouTube,* uploaded by Áindréas Fallon Verbruggen, 19 Feb. 2025, https://youtu.be/bOO-oVYH-tk

[25] Walsh, Dr Ciarán. *Dr Ciarán Walsh Interview. YouTube,* uploaded by Áindréas Fallon Verbruggen, 19 Feb. 2025, https://youtu.be/Ri8QcM4dY3A

digital media", due to the sheer number of equipment and media stored by the two men. So instead of merely digitizing pieces, Dr Walsh, like Dr King, wanted to exhibit these artefacts. Through this local level project, he was able to secure forty thousand euro from the Heritage council of Ireland in securing the archive for preservation and exhibition in the Writers Museum in Kerry, Ireland. And while this is a local level exhibition, the work put in has much wider reach for the public as he is "building a public interface between the material we're collecting and the public so there will be instant access without charge.". This is a perfect example of the use of local level grants to help create an access to archive for a much wider public outreach.

Fig 3.1. Dr Walsh (Left) at the 'Bolex Boys' Exhibit at the Kerry Writer's Museum, 2024

Fig 3.2. Examples of digitized media at the 'Bolex Boys' Exhibit in the Kerry's Writers Museum, 2024

3.2 Online Open Access

While more funding available at a national, or local, level can really help the archive in its outreach, using a digital medium through the internet is crucial as well. However, as Serkan Şavk pointed out in his essay, online video uploading sites such as YouTube lack the proper cataloging and expertise required for proper storage and display of archive materials. It is with his investigation into the Yeşilçam film collection on YouTube, he reasoned that "On the one hand, digital yet online copies of Yeşilçam films are vulnerable {...}. On the other hand they provide an alternative way of sustainment."[26] Şavk noted that even though the correct details may not be on the YouTube versions of the film, the correct information for archive cross-checking could be catalogued alongside the videos in a different site. He achieved this with his students enrolled in his Turkish cinema course at the İzmir University of Economics between the years of 2017 and 2018. As Şavk explains, "Each student took over the measurement

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[26] Şavk, Serkan "How Social Media Platforms Replace Film Archives When There Is No Film Archives." *Exploring Past Images in a Digital Age: Reinventing the Archive* by Nezih Erdoğan and Ebru Kavaain, Amsterdam University Press, 2023. pp. 57-75.

of a particular film's online copy from YouTube by using the Cinemetrics tool developed as part of the Cinemetrics Project, led by Yuri Tsivian at the University of Chicago. Thanks to this crowdsourcing model, I ended up with a sample of a hundred films." With this data collected from YouTube copies of films, they could upload it onto the Cinemetrics database which is an open source platform available publicly on the web. This means that even if the cataloguing is lost on YouTube copies they are preserved on this database for reference. This is a work intensive, but feasible solution for the issue of missing data, as "if preserving and sustaining Yeşilçam films is a concern, then creating data sets on different dimensions of these films is definitely one way to do that". This use of data sets for overcoming the obstacle of lack of cataloguing data on streaming platforms is a possible alternative for the internet archive accessibility.

While the use of an open platform database is certainly helpful in cataloging the dimensions of copies, but some archives have decided to overstep the likes of YouTube and set up their own specific website for their archive material. The benefit of this is that they are not restricted by the lack of cataloging inputs available on YouTube as they can create the inputs themselves and attach them to the video material. This allows ease of access for the viewer and provides the adequate amount of material for cataloging and profiling the material. An example of this is the 'Northern Ireland Screen Digital Film Archive'. As the website describes:

> Originally launched in November 2000 as part of the British Film Institute's Millennium Project, Northern Ireland Screen's Digital Film Archive (DFA) is a free public access resource. Constantly updated and expanding, the DFA contains thousands of hours of moving image titles, spanning from 1897 to the present day.[27]

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[27] *About: Welcome to Northern Ireland Screen Digital Archive!*
https://digitalfilmarchive.net/about

As shown in the picture below for the archive *'Euro Children Holiday Scheme'*, it shows the video as well as the necessary catalogue information below for inspection*:*
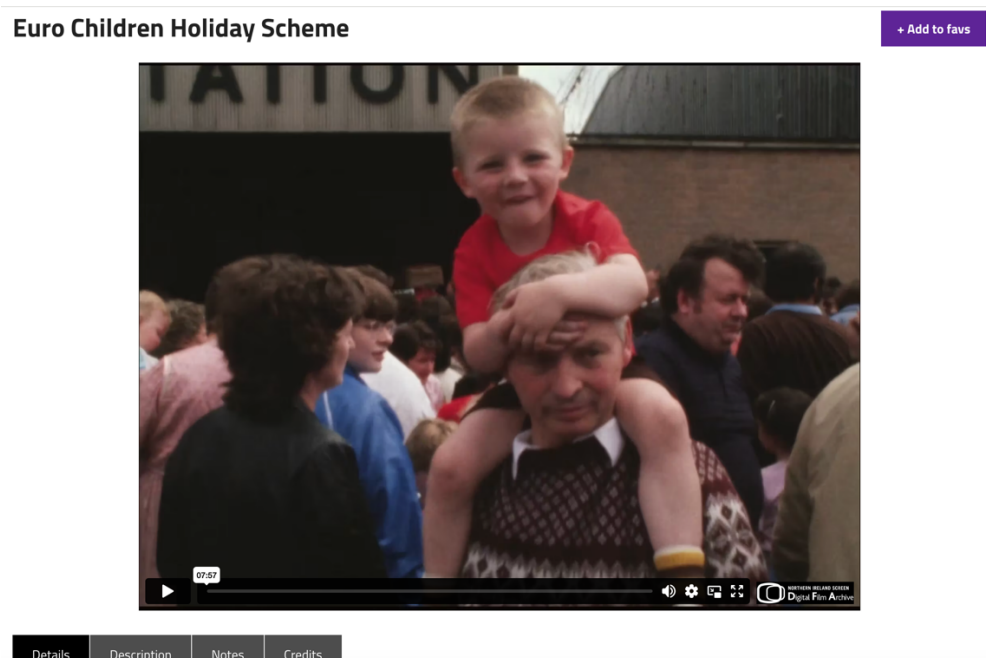

Fig 3.3. 'Euro Children Holiday Scheme' material on the

Northern Ireland Screen Digital Archive, 2024

Fig 3.4. The accompanying cataloging information provided for the for the 'Euro Children Holiday Scheme'. 2024

This example of cataloging data alongside the video has meant there is not only ease of access but there is the necessary data available for the material to be safe-guarded and preserved. When talking about this transition to the digital archive, Şavk remarks "that digitization does not merely refer to the transfer of an analogue or a print piece to a digital format. Beyond the core transfer process, digitization finds its real meaning in the creation of a network of data sets connected to the digital piece."[28] As demonstrated in the 'Northern Ireland Digital Film Archive', archives should not only transfer their material to digital but also build a dataset connected to the piece.

3.3 Sustainable Energy Practice

The energy usage of a digital archive is vast in order to sustain servers, data centres and other ICT equipment required. As discussed in the last chapter, when looking at ICT equipment through the LCA model of assessing environmental impact the environmental impact is staggering. As suggested by

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[28] Şavk, Serkan "How Social Media Platforms Replace Film Archives When There Is No Film Archives." *Exploring Past Images in a Digital Age: Reinventing the Archive* by Nezih Erdoğan and Ebru Kavaain, Amsterdam University Press, 2023. pp. 57-75.

the paper, there are short solutions to mitigating the impact of ICT hardware on the environment such as a selecting more energy efficient data storage units, switching high energy tasks to be on during off-peak times, and switching to cleaner energy, through your own means or lobbying for your country of origin to bring in cleaner additions to the energy grid. However, while these solutions work, they are short time solutions that will not drastically impact the over-consumption of energy. Instead, they suggest a shift in mindset and operation practice when preserving digital archives. They note several 'Paradigm Shifts' that would need to happen for better sustainability, the one most relevant to this paper is the Paradigm Shift focused on availability. The core idea in this shift is adjusting accessibility to be both specific and realistic in its deliverables. As the report writes, "Cultural heritage organizations can reduce the environmental impact of digital access and delivery by critically examining the justifications for mass digitization, implementing on-demand access strategies, adjusting storage technologies for access, and ensuring timely—but not necessarily immediate—delivery."[29] To elaborate briefly on their points, when it comes to the justification of mass digitising artefacts, for example for the filmmaking collection in Listowel digitized by Dr Walsh, it suggests that a more critical eye on what needs to be digitized, and that digitisation should only be used if the artefact in question is at risk from a preservation standpoint. It also suggests that digital copies should be requested in a tiered system of exports ranging in energy consumption it would take to produce the digital copy, and adjusting storage technologies to create a system of delivery that is not instant to curtail costs. While these are important steps to curb energy consumption in the digital archive sector, it does in fact inhibit the access to the archive as an expense. This framework is something that can help lengthen the archives running long term, however it requires a shift in what we believe needs to be necessary for an accessible archive.

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[29] Pendergrass Keith L., Walker Sampson, Tessa Walsh, and Laura Algna. "Toward Environmentally Sustainable Digital Preservation." *The American Archivist,* vol. 82, no. 1, spring/summer 2019, pp. 165-206. JSTOR, https://www.jstor.org/stable/48659833

3.4 Rectifying Colonial Archive

The use of digitisation in making colonial pieces available to a wider audience outside of a museum is a heartening trend taken by former colonial nations. However, there are ethical and power control issues related to using this as a form of 'digital repatriation', as outlined by Dr Walsh when referring to human remains and the Inishbofin skulls. However, there is precedent of allowing the communities that were taken advantage of to lead these digital repatriation projects instead of the museums themselves. This gives more power back to the community and shifts the dynamic in the relationship. This can be seen when looking at the case study of digital repatriation efforts concerning data sets relating to the Rongowhatkaata indigenous community in New Zealand. In The book, *On Making in the Digital Humanities,* a chapter revolves around the *Rongowhakaata Claims Settlement Act*, which returned the ownership of the meetinghouse, Te Hau-ki-Tūranga, from the Museum of New Zealand back to the Rongowhakaata tribe in 2012. While this was a significant repatriation, there was an issue concerning the missing carvings from the meeting house that were sold off under its confiscation by British Troops during the 1860s. These artefacts have been identified in other museum collections abroad such as the British Museum and the National Gallery of Australia, however, due to the various different laws in these countries relating to museums and artefact ownership, it is unlikely that for the present moment they will be returned. Over various discussions with the community members involved, digital repatriations were suggested as a compromise. The chapter explains this in depth as:

In this instance 'Digital' refers specifically to 3D digital capture of the meetinghouse and its carvings through photogrammetric or stereo-imaging techniques, and 'repatriation' refers to the ownership of this imaging data, along with the return of the object's museum records, exclusively for the iwi's (tribe's) archives.[30]

Through this project, the Rongowhakaata have not only the ownership of the physical archive (the meetinghouse), but now have exclusive ownership of the data sets of the digital archive. The significance of this cannot be understated as these artefacts are "living entities with personalities, lineages and spirits". For the communities, holding the exclusive rights to this data "is seen as the return of a specific and unique knowledge base for learning from and reconnecting with the intangible 'taonga' (cultural treasure) made by the ancestors." Digital repatriation can only work as a scheme if it allows not only the data, but the ownership of data rights, to be transferred as well. As a result from this case study, while this might start off as a compromise it can be used as a base of reconnection for the community affected by colonial subjugation and confiscation.

3.5 A 'Right' To Be Respected

In his summarisation on 'The Right To Be Forgotten' and the open access of archive and the right of memory, Čtvrník notes, "The right to know, the right to memory and, in some respects, also the duty of memory will always clash with the right to be forgotten, in which the protection of an individual's private and intimate sphere occupies the largest space."[31] The stipulation of this law in

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[30] Hakiwai, Arapata, Karl Johnstone and Brinker Fergusan. "The politics of digital repatriation and its relationship to Rongowhakaata cultural data sovereignty". *On Making in the Digital Humanities: The scholarship of digital humanities development in honour of John Bradley* by

[31] Čtvrtník, Mikuláš. *Archives and Records: Privacy, Personality Rights, and Access*. Palgrave Macmillan. 2023

Europe can be seen as a liability to access to digital, and physical, records, however, it can also be interpreted as a motivation for archives to regulate the amount of records that are archived. As spoken about in the chapter concerning environmental improvements for record management in the digital space, Čtvrník also concludes that archives have "have an enormous, unprecedented, and apparently unsustainable amount of records and archival material is being created, reserved and archived", even with this unsustainable growth there are records that are "preserved that should not be preserved for the reasons of data protection", such as parts of court files that have contain particular sensitive material that once the court dispute has been settled, should be destroyed to protect the privacy of the individual mentioned. There is a risk to destroying archive as mentioned in previous chapters the risk of destroying the physical copies now, as archive is only thought of being preserved decades after. As a possible solution, there is the selective use of pseudonymisation and anonymisation which would allow data to be kept but the personal information to be altered to prevent external institutions from accessing the information. Information is key, the importance of historical archives should be balanced with protection of personal data. As a result certain access should be judged on a case by case basis by balancing personal rights under European General Data Protection Regulation (GDPR) with the public interest in such archive documents.

To conclude this chapter, for the digital archive to not only survive but thrive as an open access platform it adapt to the issues that plague it. The solutions proposed here are not monetarily or practically simple by any means and can be open to other problems in the future as technology and archive collections advance. The framework provided by these case studies and research ideas are an important step for the medium as it allows it to prepare for the coming decades where the artefacts it preserves will be most needed and most appreciated.

Conclusion

In conclusion, the process of digitizing and thus making such archive open online is a lengthy, and at times problematic process. It has resulted in legal, ethical, and financial issues for the holders of archived records and raised questions about how data is processed, stored and used. However, through this thesis we have shown that there is a bright road for the digital archive and the material it preserves for future generations through digitization. In allowing material to be backed up not only in a physical form, but also as a data set it allows longevity for the material in the original is destroyed. The benefit of this data set is that it can be more flexible than physical material and can be used for digital archives, online access, and as part of exhibitions. As shown in the case studies such as the RIT Congo VR project and the Te Hau-ki-Tūranga digitization, digitizing colonial pieces can serve a purpose of education and provide understanding of cultural artefacts. The process of digitization is not risk averse and can be a costly process both financially and in energy consumption. Once the materials are digitized, allowing them to open access has profound challenges. The issues of legal copyright, proper cataloging of information and the policies of private web portals creates barriers for open access. The interviews with respective persons who have experienced this process firsthand have allowed for a better understanding and review of how digitization can be improved for any archivist looking for solutions. The framework of alternative methods for archives to improve their material and how to best use it in the public setting will hopefully provide insight and allow digital archive to flourish in the modern age. In the introduction paragraph, Madeline Ganges describes Archives as a place where "one can commune with history through documents and objects left behind". In her thoughts on the digital archive, she notes that because digital archive can be access from anyone at any place with internet access, "The digital Archive becomes a place of togetherness." [32] The significance of being able to turn physical material preserved for the future into tangible and detailed data-sets that can be accessed at the click on a button is

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[32] Ganges, Madeline B., "Togetherness with the Past: Literary Pedagogy and the Digital Archive." *disclosure: A Journal of Social Theory,* vol. 27, article 19, july 2018 pp. 112-125. EBSCOhost https://doi.org/10.13023/disclosure.27.16

not something we should take lightly. Digital Archives may just be a useful tool today; however, it may become a necessity in the years to come.

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