Tampere University

NIKLAS NYLUND

Game Heritage

Digital Games in Museum Collections and Exhibitions

Tampere University Dissertations 307

Tampere University Dissertations 307

NIKLAS NYLUND

Game Heritage

Digital Games in Museum Collections and Exhibitions

ACADEMIC DISSERTATION
To be presented, with the permission of
the Faculty of Information Technology and Communication Sciences
of Tampere University,
for public discussion in the lecture room K103
of the Linna building, Kalevantie 5, Tampere,
on 9th of October 2020, at 12 o'clock.

ACADEMIC DISSERTATION
Tampere University, Faculty of Information Technology and Communication Sciences
Finland

Responsible supervisor and Custos	Olli Sotamaa Tampere University Finland	
Supervisors	Patrick Prax Uppsala University Sweden	Jaakko Suominen University of Turku Finland
Pre-examiners	Victor Navarro-Remesal Comillas Pontifical University Spain	Anna Sivula University of Turku Finland
Opponent	René Glas Utrecht University Netherlands	

Cover design: Roihu Inc.

ISBN 978-952-03-1696-9 (print)
ISBN 978-952-03-1697-6 (pdf)
ISSN 2489-9860 (print)
ISSN 2490-0028 (pdf)
http://urn.fi/URN:ISBN:978-952-03-1697-6

PunaMusta Oy – Yliopistopaino
Vantaa 2020

ACKNOWLEDGEMENTS

This thesis has been a journey into games, heritage, preservation, and participation that has spanned more than five years of my life. It has introduced me to fascinating worlds far beyond those that I imagined when the journey started. What began as a need to understand how to deal with games in my profession as a researcher and curator at the City of Tampere Museum Services has taken me far and wide through the worlds of digital games, heritage studies, and enthusiastic preservation communities and institutions. Along the way, I have had the privilege of meeting countless people and communities passionately and contagiously devoted to games and heritage. This journey would not have been possible but for countless individuals that have helped me along the way. This is the time and place to thank all these wonderful people for helping me make this dissertation possible.

The dissertation has its beginnings in the Finnish Museum of Games project which got its start in early 2014 when initial plans for hosting a crowdfunding campaign for a Finnish game museum came about. The initial premise for the museum was planned by a core curatorial group and pitched in a crowdfunding campaign in spring 2015. After a successful campaign[1], the museum was opened for the crowdfunding backers in December and 2016 and for the public at large in January 2017. First and foremost, I wish to thank our core curatorial group – Mikko Heinonen, Ville Heinonen, Manu Pärssinen, Jukka Kauppinen, Annakaisa Kultima and Outi Penninkangas – which was so shrewdly put together by my colleague Outi and game collector extraordinaire Mikko. A big thank you is also in order to more recent team members and trainees Riina Ojanen, Silja Korkeamäki, Elisa Wiik, Joni Rokkanen, Solip Park, Riku Salpakari, Heikki Jungman, Lauri Kullas, Ville Manninen, and Juha Magga.

1 The crowdfunding campaign raised €85,860 from 1,120 backers. Backers included some of the major Finnish game companies such as Supercell, Housemarque, Remedy and Colossal Order, but also smaller companies, game related non-profit organizations, and over 1,000 private individuals and families.

Although all the above are very dear colleagues and collaborators, I wish to separately mention and thank four of them, since this dissertation would not exist without their support and example. First, I especially wish to thank my very dear colleague Outi for all her support from the start, and for nudging me forward into looking at games from a museum perspective. Secondly, I want to thank Annakaisa for her enthusiasm in setting up an earlier exhibition dedicated to Finnish games, and for challenging me to find critical perspectives when thinking about game heritage. Thirdly, I wish to thank Mikko for all his help, his boldness in wanting to think big, and for understanding that games are far more than a harmless pastime. Lastly, I want to thank Riina for her friendship and collegial support, as well as for all the interesting discussions related to games as museum artifacts.

Because the Finnish Museum of Games was launched by the City of Tampere, it had the support of countless individuals from the start. Perhaps most importantly, the project had the backing of Head of Museum Services Toimi Jaatinen, for which I wish to thank him cordially. Many colleagues have also been supportive from the start. I wish to thank Teemu Ahola, the best boss I could hope for, dear collaborators Elina Rantasaari, Varpu Lius, Saana Säilynoja, Henrik Saari, Klaus Törnkvist, and my old colleagues from TR1, especially Tiina Piispanen, Sanni Pöntinen, Janina Ahlfors, Mari Jalkanen, Anne Keskitalo, Suvi Jokela, and Olli Vakkala from Cultural Education Unit TAITE for their collegial support and professional enthusiasm. On top of that, I wish to thank my colleagues at the Postal Museum, especially Kimmo Antila, Mikko Nykänen, Jarmo Niinimäki, and Suvi Jalli, for their vision of what museum work is capable of.

I am also deeply grateful for the expertise of the various heritage communities, hobbyist game preservationists, amateur historians, and game collectors, on whose work the Finnish Museum of Games, as well as this thesis, is founded. Meeting all kinds of game enthusiasts, developers, and other deeply motivated people dealing with various game cultures and game preservation, left a lasting imprint on me. At the core of all stories related to the history of Finnish games, we were always able to find people enthusiastic about games, willing to sacrifice a lot in order to save them for posterity. I especially wish to thank Tommi Lempinen, Jarkko Lehti, and Aki Sivula from the Kasettilamerit preservation group, Toni Cavén and everyone else from Reprocade, and all the enthusiastic people from Wikimedia Finland.

The Finnish Museum of Games has further offered me countless opportunities to collaborate with other heritage organizations and to get to know their work practices better. I would like to thank everyone who collaborated on the informal Game preservation round table, and especially the enthusiastic people at the National

Library of Finland, the Finnish Museum of Technology, and the Design Museum. Thank you for opening doors and showing me a glimpse of how other GLAM organizations operate. I would especially like to thank Lauri Ojanen, Aija Vahtola, Jussi Omaheimo, Petteri Veikkolainen, and Kirsi Ojala, as well as Henna Ylänen from the City of Turku Museum Services, Aura Colliander from the University of Turku, Johanna Lehto-Vahtera from Aboa Vetus & Ars Nova, and Christian Hviid Mortensen and Lise Kapper from the Danish Media Museum, for all their help and professional support.

Not only was 2014 the year the Finnish Museum of Games got its start, it was also the year I started my PhD research in order to better understand how to deal with games in museums. During the roughly six years since then, I have simultaneously grown as a museum researcher and an academic researcher. My curatorial know-how has increased immensely from the support of the network of colleagues mentioned above, but my academic journey has been a more personal one into several established scientific disciplines and their particular vocabularies and understandings of society. As such, it has also been a journey into the makings and processes of the scientific community.

Along the way, my intuitional realizations about games as heritage that go back to the time of conceptualizing the Finnish Museum of Games have been joined by academic scrutiny and a more varied understanding of the game heritage process. It has been refreshing, but also taxing, to cope with the varied terminologies dealing with games, and to try to merge those abstract theories into pragmatic museum work. Still, wrestling with a manner of different concepts has, in the end, enabled wholly new trains of thought, as well as helped to better understand the various stakeholders and their motivations when dealing with games as heritage. I hope some of these personal insights can be seen by reading through this work, and that they provide helpful advice for others wrestling with the occasionally murky world of games, preservation, and heritage.

Luckily, this more solitary journey has also been supported by many dear collaborators. In taking on a role of game heritage expert, I have had tremendous help from my research done in game studies, especially at the Game Research Lab at the Tampere University led by professor Frans Mäyrä. For this supportive atmosphere, I wish to thank all my colleagues at Tampere University. During my journey, I have also had the opportunity to get to know other academic environments. Teaching and visiting scholarships have taken me to the University of Uppsala, where I would like to thank Olle Sköld for all his support and enthusiasm. Additionally, I would like to thank Teemu Leinonen at Aalto, my co-

authors Björn Sjöblom and Lina Eklund, as well as everybody at Uppsala University's Campus Gotland in scenic Visby. I also wish to thank my funders Hedmanin säätiö / Hedmanska stiftelsen and the Finnish Cultural Foundation for providing this opportunity to explore how games are and become heritage.

I also wish to thank my wonderful supervisors for their help and support in writing this dissertation. My dear friend Olli Sotamaa has been most helpful from the start with his wonderful emotional support and gentle nudging. Along the way, Jaakko Suominen has provided welcome comments on overlooked areas, as well as served as an inspiration with his writings on games and history for well over a decade. Lastly, Patrick Prax has challenged my train of thought, and been a constantly clear-eyed opponent with whom I have had the pleasure of pitching theories and viewpoints about games as heritage. I also wish to thank Patrick's wonderful wife Ida and their whole family for warmly welcoming me and my partner Wilhelmiina to Visby in the autumn of 2018.

Finalizing the PhD introduction during coronavirus lockdown in the spring of 2020 has made it increasingly apparent how important personal support networks are. For that reason, I wholeheartedly wish to thank friends and family for all the support and enthusiasm they have shown over the years. A special thank you is in order to the Write Club, which has made the strenuous task of writing and revising a joy. I especially wish to thank Tom for his friendship and support, but also for taking the initiative of establishing the Write Club and for setting the laid-back atmosphere. My faithful writing companions and esteemed friends Kati, Elina, and Heikki, but also more casual writers Mila, Usva, Sabine, and others, all deserve a heartfelt thanks for making even the bleakest writing days manageable.

I am also blessed with very supportive friends, who I wish to thank for keeping me sane throughout the PhD process. Regular coffee chats, games, awesome parties, and discussions have taken my thoughts off the increasingly heavy task of writing a dissertation. A special big thank you is in order to my good friend Antti for nudging me forward and believing in me in the early stages of the dissertation process. Everyone else, you know who you are, thank you all for the company and for everything else!

Finally, I would like to thank my family for all the support over the years. A big thank you goes to my brothers Henrik and Mikael and their families for introducing me to all kinds of games and play, and for keeping up that interest well into adult life. My father and mother deserve to be thanked for all their love and their encouragement of my academic and professional development over the years. Last of all, I wish to thank Wilhelmiina for being my companion on this taxing journey

across time and place. Although finalizing the dissertation has been a strenuous task under these exceptional circumstances, she has made the writing more bearable with her constant support and love.

ABSTRACT

Digital games are undergoing a process of heritagization, as demonstrated by how they are increasingly displayed in exhibitions and preserved in heritage institution collections, not to mention engaged with by numerous heritage communities both online and offline. What is lacking, however, is a critical understanding of what constitutes game heritage and how it is produced by the stakeholders involved. In order to provide a critical framework for thinking and working with games as heritage, this dissertation engages in theory building and conceptualizations around key heritagization issues.

The study utilizes a versatile methodology consisting of interpretive analysis and extensive use of insider knowledge and participant observation, as well as theoretical triangulation between heritage studies, games studies, and game preservation research. With the help of these approaches, the dissertation conducts pragmatic theory building around issues related to the heritagization of games, as well as provides critical frameworks for engaging with it.

In the results, the study shows how social actors beyond retrogamers and hobbyists act as stakeholders in the heritagization of games. Further, the dissertation provides a high-level theoretical ontology for dealing with the complex assemblage of games and play, which looks beyond playable games. After that, the research shows how games are changed and modified when becoming heritagized. Finally, the study sheds light on tensions that exist between various stakeholders and their heritagization strategies.

As such, the dissertation demonstrates how the complex issues and processes that arise when games become heritage are in need of more reflexive practices. In the discussion, the study points towards possible strategies that can be used in order to mitigate stakeholder tensions around the ownership of game heritage. However, further empirical research is needed in order to validate the theoretical constructs and guidelines provided in this study.

Keywords: heritagization, preservation, games, play, playing, game heritage, reflexiveness, museums, cultural heritage

TIIVISTELMÄ

Digitaaliset pelit ovat läpikäymässä perinnöllistymisprosessia, sillä niitä esitellään yhä useammin näyttelyissä ja talletetaan muistiorganisaatioiden kokoelmiin. Lisäksi lukemattomissa verkon ja reaalimaailman kulttuuriperintöyhteisöissä tehdään jatkuvasti työtä pelien säilyttämiseksi. Siitä huolimatta tutkijoilta puuttuu kriittinen ymmärrys siitä, miten pelien kulttuuriperintö rakentuu ja kuinka erilaiset sidosryhmät ovat mukana tuottamassa sitä. Tämä väitöskirja osallistuu pelien kulttuuriperinnön kriittisen viitekehyksen rakentamiseen kehittämällä teoriaa ja käsitteitä keskeisten pelien perinnöllistymiseen liittyvien ilmiöiden ymmärtämiseksi.

Tutkimus hyödyntää monipuolista metodologiaa, johon kuuluu selittävää analyysia, kokemuksellista tietoa ja osallistuvaa havainnointia hyödyntäviä näkökulmia sekä teoreettista triangulaatiota kulttuuriperintötutkimuksen, pelitutkimuksen ja pelien tallettamisen tutkimuksen välillä. Näiden näkökulmien avulla tutkielma toteuttaa pelien perinnöllistymiseen liittyvää pragmaattista teorian rakennusta sekä muodostaa kriittisiä viitekehyksiä sen ilmiöiden ymmärtämiseksi.

Tutkimuksen tuloksissa osoitetaan ensinnäkin, kuinka monenlaiset sosiaaliset toimijat retropelaajien ja harrastajien lisäksi tulisi ymmärtää pelien perinnöllistymisen sidosryhminä. Toiseksi tutkimus muodostaa sellaisen korkean tason ontologisen ymmärryksen pelien ja pelaamisen monitahoisen ja kompleksisen yhteenliittymän ymmärtämiseksi, joka ei takerru pelkästään pelattaviin peleihin. Kolmanneksi tutkimus osoittaa, kuinka pelit muuttuvat ja muokkautuvat perintöprosessin myötä. Neljänneksi se valaisee pelien kulttuuriperinnön sidosryhmien ja niiden erilaisten perinnöllistymisstrategioiden välisiä jännitteitä.

Tutkimus osoittaa, kuinka pelien kulttuuriperinnöksi muuttumisen monimutkaiset jännitteet ja prosessit kaipaavat osakseen kriittistä pohdintaa ja refleksiivisiä käytänteitä. Tutkimuksen syventävässä osiossa käsitellään strategioita, joita voitaisiin käyttää pelien kulttuuriperinnön omistusoikeuksien välisten jännitteiden purkamiseksi ja sidosryhmien intressien yhdistämiseksi. Koska kyseessä on teoreettinen tutkimus, tulee siinä tehdyt teoreettiset rakennelmat ja ohjenuorat kuitenkin vielä vahvistaa empiirisen tutkimuksen avulla.

Avainsanat: perinnöllistyminen, tallettaminen, pelit, pelaaminen, pelien kulttuuriperintö, refleksiivisyys, museot, kulttuuriperintö

CONTENTS

List of Tables

ORIGINAL PUBLICATIONS

Article I — Nylund, N. (2017). Preserving game heritage with video interviews: A case study of the Finnish Museum of Games. *Finskt Museum*, *124*(1), 8–27.

Article II — Nylund, N. (2018). Constructing Digital Game Exhibitions: Objects, Experiences, and Context. *Arts*, *7*(4), 103–117.

Article III — Prax, P., Sjöblom, B., Eklund, L., Nylund, N., & Sköld, O. (2019). Drawing Things Together: Understanding the Challenges and Opportunities of a Cross-LAM Approach to Digital Game Preservation and Exhibition. *Nordisk Kulturpolitisk Tidsskrift*, *22*(02), 332–354.

Article IV — Nylund, N., Prax, P., & Sotamaa, O. (2020). Rethinking game heritage–towards reflexivity in game preservation. *International Journal of Heritage Studies*, 1–13.

DIVISION OF WORK IN CO-AUTHORED PUBLICATIONS

This dissertation includes four articles and an accompanying introduction. Two of the four articles included in this dissertation are co-authored. Table 1 shows the extent of work done on each of the two co-authored articles by the author with regard to building the theoretical argument, analyzing the subject matter, conducting a literature review, and writing and editing. In addition, it identifies the two articles included that are not co-authored.

	Theoretical argument	*Analysis*	*Literature review*	*Writing first draft*	*Editing*	*First author*
Article I	X	X	X	X	X	X
Article II	X	X	X	X	X	X
Article III	X	X	X			
Article IV	X	X	X	X		X

Table 1. Division of work in co-authored publications

In the first co-authored paper, "Drawing Things Together: Understanding the Challenges and Opportunities of a Cross-LAM Approach to Digital Game Preservation" written with Patrick Prax, Björn Sjöblom, Lina Eklund, Olle Sköld, I was mainly responsible for building the theoretical argument, conducting an analysis of games on display at the Finnish Museum of Games, and compiling part of the literature review, with only limited input into writing the first draft and editing it into a complete paper. The first co-authored paper was published in Nordisk Kulturpolitisk Tidsskrift in 2019

In the second co-authored paper, "Rethinking game heritage — Towards reflexivity in game preservation", which is co-authored with Patrick Prax and Olli Sotamaa, I was responsible for building the theoretical argument, compiling the literature review, as well as for conducting the analysis, writing the first draft and editing. This second co-authored paper was published in a Special Issue on Video Games and Cultural Heritage in the International Journal of Heritage Studies in 2020, and it has me as first author.

1 INTRODUCTION

1.1 Study motivation and background

Digital games[2] are increasingly treated as cultural artifacts and cultural heritage, as witnessed by the numerous game exhibitions and museums that have opened around the world lately. Still, established heritage institutions[3] do not yet have the tools and processes required to deal with games, and they are challenged by their ontologically and ethically complex nature. This collection of articles and the accompanying introduction form a dissertation on digital games as heritage which deals explicitly with ontological, museological,[4] political, and ethical issues and dilemmas that arise when starting to understand games as cultural heritage. It is an effort to combine concepts from heritage studies and game studies in order to help various game heritage stakeholders to understand the ways that games are and become heritage, and thus help heritage stakeholders make more self-conscious and reflexive choices when dealing with games. While it is by no means the only study dealing with these issues, it is the first study of this scope and magnitude, and the first one that aims to provide a holistic understanding of games as heritage.

One key aim of the dissertation is to build a theoretical framework by which to understand the game heritage process. As such, the dissertation works towards specifying a terminology for talking about games as heritage. While there is an increasing amount of research published that explicitly deals with games as heritage (e.g. Suominen et al., 2018; Ahm, 2018; Eklund et al., 2019; Glas & van Vught, 2019),

2 In this dissertation, the term digital game is favored over terms like videogame in order to denote games played on various digital and electronic devices, i.e. mobile games, computer games, console games, and online games (Kerr 2006). As the study deals exclusively with digital games, the short version of "game" is methodically used to signify all kinds of digital games. Instances where other types of games are discussed are distinguished by the use of terms such as analog games.

3 The terms heritage institution and GLAM (Galleries, Libraries, Archives, Museums) institution are used interchangeably. As such, GLAM refers to institutions that are exhibiting and collecting heritage.

4 In the US, the term "museum studies" is used instead of the internationally more common term museology (Latham & Simmons 2019).

an overarching theoretical understanding of what comprises game heritage is still lacking. This dissertation thus aims to take first steps into theory building (Steiner, 1988) around game heritage, and to provide a practical theoretical understanding of games, play[5], and game cultures as preservation artifacts. In doing so, it attempts to understand games *as* culture, but also games *in* culture and at the center of complex social, political, and ethical struggles.

This is a pragmatic, but also deeply personal work. The thesis has come about because of my experiences as a part of the team conceptualizing, researching, and curating the Finnish Museum of Games in Tampere, Finland. It builds on my personal experiences as a museum curator[6] working with games, but also explores research topics I have felt that are needed in order to better deal with games in museums, such as ontological[7] questions related to game preservation, as well as issues related to participation, gatekeeping, and stakeholder power positions. The pragmatic ontological, participatory, and heritagizatory concerns and issues that were at the heart of the Finnish Museum of Games project have shaped the research from the start, and to a large extent defined its aims. However, as the research progressed it has increasingly shaped and inspired my professional museum work by introducing perspectives and interests from academic research, such as inclusion and gatekeeping. The relationship between research and practice has thus been two-way, with both influencing each other.

Looking back, it is clear how the Finnish Museum of Games project was participatory from the start. The idea for launching a crowdfunding campaign to set up the museum initially came from hobbyist game collector group Pelikonepeijoonit, but the actual museum was planned to be operated by Rupriikki Media Museum and the Museum Services of the City of Tampere. Along the way, students and researchers from the Tampere University joined collectors and museum staff to define the scope and goals of the museum. As the project moved forward, the role

---

5 Play is used to denote instances where people are playing (digital) games. The infinitive form "play" thus refers to organized, regular, and specific instances of playing games, instead of to play as an overall and general activity (as in e.g. child's play).

6 While curator is a term which holds diverse meanings, everything from "custodian, steward, keeper, superintendent, guardian", curators are most often perceived to be dealing with the care of collections (Golding, 2013, p. 20) and research concerning them (Wells, 2007, pp. 7-8), but also with preference and choice of what to preserve (e.g. Rugg & Sedgwick, 2007).

7 One of the research aims of the dissertation is ontological, i.e. it deals with questions concerning the existence and grouping of entities (Stojanovic, 2004). In the context of this study, ontology is primarily dealt with as an information sciences concept concerning the classification of artifacts, and not as a purely philosophical concept, although those two share qualities with each other.

of cooperation took on new forms. Participation between key actors – museum professionals, game collectors, and academic researchers, but later also municipal politicians, game companies and developers, game journalists, countless donors, and other heritage institutions – happened in a situation where the nature and quality of games as heritage was still being negotiated. As various participatory amateur historians and preservationists had already been heritagizing[8] (Fontal & Gómez-Redondo, 2016) games since at least the late 1990s (e.g. Suominen & Sivula, 2016; Suominen et al., 2015) by setting up online "rogue archives" (De Kosnik, 2016), it was obvious that the museum project would benefit from the knowledge and tools these communities had already amassed.

As the participatory networks were being formed around the upcoming museum, it became apparent that a shared curatorial vision entailed negotiation between partners and stakeholders. With so many stakeholders from different backgrounds and with very different aims coming together to set up a permanent museum dedicated to Finnish games, game heritage could also be a potential site of struggle. In game studies, a central discussion has been one of ownership of game culture amid political and economic pressures, where concerns have been expressed over whether the breath player communities and identities are taken into account (e.g. Paul, 2018; Kirkpatrick 2013). As game cultures have been dominated by a largely white and middle-class male audience for decades, introducing other kinds of stakeholders into the game culture discourse has given rise to various conservative and misogynist backlashes, as shown by e.g. the Gamergate controversy (Paaßen et al., 2017; Mortensen 2018). As such, this dissertation aims to emphasize the participatory nature of games and play cultures, but also the role of participation in the heritagization of games, as well as game heritage as a site of struggle between disparate stakeholder motivations.

Game heritage also entailed the learning of new skills and mindsets for museum professionals. Games are new *kinds* of artifacts for museums, presenting numerous challenges for those interested in preserving and exhibiting them. In the Finnish Museum of Games project, emphasis was placed on playable games utilizing varying setups and technologies. In the end, the exhibited games took advantage of original hardware, as well as emulated and migrated content. In addition, the curatorial team decided to deal with a variety of ex-games (Guins, 2014), which could not be made playable due to disbanded servers, legal concerns, or other issues. These games were dealt with by a variety of documentary approaches, including video documentaries

8 Heritagization designates the processes by which something is legitimated and dealt with as heritage.

produced by the museum. While playable games were the goal, it also became apparent that displaying or preserving games does not automatically translate into visitors grasping past play practices or the complex meaning-making processes going on around games and play.

In game studies, there has been a tendency to concentrate on games as artifacts instead of play as activity, to the extent that to "understand play, we often focus on games" (Sicart, 2014, p. 84). While the importance of playable games for game preservation has become something of a truism (e.g. Guttenbruenner et al., 2010), there has been less effort to understand, record, and preserve how others play, although the potential of Let's Play videos for heritagization has garnered academic interest lately (e.g. Glas et al., 2017) and Newman (2012) has emphasized the importance of artifacts generated by play. Still, the nature of play in its various forms (play in the abstract, visitor play here-and-now, re-mediated past play), and the various dimensions of authenticity and originality of play experiences, are still confusing the research community and museum curators alike.

While playable games were the focus, establishing the Finnish Museum of Games seemed to gather, but also create, a plethora of digital, tangible, and intangible artifacts. The curatorial team wanted to deal with the contexts, skills, and experiences of people making and playing games. This entailed showcasing the breadth of Finnish game makers in and beyond the game industry, i.e. hobbyist game makers, industry professionals, modders[9], and various communities making their own games, as well as exhibiting various kinds of artifacts and experiences beyond playable games. For the Finnish Museum of Games team, it was clear that game museums can have a central role in preserving games produced by the game industry which, as a "perpetual innovation economy" (Kline et al., 2003), rarely looks back, but that museums can also deal with other kinds of games and game making. Thus, already in the early planning stages, the complex participatory nature of game cultures beyond commercially released games became the focus of the Finnish Museum of Games.

As such, the musealization[10] (Maranda & Emerita, 2009) of games seemed to assemble disparate artifacts dealing with the various contexts[11] and cultural activities

9 Modding (from modify) is a term used to describe the ways player-creators (Prax, 2016) redesign, reimplement, and reinterpret existing games to their own needs, e.g. by adding content via games' APIs (application programming interfaces) or by hacking game code.

10 Musealization refers to the ways in which the act of making museum artifacts changes them.

11 Context is a complex concept used in various ways in different research disciplines. In sociological studies, it denotes everything that surrounds human action that is relevant for the situation, while

going on around and beyond playable games, some of which were created in the musealization process and were far removed from "traditional" museum objects and artifacts.[12] These transtextual[13] (Genette, 1997) artifacts were difficult to deal with in an organization optimized for processes having to do with material artifacts, and it became apparent that museums needed better ontological frameworks to understand the complex networks of digital concept art, game paraphernalia, game maker concerns, mods, intellectual property (IP), and artifacts created by participatory play cultures around games.

While game preservation research has acknowledged e.g. the role of play as a preservation artifact (Newman, 2012) and how games change in the musealization process (Guins, 2014), it has not gone into greater detail in examining how curatorial choices have political and ideological repercussions for game heritage. During the Finnish Museum of Games project, I became increasingly interested in the power structures and imbalances present in heritage processes and in the ways they could be further analyzed and mitigated. As such, this study is ethically motivated by social inclusion. It can be read as an apology to all the different games, players, and communities out there, but also as a call for action for museums to embrace their role as social actors working for social justice and able to negotiate complex power imbalances. These kinds of power structure issues have not been part of the game preservation agenda, but this study argues for their importance when working towards inclusive game heritage.

As seen, theorization around power structures, heritagization, and musealization show that museums need to stop and ponder what exactly is being done when games are made into heritage. This means better understanding of the power positions and stakeholders involved, but also the changes that happen at the artifact level. As such,

---

actor-network theorists define it as the social, cultural, technological, and physical situatedness of phenomena, which means that their physical and abstract surroundings inform their values (e.g. Sicart, 2014, p. 106; Latour, 2005). In museology, context denotes the circumstances of the artifact before musealization, but it can also refer to the metadata of artifacts (e.g. ICOM, 1995; Pearce, 1994).

12 In this dissertation, object and artifact are both used as terms dealing with the materiality of culture, but the latter is preferred. The term artifact is further used as a portmanteau term for various kinds of material, digital, and intangible "things" that are the target of preservation efforts.

13 Transtextuality, the "textual transcendence of the text", is a term coined by literary theorist Gérard Genette (1997) to deal with the various cultural expressions that have formed around primary cultural texts, i.e. games. Transtextual terminology is used in this study to differentiate between various contextual artifacts.

the study is part of reflexive[14] research into museum work practices. Being critical of game heritage processes makes it possible to reach beyond the various "naturalized" (Smith, 2006) ways that games have already started to become treated as heritage in various heritage communities.

In this thesis, I aim to map these diverse issues into a comprehensive model of games as heritage that considers earlier research, not just in game preservation, but also in game studies and heritage studies. I hope that this thesis will help practitioners to understand game heritage as a complex and multifaceted field of study that can look beyond playable commercial game products. The study is thus explicitly and reflexively looking beyond what is currently done in a more technically oriented game preservation approach, and pinpointing issues in need of critical thought and avenues for providing it. The aim of the study is operationalized as one main research question, which is split into four sub-research questions. The main research question of the study asks *What is game heritage and how can the stakeholders involved be treated in an inclusive manner*? The sub-research questions support the main research question by asking (1) *Who are the stakeholders of game heritage*, (2) *How can the ontology of game heritage artifacts be articulated*, (3) *How does heritagization affect games,* and (4) *How does participation affect the power positions of heritage stakeholders?*

1.2 Theoretical positioning

This dissertation deals with digital games as cultural heritage. The theoretical discussions framing the dissertation are game studies (Mäyrä, 2008) and heritage studies (Sørensen & Carman, 2009). In the course of the argumentation, ideas and terminology from game preservation research (e.g. Guttenbrunner et al., 2010; Newman, 2012; Guins, 2014), as well as museology (Larsen et al., 2018; Latham et al., 2019) and museum work practices research (MacLeod, 2001; Hakamies, 2017) are applied to game studies and heritage studies in order to reach a coherent understanding of games as heritage.

Game studies provides a rich foundation for the work, as it includes perspectives on not only game design and games as interactive experiences, but also on the role of play and players (e.g. Sicart, 2014) and the production of games (e.g. O'Donnell,

14 The concept of reflexivity is used to denote awareness of surrounding power structures and biases, and the ability of institutions and individuals to reflect on their power position in relation to others (c.f. Cunliffe, 2009; Cunliffe, 2004; Antonacopoulou, 2004; Nicholls, 2009).

2014). Research concerned with the participatory nature of game communities and user generated content (Newman, 2019a), player-creators and participatory design (Sotamaa, 2009), diversity of play cultures (Shaw, 2010), but also on the social context of games and play (Consalvo, 2017), is present in game studies, providing a wide ranging overview of the ways that games are made and played.

Heritage studies, on the other hand, makes it possible to approach the heritage processes of games in a critical manner. This includes perspectives on how game heritage is formed and whose interests it caters for (Carman & Sørensen, 2009), as well as who act as gatekeepers (Coleman, 2015) in the heritage process. Other key concepts here are the conceptual pairing of tangible and intangible heritage (UNESCO, 2003a; Smith, 2006), as well as the nature of games as born-digital heritage (UNESCO, 2003b; Karp, 2004). The dissertation is also interested in ideas presented in critical heritage studies (Smith, 2006; Winter, 2013), in aiming to better understand the power positions inherent in the production of the game heritage discourse. Cultural policy research (Mulcahy, 2006) issues are dealt with in areas related to participation.

Previous heritage related research on games has dealt with issues such as using games for educational purposes in museums (Hammady et al., 2016; Paliokas & Sylaiou, 2016), digitizing collections (Ioannides et al., 2017; Bontchev, 2015), critical readings of how heritage sites and objects are represented in games (Gonzalez Zarandona et al., 2018), and similar endeavors. These topics, while interesting in themselves, are not relevant for the treatment of games as heritage artifacts. They see games as a tool for enriching museum content and not as heritage as such. This dissertation, conversely, deals explicitly with digital games as museum artifacts and as heritage.

Museology deals with the study of museums and their role in society (e.g. Larsen et al., 2018; Mairesse & Desvallées, 2010). It includes perspectives on conservation and preservation, education, and curating. While the study at hand deals with both long term preservation as well as curating and exhibitions, it does not explicitly engage with issues related to museum education and learning in museums. The study does engage with museum work practices research (or operational museology), but does so on a high ontological level, rather than on the level of day-to-day operations and good work practices. New museology (e.g. Vergo, 1997), which is concerned with power structures and the social and political role of museums, provides an additional toolset for critical inquiry throughout the study.

Game preservation research is a specialized field that has been interested in the technical properties and long-term preservation of games (Pinchbeck et al., 2009;

Guttenbrunner et al., 2010; Anderson et al., 2013). Much of the discussion has been concentrating on the importance of playable games, and the pros and cons of emulation of large amounts of different play titles, on one side, and the qualitative efforts of hardware preservation, on the other. Another trend of recent game preservation research is pointing at the importance of the socio-cultural context of play (Barwick et al., 2011; Guins, 2014; Sköld, 2018). Although game preservation has started to look outside of games as objects and into territory occupied by players and social context, and there have been some first tentative attempts of bringing critical concepts into the game preservation discussion (Prax et al., 2016; Eklund et al., 2019), critical cultural heritage questions have not been examined in game preservation research on a larger scale.

Recent publications centered on game preservation issues include the first two issues of ROMchip magazine from 2019 and a special issue of Kinephanos dealing with game preservation from 2018. These contemporary studies have looked at games through the lens of e.g. gameplay preservation (Newman, 2018), case studies of museums and their funding (Suominen et al., 2018), through in-depth case studies of touch feedback controllers (Parisi, 2019), but also by propagating preservation efforts dealing with such everyday qualities of games that do not make a lasting impression (Consalvo, 2019), the need for a reparative game history highlighting the lives of queer and trans designers (Pow, 2019; Shaw, 2019), as well as a distinct paradigm shift towards play instead of games (Walker 2019). These new studies increasingly point towards how it is impossible to separate the history of games from "politics, culture, economics, identity politics" (Murray, 2019). These latter research initiatives seem to suggest that there is demand for new directions in game preservation research, as well as for examining ideological and political questions related to the ownership of game heritage.

By explicitly dealing with games as heritage, the dissertation sets new challenges for heritage studies because of the need to deal with games as interactive and digital artifacts. Introducing key concepts to game preservation from game studies and heritage studies makes it possible to broaden the framework of the existing game preservation research field, and vice versa. Table 2 shows the relationships between game preservation research and game heritage research when applied to the concepts of play, playing, and games and as conceptualized in this study. The table further defines existing game preservation as a field that is mainly interested in conservation of digital artifacts, whereas game heritage as a field is more interested in the ethical and ideological considerations of games as heritage. Most existing game preservation research should thus be understood as a sub-field of conservation studies (e.g. Caple,

2012) and as part of the emerging field of "digital conservation" (c.f. Karp, 2004, p. 49).

	Game heritage	*Game preservation / digital conservation*
Play	Heritage of playing games	Preservation of play mediations (e.g. Let's Play videos)
Games	Digital game heritage	Preservation of playable games

Table 2. Relationships between play, games, game heritage, and game preservation

1.3 Overview of thesis structure

The thesis is structured into six distinct chapters. Chapter 1 functions as an introduction to the themes and scope of the dissertation, and it is further divided into three sub-chapters. In 1.1, the introduction addresses the motivation for the study, as well as provides a personal reflection of how the themes and aims of the dissertation are connected to the work done at the Finnish Museum of Games. It also introduces the aims and research interests of the study, as well as the research questions. The study motivation is followed by a theoretical positioning of the research in relation to other fields of study in sub-chapter 1.2, and an overview of the thesis structure in sub-chapter 1.3.

After the introduction, the study moves on to epistemological and research methodological questions in chapter 2. First, the knowledge interest is examined in sub-chapter 2.1. After that, the study moves on to discuss the research methodology in sub-chapter 2.2. The dissertation then examines research ethical considerations related to conflict of interest in sub-chapter 2.3, after which it introduces summaries of the four individual articles that form the basis of this dissertation in sub-chapter 2.4. These topics are followed by a more detailed introduction of the research question, the various sub-research questions supporting it, as well as an account of how the four articles included in the dissertation work towards the results in sub-chapter 2.5.

Chapter 3 provides an in-depth literature review, which examines the relationships of the various research fields drawn upon in the study. The theoretical framework of the study consists of three parts. 3.1 deals with cultural heritage processes ranging from power structures and sustainability to artifact ontology and participatory heritage, while 3.2 covers relevant topics in game preservation research, i.e. games' dual ontology as artifacts and activity, software preservation approaches, and various types of game re-mediation as a preservation method. Sub-chapter 3.3, in turn, addresses relevant perspectives drawn from game studies, i.e. social debates going on around games, game making and re-making research, and heritage communities dealing with game history.

After that, four results drawn from the included research articles and elaborated on by the methodologies used are presented in chapter 4. By framing the results with the help of theoretical triangulation utilizing the various theoretical frameworks presented in chapter 3, the dissertation maps out the stakeholders of game heritage in sub-chapter 4.1, as well as game ontology and its challenges for existing GLAM practices in sub-chapter 4.2. Consequently, sub-chapter 4.3 provides an account of the meaning-making and heritagization processes related to game heritage, which is followed by an examination of the stakeholder tensions present in game heritage in sub-chapter 4.4.

The dissertation then moves on to the discussion in chapter 5. In the discussion, the larger implications of the results are examined in various ways. First, the contributions of the study to heritage studies and game preservation studies are spelled out. Then, the discussion deals with the implications of the results from a more pragmatic perspective, arguing for more reflexivity and inclusion in game preservation and spelling out modes of operation for GLAM institutions. After that, the delimitations of the study are described, and avenues for future research briefly mapped out. Following the discussion, the conclusion in chapter 6 briefly presents the key findings and implications of the research.

2 STUDY DESIGN

2.1 Cognitive interest

This dissertation aims to answer four distinct sub-research questions related to digital games as heritage, which are further outlined in sub-chapter 2.5. It is interested in examining the stakeholders of game heritage, the ontological issues related to how games should be treated as preservation objects, and whether their nature as interactive digital programs entails a paradigmatic shift for heritage studies, as well as in examining the curatorial processes and stakeholder power positions influencing the heritagization of games. As such, the sub-research questions have varied cognitive interests[15], as defined by Habermas (1972).

While the sub-research questions all have different knowledge interests, they are all based on theoretical reasoning rather than empiricism. As theoretical reasoning, the study's cognitive interest is practical and interpretive (Bhattacherjee, 2012), rather than technical or empirical, in the sense that it would aim for testable general explanations. The study does not aim to confirm hypotheses by examining the natural world in a feedback loop of controlled observation and methodical experiments. As such, empirical testing regarding the results of the study needs to be performed separately in future research.

The practical cognitive interest is present in the study's theory building (Steiner, 1988), which aims for conceptualizations regarding the intangible discourses (Smith, 2006), actors, and networks (Latour, 2005) involved in game heritage. As such, the study aims to define the stakeholders of game heritage in sub-chapter 4.1 through theoretical triangulation rather than case studies or empirical testing. Similarly, when

15 Habermas (1972) identifies three distinct cognitive interests: the technical, the practical, and the emancipatory, all of which are always historically positioned. The technical knowledge interest deals with instrumental knowledge and causal explanations and is thus mostly found in the positivistic sciences. The practical knowledge interest, on the other hand, deals with interpretation and understanding and is mostly found in interpretative and qualitative research. The emancipatory cognitive interest deals with criticism and reflection and is found mostly in the critical social sciences. The three knowledge interests are often further connected to different scholarly "identities": instrumental, practical, and emancipator (Gajendran et al., 2012).

examining the ontology of games as heritage, it does so through philosophical reasoning rather than empirical testing in sub-chapter 4.2. The meaning-making processes of game heritagization in sub-chapter 4.3 and the stakeholder tensions examined in 4.4 are further dealt with on the theoretical, rather than on the empirical, level.

The study is also emancipatory, in that it is interested in developing tools and methods for self-reflection, as well as a sensitivity to the power structures and gatekeeping positions present in game heritage in sub-chapters 4.3 and 4.4. As such, the study is critical of the state of discourses, actors, and networks surrounding game heritage in order to produce knowledge that makes it possible for individuals and institutions to emancipate themselves from present power structures (Wodak &Meyer, 2015). By challenging existing properties and established qualities of the research subject, the emancipatory knowledge interest guides the study in a critical direction, where the properties and qualities of existing game preservation research are challenged. The emancipatory knowledge interest thus adheres to the "critical theory" of the Frankfurt school, which holds that "social theory should be oriented toward critiquing and changing society as a whole", instead of trying to define or explain it (p. 6).

In order to fulfill its emancipatory knowledge interest, the study is reliant on a power sensitive stance of self-critical awareness (i.e. reflexivity), which provides tools by which to better understand and disseminate the power structures involved. By using a reflexive approach, I hope to shed light on the power positions inherent in games as emerging heritage, in order to anticipate and diminish the effects of the potential dogmatism that might otherwise ensue. This stance aims for equal participation opportunities for all the stakeholders involved, and thus for the construction of a more inclusive game heritage.

2.2 Research methodology

2.2.1 Interdisciplinary research and theoretical triangulation

The aim of the dissertation is to help conceptualize the emerging research field of game heritage by applying and combining methods, concepts, and terminology from two existing research traditions. As such, the research methodologies used in this study are an interdisciplinary combination of various approaches. As

interdisciplinary research, the study is joined by most scholarly works dealing with games, since game studies is in itself an emerging field necessarily dependent on findings and approaches in established research (Mäyrä, 2008), but also by the interdisciplinarity of heritage studies, which draws on experiences from anthropology, archaeology, architecture, art, history, psychology, sociology, and tourism (Sørensen & Carman, 2009). As interdisciplinary research, the study is further defined by the use of a diverse "analytical toolkit" (Reunanen, 2017, p. 21).

One way to utilize interdisciplinarity is to employ methodologies of theoretical triangulation. The theoretical triangulation approach is based on Denzin (2017), and it means that the research utilizes more than one method when collecting data. Theoretical triangulation can be used to cross-validate data, but it can also be used to capture different aspects of the research subject. While the positivist nature of theoretical triangulation does not sit well with a cultural constructivist and cultural studies informed approach (Saukko, 2003, pp. 23-24), as such a perspective entails an understanding of "truth" and unchanging disciplines, the study at hand utilizes a theoretical triangulation method in order to combine disciplines by establishing creative tensions between them. Thus, in this study, the emerging research field of game heritage is mapped out by using methods and theoretical frameworks from game studies and heritage research. The triangulation further sheds light on approaches and issues that have been sidelined by the game preservation discourse. As such, theoretical triangulation is used to cross-validate the primary data of the research articles with a diverse set of secondary data provided by the game studies and heritage studies approaches introduced in the literature review. Further, by reflexively juxtaposing the game studies and heritage studies approaches presented in the literature review with approaches that are in use in game preservation research, the study can point towards subjects overlooked by existing research.

While the study was initially planned to contribute to game preservation research and practical museology, in order to support the day-to-day workings of the Finnish Museum of Games, the focus of the study started to shift during the process. Theoretical triangulation and the literature review made it possible to first distinguish aspects and perspectives that were lacking from game preservation research, and then to push the research in those directions. As theoretical triangulation showed how existing game preservation research was lacking in critical analysis of power positions, this made it possible to start looking at existing (critical) heritage research and to import frameworks dealing with heritage as a social and political construct into the game heritage framework. In this way, theoretical triangulation supported exploratory research (Stebbins, 2001; Shields & Rangarajan, 2013), mapping out a

previously unexplored research field defined by critical perspectives and the emancipatory knowledge interest (Habermas, 1972).

2.2.2 The hermeneutic spiral and reflexiveness

Throughout the study, extensive use of the hermeneutic spiral[16] (McKemmish et al., 2012; Mäyrä, 2008, p. 153-154) informs the writing. The use of the hermeneutic spiral has made it possible to finetune and adapt the methodologies and research questions used in this dissertation as the work has progressed. As the individual articles included in the study were not set at the start of the study period, it made it possible to adjust the research aims as the work progressed. The hermeneutic spiral made it possible to examine game preservation and game heritage from various angles by choosing and applying frameworks influenced by existing research in the individual articles, giving the research time to focus on the final approach chosen in the dissertation. Thus, as the research progressed, the individual articles made it possible to pinpoint areas that would be of professional interest to me while simultaneously helping to expand the research field. This kind of approach would not have been possible without the hermeneutic spiral, as the aims of the study were being developed while the work as a whole progressed.

While theoretical, the research is informed by collaboration with various stakeholders involved in the game heritage process. In working with these stakeholders, an emancipatory and reflexive mindset has been utilized in accordance with the double hermeneutic spiral[17] (Giddens, 1984; McKemmish et al., 2012). By utilizing the double hermeneutic spiral and reflexive practice, the study aims to be

16 The hermeneutic spiral is defined as the way in which researchers, in order to properly understand the subject of study, first need to acquaint themselves with the details and particularities of it, which is paradoxically impossible without an understanding of the whole. As such, the hermeneutic spiral helps researchers zoom in on the area of their research by simultaneously learning more of the whole and the particularities. The method was originally referred to as a hermeneutic circle, but that metaphor has increasingly been replaced by that of the spiral, in order to better portray the process by which the research zooms in on the topic of study (McKemmish et al., 2012).

17 The double hermeneutic spiral is associated with designing and carrying out community partnership research, and it refers to the process by which knowledge of the topic is first gathered, and how that knowledge can improve the functionality of various institutions and communities. Giddens coined the term in order to deal with the "mutual interplay" of the social sciences and those "whose activities compose its subject matter" (Giddens, 1984, p. xxxii). Giddens uses the metaphor double hermeneutic circle, but the term double hermeneutic spiral is here used in accordance with contemporary research and relevant supportive terminology in the dissertation.

aware of surrounding power structures and possible biases. As such, the double hermeneutic spiral is utilized to further the reflexiveness of the study by denoting instances where (a) practitioners are aware of the surrounding power structures in which they operate (c.f. Giddens, 1984), an (b) awareness of the biases that exist when games and game cultures are becoming heritage (c.f. Bourdieu & Wacquant, 1992), and the (c) ability of organizations to "reflect on their practices and whether their reflection on the reflections (i.e. their reflexive practice) is supported by learning and changing" (Antonacopoulou, 2004, p. 50).

Furthermore, reflexivity is utilized in three ways: as self-reflexivity, inter-reflexivity, and collective reflexivity (Nicholls, 2009, p. 121-123). Self-reflexivity helps me as a researcher to be more aware of the assumptions, privileges, and power structures that influence the research. Further, it makes it possible to approach situations where my background might influence the way the research is progressing in a self-critical manner. Inter-personal reflexivity, on the other hand, applies to situations where I have collaborated with others, which has mostly been the case with the co-authored papers included in the dissertation. Lastly, the dissertation is engaged in collective reflexivity in the sense that it is working towards social change by critically analyzing who are included and excluded in game heritage processes, and in examining how various stakeholders influence the heritagization of games.

2.2.3 Interpretive research

The research presented in this dissertation is interpretive, in that it understands social reality as being constructed by social and discursive practices, and in that it holds that social reality is best studied by accommodating various subjective interpretations and bringing them together (Bhattacherjee, 2012). As interpretive research, it sets out from the premise that knowledge production is always a social construct and that "theories concerning reality are ways of making sense of the world" (Walsham, 2006, p. 320). It claims that shared meanings exist because they are shared by many people, not because they are objective signs of the world, and that social phenomena need to be studied as part of their social contexts. Furthermore, interpretive research sees the researcher as an instrument of research, as it is the culturally positioned and embodied researcher who can do theory building related to the subject matter (Bhattacherjee, 2012). As such, the dissertation is not interested in testing hypotheses, but rather in making sense of the subject at hand with the help of

conceptualizations and theorizations, as well as understanding how various stakeholders exist in the social realities surrounding the subject.

As interpretative research, the dissertation draws inspiration from theories and methodologies related to critical discourse analysis and representation (Hall, 1997), critical realism (Taylor, 2018), as well as actor-network theory (Latour, 2005). The framework of critical discourse analysis is relevant for understanding how power structures and identities are maintained through representation, meaning, and interpretation in language and social practices. As critical discourse analysis postulates that power resides in the use of language and that discursive practices produce and reproduce unequal power relations between e.g. genders, social classes, and ethnicities (Fairclough & Wodak, 1997, p. 258), the framework provided by critical discourse analysis helps in examining game heritage through the lens of power. It also helps to perceive game heritage as a set of practices that both shape and are shaped by conflicting language use in the meaning-making practices and processes happening around games.

Understanding heritage as discourse means being concerned with signs, representations, and identity, and with how those help to define heritage and its role in society (Scullion & Garcia, 2005, p. 122). As discourse, heritage is not an objective thing that can be observed and preserved, but rather something which is continually produced, constituted, and constructed in language and by discourse. That makes heritage meaningful in the present, as the meanings of the past are constantly being renegotiated in the present in order to shape the future (Wu & Hou, 2015, p. 39). A crucial method of critical discourse analysis is related to representation, meaning it is motivated by examining whose interests are represented by heritage and how heritage represents various stakeholders (Hall, 1997). By analyzing the ways that language represents people and positions them, it is possible to interpret the power relations which are constituting and defining culture and heritage.

Instead of seeing the world as being built and defined entirely by language, the study adheres to a less severe understanding of the relationship of materiality and discourse which is grounded in the epistemological stance of critical realism. Critical realism "defines an objective reality as one that exists independently of individual perception" and discursive practices (Taylor, 2018, p. 217), but the meaning-making and power struggles related to them are firmly grounded in various forms of discursive practice (Smith, 2006, p. 13). Actor-network theory (Latour, 2005) expresses similar concerns, in that it sees reality as a network influenced by both materiality and semiotics, which makes it possible to afford material artifacts with agency. In actor-network theory, the power structures do not automatically default

to semiotic and discursive practices, and stakeholders and artifacts have agency in the complex networks of meaning-making happening in culture. Actor-network theory thus places added importance on the material world around us, instead of attributing power to merely the discursive practices happening in language. This material turn is echoed in "new materialism", which departs from various idealist traditions which understand meaning-making as, in essence, being based on language, and instead prioritizes matter as well as digital processes as a base for meanings (Van der Tuin & Dolphijn, 2010; Parikka, 2012).

For the purposes of this dissertation and in keeping within the framework of actor-network theory (Latour, 2005), critical realism (Taylor, 2018) and new materialism (Parikka, 2012), power is constructed in discourse (i.e. language use), but also by (material and digital) artifacts and networks. Power can thus exist in historical monuments, artifacts, and software, but also in political strategies and the language used to make sense of them, as well as in the ways that stakeholders and heritage artifacts are interacting with each other.

2.2.4 Literature review as a method

This dissertation includes an extensive literature review on game studies, game preservation research, and heritage studies. While a literature review is not typically understood as a method, but rather as theoretical background research (Hart, 2018), it can also be used as a method (Onwuegbuzie & Frels, 2016). As such, while a literature review is typically done in order to provide a systematic search of previously published research in order to identify what is in one way or another relevant to the topic at hand (Gash, 2000), it can also function as a separate study of previous knowledge in the field (Onwuegbuzie & Frels, 2016, p. 49).

The literature review is commonly understood to be the area of research where the researcher positions themselves with respect to other sources and where connections to other research are made (Ridley, 2012, p. 2). It is where the researcher identifies previous research which has influenced their choice of research topic, where gaps in previous research can be identified, and where the researcher reflexively positions themselves in relation to other research. This study includes an extensive literature review on relevant game studies and heritage studies, as well as game preservation research. The literature review functions as the basis for theoretical triangulation (Denzin, 2017), which makes it possible to complement the

field of game preservation with theorizations and methodologies from other disciplines.

When dealing with the literature review as a method, it is important to explicate how the reviewer chooses "from an array of strategies and procedures for identifying, recording, understanding, meaning-making, and transmitting information pertinent to a topic of interest", thus effectively choosing what to include in the literature review and on what grounds (Onwuegbuzie & Frels, 2016, p. 49). In this dissertation, the literature review developed organically and qualitatively. It came to be through applying the hermeneutic spiral, instead of being born out of a quantitative and rigorous meta-analysis of previous research. While the literature review has aimed to systematically cover the various perspectives provided for in game preservation research, previous research from game studies and heritage studies are used pragmatically on a case-by-case basis. This approach was chosen because the amount of research written on both heritage studies and game studies is prohibitively large, and because the exact areas of inquiry relevant for this study were not known from the outset.

2.2.5 Participant observation and heuristics

This is a deeply personal work, arising from professional concerns in my occupation as a museum researcher and curator. As such, my personal and work experiences are in many cases relevant for the formation of the theorizations of games as heritage that are produced by the study. This kind of research based on work experience can be conceptualized as containing elements from heuristic evaluation in usability engineering (Korhonen, 2016) and participant observation in ethnography (Brewer, 2000). They are both methodological constructs that can be used to verbalize how I have been able to produce knowledge which is relevant for my own field of professional expertise. While I have not rigorously followed either of the methodologies mentioned, heuristics and participant observation can be used to frame my position in relation to my research subject.

Firstly, the study shares qualities with a heuristic evaluation approach, as it uses my knowledge as a museum professional in order to provide an expert review on game heritage issues (c.f. Korhonen, 2016). As the study is to a large extent based on my previous work and research experience with preserving and exhibiting games at the Finnish Museum of Games and my knowledge of the heritage processes taking place at other GLAM institutions, my background as a museum professional

supports my position as a reviewer in the heuristics sense. In this, it is important to remember that heuristics does not provide absolute truths, but it can provide a "close-enough solution" (Paavilainen et al., 2018, p. 264) that helps researchers to analyze and manage the various aspects related to their field of study. As such, the study utilizes "close enough" solutions that are sufficient for reaching the immediate goal of understanding what game ontology and stakeholders are.

Secondly, my personal experiences can be conceptualized via the methodological toolkit provided in the research tradition of ethnography (Brewer, 2000). While the dissertation has not applied a rigorous participant observation methodology (Musante & DeWalt, 2010), participant observation informs the study in the sense that it is based on both my own experience in working with museums, but also in my experience of playing games and being part of various game communities.

As a fan, my position is like the one occupied by scholars in subcultural studies, where researchers are or have typically been members of the communities they are researching (Reunanen, 2017, p. 14). MacRae (2007) differentiates between three kinds of relationships between subcultures and researchers: outsider-in, outsider-out, and insider-in. My position as both a game enthusiast and museum professional can be understood through the concept of insider-in, which means that I have already been a member of these communities before starting the research, in contrast with the more traditional ethnographic position of outsider-in, or the more theoretically informed outsider-out approach. While the dissertation shares qualities with all three participant observation positions through a complex interplay between my roles as game community member, museum curator working with games, and game heritage researcher, the insider-in experience makes it possible to offer solutions and working practices drawn from the experiences I have had in these roles that exist outside my position as a researcher.

2.2.6 Ontology development

An ontology can be defined as "an explicit specification of a conceptualization" (Gruber, 1993), i.e. a simplified and abstract view of the world that is made and specified for a particular purpose. An ontology is thus "a formal explicit description of concepts, or classes in a domain of discourse", where the various slots describe features and attributes, and the slots have various ranges of values (Stojanovic, 2004, p. 10:2). All information systems are committed to some kind of ontological conceptualization, whether explicitly or implicitly (Guarino et al., 2009). As the study

at hand touches upon systematic ontological issues related to archiving games, it is also, by necessity, engaged in ontology development.

Ontologies can be constructed by various means. While there exist specific methodologies for computational ontology construction (e.g. Jones et al., 1998), this study utilizes the scenario technique, which is in widespread use in software development as a form of agile development tool (Carroll, 2000) used to quickly model a way to approach the subject at hand. This kind of scenario approach can e.g. help to unify criteria and concepts, stimulate thinking, and help trace requirements, thus validating information that is conceptualized by the ontology. For the purposes of this study, the aim is not to provide a full information sciences ontology, but rather to build a framework from which to construct one. The ontological model of game heritage presented here is a high-level theoretical construct that still needs to be operationalized in actual museum work in order to build databases and exhibitions, as well as to make sense of the various aspects of game heritage in systematic collections.

2.3 Research ethical considerations

Because of its theoretical and interpretive nature, this dissertation does not directly deal with research ethical questions related to data collection and management (Pimple, 2002). Research ethical concerns related to conflict of interest (Griseri & Seppala, 2010) are present, however, as participant observation easily leads to conflict of interest since it is easy to be biased when researching one's object of interest (Musante & DeWalt, 2010). In broad terms, conflicts of interest are present when individuals or institutions are able to exploit their position for personal or institutional benefit. Conflicts of interest can further be conceptualized as a conflict between the primary research interests, such as research integrity and validity, and secondary interests, such as personal benefit and financial gain (e.g. Davis, 2013; Thompson, 1993).

As conflicts of interests can disrupt or compromise the research and peer review processes, and thus affect the integrity and reliability of all stakeholders involved, it is important to declare them, even if there is no significant monetary gain involved (Griseri & Seppala, 2010). Conflicts of interest are not intrinsically wrong, however, as they can be managed and assessed (Davis, 2013) since they are complex non-binary phenomena that are "more or less severe" (Lo & Field, 2009, p. 2/7), and a "condition and not a behaviour" (Thompson, 1993, p. 1). In my research, conflicts

of interest originate from my positions as a game enthusiast, museum professional, and researcher examining games in GLAM institutions. My secondary interest, e.g. the prospect of professional advancement or the wish to treat stakeholders such as donors and affiliates in a positive light, can potentially jeopardize the primary research interest at hand.

A reflexive approach susceptible to the power positions involved (e.g. Rose, 1997) can be helpful in declaring, assessing, and managing secondary interests. As such, I have acknowledged my position as a curator and game enthusiast and declared that these positions have the potential to unduly influence my writing on game heritage. I need to consider the possibility that, in order to further my work, I might be tempted to be less critical of my professional work and try to hide potentially negative connotations. As the study at hand is directly connected to my work experience at the Finnish Museum of Games, and many of the case studies and examples used come from either the institution that I am employed at or from institutions and stakeholders I am affiliated with or in direct competition with, my dual position has potential secondary interests, although not monetary in nature.

Further, as museums are active stakeholders in the heritage process, with their own agendas and power positions, researchers need to acknowledge the gatekeeping power positions of curators and museum professionals, and similarly subject them to reflexive scrutiny. Researchers dealing with game heritage, in striving to act from an emancipatory knowledge interest, need to mitigate social harms related to the various stakeholders involved in the game heritage process by being inclusive, as well as be sensitive to the viewpoints already proposed by the stakeholders involved.

2.4 Summaries of research articles

2.4.1 Article I / Nylund, N. (2017). Preserving game heritage with video interviews: A case study of the Finnish Museum of Games. *Finskt Museum*, *124*(1), 8–27.

Article I, published in 2017, investigates the potential of game developer video interviews for museum work. In the article, fourteen video interviews from the collections of The Finnish Museum of Games are analyzed for their content, and their ontology as museum artifacts problematized. The focus of the analysis is on the views expressed in the interviews and not on the interview process per se.

Theoretically, the article is situated at the meeting point of game studies and cultural heritage research. By closely reading interviews that have first been systematically classified and organized into four thematic categories, the article shows the different ways that the interviews act as accounts of game work processes and development that are important for game preservation measures, and as game heritage. From this standpoint, the paper examines how (a) game makers talk about their games in a museum context, and (b) how it makes video interviews valuable from a museum perspective.

The analysis highlights that games turn out the way they do because of various, often counterintuitive reasons. The values and themes expressed in the interviews expand our understanding of game cultures and heritage. Game developers' oral histories of their work, their reminiscence of the creative processes and skills and know-how diversify our understanding of game cultures. While researchers and preservationists need to keep in mind that game developer interviews do not preserve the skills, know-how and work processes per se, but rather the interviewees' opinions and reminiscences on those, the way the ideas and work processes are vocalized in interviews helps preserve aspects of game heritage that would otherwise be lost.

Article I closes by evaluating video interviews as museum artifacts and their suitability for preserving digital games. In the discussion, repercussions for the museological processes related to the interviews, as well as the ontology of the interviews, are examined in greater detail. In summary, video interviews with game developers are included in the museum collection because they preserve game making history and the intangible experience-based part of cultural history and heritage, but their ontology in museum collections is not clear. While context-oriented preservation work in museums has utilized contemporary collecting methods (ethnographic observation, audio and video interviews) since at least the 1970s, the video interviews further problematize the ontology. The study shows how the examined video interviews can be ontologically defined as either metadata (for the games they deal with) and as independent digital artifacts in their own right, and argues for how the latter option is ontologically more suitable for game museum work.

In conclusion, there is a need to understand game heritage in broader terms than just by looking at playable games and the physical components of games. The interviews re-define game related heritage by including intangible ideas, skills and thoughts as museum objects. In the case of the Finnish Museum of Games, video interviews should be understood less as context information that provides a deeper

understanding of (tangible) museum objects, and more as (intangible) museum objects in their own right.

2.4.2 Article II / Nylund, N. (2018). Constructing Digital Game Exhibitions: Objects, Experiences, and Context. *Arts*, *7*(4), 103–117.

Article II deals with games on display in museums, galleries, trade fairs, and similar public places. It draws on different traditions and approaches, aiming to build conceptual bridges from game studies and game preservation research to museology, museum pedagogy, heritage studies, and the study of exhibitions. Based on an extensive literature review and four case examples, it proposes a new way of conceptualizing game exhibitions by understanding games on display as constructs consisting of objects, experiences, and context.

The paper is based on a literature review on game preservation research, as well as research dealing with interactivity and learning, which allows for a more nuanced understanding of what constitutes the game exhibition experience. With the help of the literature review, the paper builds a theoretical argument for understanding games on display and provides a comprehensive model and vocabulary for understanding them. The systematic thematic analysis applies the model to four games on display at the Finnish Museum of Games and identifies artifact categories relevant for the analyzed games. The four case examples highlight the existence of the various aspects of games on display. The paper then arranges the various artifacts on display into five overarching categories informed by the author's knowledge of museum work practices. The categories are further conceptualized as a model presenting games as constructed out of objects, experiences, and context.

The paper contributes to building a critical vocabulary for talking about and understanding games on display, which can be used in analyzing, planning, and criticizing game exhibitions. It provides theoretical connections between game preservation research and the established fields of museum and heritage research. The main argument of the article shows how games in exhibitions can take many different forms, of which playable emulations or original experiences are not always the most fruitful or desirable, although they are the ones that have garnered the most attention in game preservation research. By understanding games as constructs, conglomerations, or assemblages, the article accentuates how game preservation research is not only a technical field that needs to solve issues related to game playability, but also a field that needs to better understand other types of preservation

techniques and approaches already in use in various museums and other heritage institutions.

While the article deals with games on display, it has implications for game preservation at large. The article points out how game preservation research needs a better framework for understanding how exhibitions are active meaning-makers. As cultural heritage is always constructed through active agency by the people managing collections and setting up exhibitions, game exhibitions and their curators are active participants in the construction of cultural artifacts and game-related cultural heritage. Deciding on the types of games to include, but also on what kinds of aspects to include from those games, is one of the ways that curators exert the inherently ideological influence they possess. Article II helps game exhibitions and their curators to be more aware of the choices they are making when displaying games and constructing game heritage.

2.4.3 Article III / Prax, P., Sjöblom, B., Eklund, L., Nylund, N., & Sköld, O. (2019). Drawing Things Together: Understanding the Challenges and Opportunities of a Cross-LAM Approach to Digital Game Preservation and Exhibition. *Nordisk Kulturpolitisk Tidsskrift*, *22*(02), 332–354.

Digital games have become a prominent part of contemporary culture and society, but the popularity and impact of games has not solved the challenges game preservation faces regarding e.g. curation, preservation efforts, documentation, and exhibition practices. Most preservation challenges stem from the characteristics of digital games: born digital and frequently updated, they are both interactive and modifiable, giving players and communities ample opportunities for co-creation and participation. Article III investigates the challenges and opportunities implicit in LAM[18] convergence regarding game preservation, examining key stakeholders beyond LAM institutions such as rogue archives (De Kosnik, 2016) and other kinds of participatory and player generated preservation resources.

The aim of the paper is to critically investigate research policy around LAM convergence from the perspective of the participatory creation of games. Two studies of museum work practices at the Finnish Museum of Games and the

18 Contrary to the PhD introduction as a whole, Article III does not include galleries in its scrutiny but rather deals explicitly with LAM (Libraries, Archives, Museums) institutions. This derives from the fact that it is primarily interested in collecting and long-term preservation rather than in exhibiting games.

National Swedish Museum of Science and Technology form an empirical basis for the study. The cases are not meant to be representative of museum practices, but instead have been chosen as relevant examples for showcasing the possibilities of participation in the process of the creation of game exhibitions. The analysis focuses on how museums have collaborated with third parties like game creators, players, and researchers in order to create the particular element of the exhibition. The paper shows how co-curation practices can produce very interesting museum artifacts that transgress traditional museum practices, but also that a co-curation process very much depends on collaboration between LAM institutions and co-curators like game developers and game community activists, and that they need to trust the institutions they are working with. The analysis also shows how the power relationships between museums and other stakeholders are asymmetrical, which can influence the ways that the co-curation process turns out.

In the discussion, the paper argues that convergence should not stop at established LAM institutions but include rogue archives, game producers, player creators, and game communities, because they are already preserving games and game culture regardless of LAM institution agendas, and have insider knowledge of what needs to be preserved and how. Collaboration also ties into ideas of participation that game cultures are already familiar with.

2.4.4 Article IV / Nylund, N., Prax, P., & Sotamaa, O. (2020). Rethinking game heritage–towards reflexivity in game preservation. *International Journal of Heritage Studies*, 1–13.

While games and the communities playing them all have their own agendas and aims, many game exhibitions are based on a limited understanding of games that relies on the dominant perspective of one particular demographic, specifically young white male gamers. Article IV argues that games should be understood as being a part of culture at large, rather than as a self-governing cultural sphere dominated by white males. Starting off from Shaw's (2010, p. 416) definition of "games in culture" that are being played by people of "all ages, genders, sexualities, races, religions, and nationalities", the paper argues for a critical, participatory and reflexive understanding of game heritage.

By connecting previous work on critical heritage studies with game research, Article IV aims to emphasize the importance of including diverse game cultures and communities as part of game heritage. The paper's primary aim is to bring these

perspectives together to gain an understanding of game heritage as both productive and inclusive, and to help heritage institutions reflect on their practices. The critical analysis of the power positions of stakeholders involved in defining game heritage is also related to the normative aim of democratizing and broadening the "cultural heritage process" (Smith, 2006). Article IV is a theoretical paper and it is not collecting data or explicitly discussing case studies. It is part of museum working practices research (MacLeod, 2001), as it is using relevant examples from recent game museums and exhibitions and the experiences of the authors who have worked at the Finnish Museum of Games and the National Swedish Museum of Science and Technology.

Article IV contributes to game preservation research by defining the intangible heritage processes of games, and conceptualizes a way of looking at museums and other heritage institutions as active stakeholders in the game heritage discussion. The article also contributes to the ontological discussion around games as heritage, as it provides perspectives on game heritage covering activities besides saving playable games, instead pointing towards the importance of preserving the various historical contexts of games and their ideological and political dimensions. Article IV additionally argues for a more inclusive understanding of games as heritage. While amateur historians and game collectors have been working to preserve many individual platforms and their games, they have not been working for a more nuanced understanding of game heritage and the various play communities that constitute it. In conclusion, Article IV conceptualizes a more practical understanding of games, game cultures and play as cultural heritage, as well as argues for a more inclusive definition of game heritage.

2.5 Research questions

On a high theoretical level, this study is concerned with digital games as heritage. It can be defined as exploratory research (Stebbins, 2001; Shields & Rangarajan, 2013), mapping out a new theoretical field and a new set of problems. As such, it follows the practical knowledge interest (Habermas, 1972) to engage in theory building (Steiner, 1988), as well as the emancipatory knowledge interest (Habermas, 1972) in order to help museums and other GLAM institutions mitigate stakeholder concerns. To reach its high-level theoretical goals, the dissertation aims to conceptualize operational definitions and establish priorities for the emerging research field of game heritage. Mapping out a new theoretical field that is parallel to game

preservation but influenced by game studies and heritage studies, the dissertation aims to provide insight into the sub-fields and sub-questions related to games as heritage and the power structures influencing those.

The research articles included in the study support the theoretical concerns and research aims outlined above. Article I deals with the role of developer interviews in the meaning-making processes of game heritage, as well as their ontology. Article II, in turn, deals with how games should be understood in museum collections, and points towards a theoretical model for understanding games as assemblages. Article III, on the other hand, explores the nature of games as a participatory culture that GLAM institutions can gain from cooperating with, and Article IV analyzes the power positions of game stakeholders involved in the game heritage process. In order to further establish their role in the dissertation, Table 3 compiles the content, theoretical and methodological framework, and research questions of the included research articles.

	Author(s)	*Publication*	*Research question(s)*	*Methodological framework*
Article I	Nylund	Finskt Museum, 2017.	(1) How do game makers talk about their games in a museum context? (2) How does it make video interviews valuable for museum collections?	Literature review of game preservation and cultural heritage research, case study of 14 video interviews with Finnish game developers.
Article II	Nylund	Special Issue on Born Digital Cultural Histories / Arts 2018.	(1) Can games on display be understood as being constructed out of three different aspects: object, experience, and context?	Extensive literature review of game preservation and cultural heritage research, case studies of 4 games on display at the Finnish Museum of Games.
Article III	Prax, Sköld, Eklund, Sjöblom, Nylund	Nordisk Kulturpolitisk Tidsskrift, 2019.	(1) What can political and agonistic participation look like in the practical context of a museum and what can we learn from this for cultural policy?	Literature review of participation in game studies and heritage studies, case examples of co-curation at the Finnish Museum of Games and participatory design at the National Swedish Museum of Science and Technology.
Article IV	Nylund, Prax, Sotamaa	Special Issue on Video Games and Cultural Heritage / International Journal of Heritage Studies, 2020.	(1) How can we understand game heritage as both productive and inclusive? (2) How can heritage institutions reflect on their game related practices?	Literature review of game preservation research and critical heritage studies. Case examples from the Finnish Museum of Games and the National Swedish Museum of Science and Technology.

Table 3. High-level overview of the included research articles, their authors, publication venues, research questions, as well as a presentation of how they contribute to the sub-research questions of the study

In the above, I have mapped the research contributions of the four articles included in the dissertation. As stated, the key research aim of this theoretical study is to better understand and describe the nature of digital games as cultural heritage, as well as what kinds of power struggles exist between the stakeholders involved. On a more practical level, the study aims to outline an ontology – both in the philosophical and information sciences senses of the word – of digital games as heritage artifacts, to define the meaning-making processes of games, as well as to provide a working taxonomy of the stakeholders of games. In addition, the study follows the emancipatory knowledge interest in order to map out the tensions between the various stakeholders of game heritage and to point towards possibilities for museums as proponents of social justice to work for a more inclusive game heritage.

In the following, I operationalize the aims addressed above into four sub-research questions and one main research question synthesizing them. First, the overarching aims of the study are operationalized through four sub-research questions looking at game heritage processes from various perspectives.

1. Who are the stakeholders of game heritage?
2. How can the ontology of game heritage artifacts be articulated?
3. How does heritagization affect games?
4. How does participation affect the power positions of heritage stakeholders?

Based on the theoretical framing, as well as the content of the individual articles, the main research question of the dissertation provides an overarching frame of understanding by asking:

- What is game heritage and how can the stakeholders involved be treated in an inclusive manner?

In Table 4, the impact of the individual research articles on the results of the study are mapped out in added detail. With the help of the table, it is possible to discern which articles work towards which results. Each sub-research question is dealt with

in a sub-chapter of the results in chapter 4. The included articles further work towards answering multiple sub-research questions.

	Article I	*Article II*	*Article III*	*Article IV*
(1) Who are the stakeholders of game heritage?	**X**		**X**	**X**
(2) How can the ontology of game heritage artifacts be articulated?	**X**	**X**		**X**
(3) How does heritagization affect games?	**X**	**X**	**X**	**X**
(4) How does participation affect the power positions of heritage stakeholders?		**X**	**X**	**X**

Table 4. Overview of how the included articles participate in defining the results of the PhD introduction

3 THEORETICAL FRAMEWORK

3.1 Cultural heritage processes

3.1.1 Power relations in cultural heritage

In this sub-chapter, the study explores cultural heritage from a power perspective, establishing a theoretical framework for heritage and GLAM institutions, as well as examining their societal roles. It first defines heritage as a discursive process, then covers its power structures, and after that deals with the complex meaning-making processes by which heritage is constructed in GLAM institutions. The aim of this sub-chapter is to provide a critical cultural heritage perspective by which to approach game heritage as a social construct.

While the drive to preserve heritage was, at least until the 1960s, connected to the *essentialist* (Dudley, 2013) urge to conserve old ways and thus to suspend culture into an ideal of the past, the procedural nature and social significance of heritage is emphasized in contemporary research. As such, contemporary socio-constructivist views of heritage define it as a set of practices that produce heritage through meaning-making processes grounded and based on physical artifacts and the past (e.g. Smith, 2006; Schofield, 2016). Heritage is thus not an absolute or objective fact, but rather always related to a specific time and place and specific social and cultural circumstances (Rizzo &Throsby, 2006). Smith (2006, p. 44) further suggests that heritage should be understood as a "cultural process" engaging with various sites and objects, in order to engage with the present. Sites and objects are "facilitators" that help to start and focus various meaning-making processes going on around them, but they nor their qualities are not inherently important for meaning to be created. As such, heritage is constructed through active measures by cultures, people, and institutions, making it inherently ideological (p. 11).

A key aspect of heritage, as defined above, is how it is always connected to the values of communities and peoples. All communities and cultures exist in and via the discursive meaning-making processes language makes possible. They are constantly changing and re-inventing themselves, and heritage is one of the meaning-

making tools they utilize in this process. Heritage can be seen as social action, by which things and places not only become heritage as a result of communal identity building, but that a sense of heritage is crucial for the long-term survival of communities in the first place (Byrne, 2008, p. 24). But, as various cultures and communities have conflicting understandings of the past, often connected to ideas and perceptions related to e.g. identity, community, and nationality, it also makes heritage a site of discursive struggle between various stakeholders (Graham et al., 2000).

The discursive struggle is about what should be regarded as heritage, but also about the meanings that are attached to it and by whom, as "interpretations can be imposed by one social group on another" (Bartel-Bouchier, 2016, p. 12). As every human activity, including places, objects, and customs, has the potential to be dealt with as heritage, the forms of culture that become elevated to heritage are chosen from a larger set of potential heritage. GLAM institutions are at the center of "certifying" certain cultures and their histories, while silencing others (Stylianou-Lambert et al., 2014, p. 577). Smith (2006) argues how the inherent racism of very specific "Western elite cultural values" is revered in museums at the expense of other heritage discourses. As such, heritage institutions are naturalizing the superiority of Western values as an "authorized heritage discourse" by working for an understanding of heritage by which the Western elite cultural values are revered.

Still, the authorized heritage discourse produced by hegemonic institutions and individuals are continually joined side-by-side by various "countermemories" and various forms of valorization of dissident voices (Smith, 2006, p. 13). Another, more inclusive, approach in GLAM institutions is gaining significance, as exemplified by the Faro Convention and ideas related to cultural sustainability.[19] This new definition places more importance on the people and communities actually interacting with the heritage in the first place and understands its position as a constantly changing system of values, which is not stuck in a particular definition (Schofield, 2016, p. 5).

All heritage institutions, but especially museums, have a definite position in the power struggle defined in the above, as they are "making" cultural heritage as part of the curatorial choices of what to include in the collections (Carman, 2010). While libraries and archives are mostly bound by national law, museums instead obtain

19 The introduction of the concept of cultural sustainability (Stylianou-Lambert et al., 2014; Soini & Birkeland, 2014) has been an attempt to apply social inclusion and intercultural dialogue into the heritage discussion, further underlying the potential of heritage to deal with progressive ideas instead of consolidating established values.

artifacts for various reasons, having to do either with their rarity or their familiarity, their provenance and physical condition, as well as legal restrictions and the size of the collections premises, relying on their curatorial expertise to pick-and-choose what to take into their collection (e.g. Malaro, 2005, p. 14). As active participants in the transition of "things" and "objects" into museum artifacts, museums and their curators, collections and exhibitions are active meaning makers, constructing heritage through their decisions on what to exhibit and preserve. Museums are thus part of the complex meaning-making practices that are making, interpreting, conserving, and negotiating heritage as a cultural phenomenon.

The process by which museums make artifacts has been conceptualized as musealization (Maranda & Emerita, 2009). Musealization not only makes artifacts but also transforms them from one state to another, by taking them away from functioning environments to a place of examination, conservation, and generally being looked at instead of physically interacted with. They become musealized by a process that takes away their past as functional objects and makes room for a present where they are documented by various metadata procedures and dealt with as knowledge. Museums are thus using their exhibitions and collections as representations in two meanings of the word: firstly, in making the past present again, and secondly as a reflection and remodeling of the real (Prendergast, 2000, p. 4). Museum artifacts are constantly mutated and recontextualized, as they are re-evaluated and re-defined and given different roles in exhibitions and other meaning-making processes that museums engage in (Guins, 2014, p. 9).

The term heritagization, on the other hand, explains how things are legitimated as heritage. The process entails associating heritagized artifacts with values beyond their everyday existence, which can be rationalized as a way to preserve the inherent "cultural values" they possess, but critical readings have shown how this kind of legitimation is a way to sidestep the complex power structures of the heritage process (Fontal & Gómez-Redondo, 2016). While GLAM institutions are the primary instruments for legitimizing heritage, it can also be self-legitimized by individuals, communities, and various participatory heritage stakeholders. As such, it is often an important component of the identity of the participants engaging with it, and the term identization explains how communities make heritage part of their identities in order to take control of it (p. 75).

As seen, the ways that stakeholders interact with heritage can have widely different, and indeed contradictory, implications and motives. All heritage stakeholders are part of a power struggle to influence what heritage is understood to be. Museums are established and run based on their unique priorities, so they might

champion values as varied as "national identity, cultural tourism, the need for local economic revitalization, micro-interests, and personal agendas" (Sandis, 2014, p. 581), making them and their goals widely varied. The position of museums is further complicated by economic imperatives and the need to attract visitors. With heritage tied to economic realities, heritage institutions and their funders are not always interested in the darker and unethical aspects of the past. "Dark heritage" and "atrocity heritage" are concepts signifying challenging history, and much of heritage studies is interested in also preserving these phenomena, instead of heritage discourse being driven merely by nostalgia and the economic imperatives of the tourism industry (p. 15).

3.1.2 Tangible, intangible, and digital artifacts

In this sub-chapter, the study covers contemporary ideas related to the ontological nature of various kinds of museum artifacts. This is done in order to provide a theoretical framework for examining the ontologically complex nature of games and the various kinds of artifacts that are linked to them. In order to reach this aim, the literature review first takes a more in-depth look into the nature of tangible, intangible, and digital conceptualizations of heritage. The actual relationships between the various concepts, particularly in combination with digital games, are explored to fuller effect in the results in chapter 4.

The "museal project" started in the 19th century is in many ways intertwined with ideas of modernity and the nation state, but also on a focus on material culture and objects, in which museums have been seen to have the primary purpose of collecting (Bennett, 2013). The essentialist model of museums (Dudley, 2013) has emphasized a model of heritage that is composed of objects and artifacts, which has accentuated the visible, physical, and material nature of heritage on the expense of the immaterial, discursive, and intangible (Munjeri, 2004, p. 13). These various manifestations of material culture in heritage institutions are routinely grouped under the concept of tangible heritage (e.g. Mairesse & Desvallées, 2010).

While the essentialist model of museums sees museum artifacts as capable of accumulating and conveying information by documenting the reality and culture they come from in their "physical and semantic structure" (Maroevic, 1998, p. 178), this kind of positivist materialistic framework is now increasingly challenged by research framing museums as systems of representation giving meaning to and validifying the objects they exhibit (Hall, 1997, p. 205). The representational model states that

material artifacts and the exhibitions and collections they are included in are representations of past events, but they are never directly conveying information about them. Similarly, the materiality of artifacts is highlighted by discussions about how their potential for activity is taken away from them when they have entered museum collections (Guins, 2014, pp. 35-36). This conception goes back to Heidegger's separation of an artifact's "work-being" and "object-being" in "The Origin of the Work of Art" (2017), which postulates that while the "work-being" of museum objects stops when they are entered into museum collections and are no longer set in their "natural" context, their "object-being", i.e. potential to convey meaning through their materiality, is still an essential part of them even after they are acquired into museum collections.

The concept of the aura of originals, as discussed by Benjamin (2015) and others (e.g. Bolter et al., 2006; Hoberman, 2003), is yet another enduring philosophical topic in collections management. By the aura, Benjamin means the "unique existence" of rare and unique artifacts, as juxtaposed to mechanically (or digitally) mass produced artifacts which have lost all signs of authenticity. Silverman (2015) reminds us that rarity is a social construct based on the materiality of things, but with attached complex layers of discursive meaning-making like the process by which physical artifacts and sites are naturalizing heritage (Smith, 2006). One way to produce uniqueness and aura in museums is to document the unique history and background that artifacts have. The term provenance in contemporary cultural history museums (e.g. ICOM, 1995, p. 255) is used to detail the history of ownership of artifacts.

In contrast with the material, modern heritage practice and policy (e.g. ICOM, 2007; UNESCO, 2003a; Munjeri, 2004) emphasizes the skills, practices, and meaning-making processes that make sense of material artifacts. As such, intangible and tangible aspects components are increasingly interconnected in a "symbiotic relationship" (Bouchenaki, 2003). As seen, the intangible approach argues that what makes heritage sites and artifacts valuable are the discursive meaning-making processes undertaken at and around them (Smith, 2006). The shift towards intangible meaning-making practices has put pressure on GLAM institutions for learning new skills and processes, since the legal, administrative, and collections-management measures that are used for protecting tangible heritage are inappropriate for safeguarding the "systems of knowledge" and "specific social and cultural contexts" of intangible heritage (Bouchenaki, 2003).

As dealt with in the above, essentialist positivist materialism (Dudley, 2013) has been challenged by the discursive turn (Smith, 2006), but actor-network theory and new materialist frameworks in turn challenge representational ideas by giving agency

to artifacts as conveyors of meanings (e.g. Parikka, 2012) and by problematizing relations between material artifacts and social meanings (Waller, 2016). Critics argue that the concept of intangible heritage is a misguided attempt to understand tangible artifacts through the values attached to them through their use, instead of highlighting the interconnectedness of materiality and use (Carboni & de Luca, 2016, p. 110), and highlight how the division into tangible and intangible heritage is a recent social construct not based on existing museum work practices and processes, making it impractical for actual preservation work.

As such, heritage is defined both by its materiality and the meaning-making processes that are based on it. Heritage is simultaneously material and discursive, and material artifacts can be understood as actors in the sense that they can influence networks and their power struggles (Latour, 2005). This dual nature of artifacts as both tangible and intangible at the same time harks back to the idea of a "discursive-material knot" (Carpentier, 2017), where the two components of meaning-making cannot acceptably be separated from each other.

But, in order to fully understand games as cultural heritage, there is a need to look beyond tangible and intangible heritage and into the realm of the digital. UNESCO (2003b) has defined digital heritage as embracing various kinds of digitally created information, both born-digital[20] and digitized, and foreseen that its role in GLAM institutions will grow as individuals and communities start to realize its importance. Still, including digital artifacts in collections means perceiving them through the lens of existing museum work processes and as part of a broader heritage paradigm (Cameron, 2007), although research into digital heritage (e.g. Abrams, 2015; Becker, 2018) has shown how digital artifacts[21] are suffering from definitional inconsistency, making those processes difficult to operationalize.

Digital artifacts have a life on many different layers. For programmers they are text files, for the operating system they are binary code, on the level of circuit boards they are voltages and logic gate operations, for modders they are a starting point for

20 While digital heritage also includes artifacts that are digitized, i.e. have been migrated into digital form, it is obvious that the most vulnerable part of digital heritage will be artifacts that are born-digital, and thus have no other format than their original digital form (UNESCO, 2003b).

21 Several different definitions for digital objects and artifacts exist, for example Kahn and Wilensky (1995), which states that a "digital object is a data structure whose principal components are digital material, or data, plus a unique identifier for this material", or Payette et al. (1999), which states that "a digital object model […] enables the aggregation of distributed, heterogeneous elements or streams of data to create complex multimedia objects." In the following, the term digital artifact is preferred over digital object in order to highlight the complex nature and ambivalence of digital heritage (c.f. Kallinikos et al., 2013).

creative endeavors, and for users they look like functional programs, so they are defined by their incompleteness, malleability, and ambivalence (Kallinikos et al., 2013). All this makes digital artifacts, such as digital games, a prime example of what, in the information sciences, have been called complex artifacts[22] (Anderson et al., 2013), which are difficult to pinpoint because they have distinct properties that are not always comparable to each other. Complex (digital) artifacts are defined by multiple layers of complexity. The first level of complexity involves the interconnectedness between digital artifacts and their technical environments. Secondly, complex digital artifacts are also made more complex because, as Dobreva and Duff (2015, p. 97) state in their editorial, "the contexts of use in which these objects need to be captured, preserved, and re-created continue to evolve".

In practice, digital artifacts have been approached by defining their "essential features", i.e. the "significant properties" of the user experience (Becker, 2018, p. 15). Significant properties exist in the "grey area where the technical and the social meet" and need to be defined independently of the software, by considering how people interact with computer programs (p. 32). But even using the metaphor of digital *objects* and *artifacts* sidelines our understanding of digital heritage (p. 29). The technical "integrity" of digital objects is not always necessary for "authentic records" and functioning digital object preservation. Actual damage to digital objects occurs through "loss of relationships between elements, whether through link rot, obsolescence, or lack of metadata", all of them inherently connected to the use of the digital objects (p. 29). Digital objects are thus more like experiences or instances than actual static things, and significant properties are to be understood as "mechanisms that allow curators to specify shared understandings of what constitutes authentic reproductions of digital objects", which necessarily happens on a case-by-case basis, depending on the results that are desired out of the preservation process (p. 32). As such, digital artifacts belong to the category of "technical objects" that are defined by their use (Hui, 2012, p. 381-384), but in contrast to tools and machines, they do not in the full sense of the word exist outside of their use.

22 Anderson et al. (2013) write about complex objects, but the term is here substituted with complex artifacts.

3.1.3 Participatory heritage practices

In this sub-chapter, the study examines participatory practices in heritage. This is done in order to explore and define how participatory historiography and preservation have been at the center of game heritage since various amateur historians, online heritage communities, and rogue archives have started to deal with game heritage and established GLAM institutions have commenced to cooperate with them. In order to better understand participatory heritage processes, the research first investigates stakeholder management issues, then levels of participation, and lastly curatorial power, gatekeeping positions, and their role in inclusion and exclusion. The implications of these participatory processes are further developed in the results in chapter 4 and in the discussion in chapter 5.

To start with, heritage needs an audience (e.g. communities, exhibition visitors, scholars) to make sense of it. It is only through visitor engagement that museum artifacts gain their meanings and become properly manifest (Dudley, 2013, p. 5). As seen, the procedural nature of heritage is to a large extent dependent on how various communities, institutions, and individuals engage with it, thus participating in meaning-making through both maintaining and questioning the cultural meanings it has (Smith, 2006, p. 87). Heritage is only kept alive when engaged with, and Byrne (2008) goes as far as stating that heritage can be understood as social action, so if various communities engage with their past, it helps said communities to thrive and stay alive.

The concept of participation implies several stakeholders. The concept of stakeholders was first developed in management studies (Freeman, 1984), where stakeholders were seen to influence the work done in organizations in significant ways. In tourism studies (e.g. Waligo et al., 2013; Aas et al., 2005), the concept has been used to shed light on the various interests that are significant for the tourism industry's sustainability. As such, stakeholder theories have scrutinized the tourism industry, but also the aims and hopes of people living on tourist sites and the interests of heritage preservation, and argued how giving communities access to ownership and custodianship of their heritage can mitigate potential confrontations between the stakeholders involved (Aas et al., 2005, p. 33).

As such, stakeholder models claim that heritage is being engaged with and constructed by a vast and complex network of institutions, individuals, communities, associations, and nongovernmental organizations (NGOs), all of which "recreate" and "nurture" the meanings of heritage by actively dealing with it (Severo & Venturini, 2016, p. 1617). Hajialikhan (2008), for example, identifies ten different

stakeholders[23] when dealing with heritage sites. Styliano-Lambert et al. (2014, p. 574), on the other hand, reminds us how official museums are born out of various initiatives by a diverse set of stakeholders. Museums might have their origins in and evolve from collections set up by individuals, communities, municipalities, or by the state, and these initial stakeholder interests will influence the institutions in the future as well.

The term "heritage communities" is an attempt to better understand the motivations, backgrounds, and interests of amateur communities that are engaging with heritage (Ciolfi et al., 2017, p. 25). The concept has been introduced in heritage policy writing as of late, and documents such as the Faro Convention have emphasized how heritage communities are central for sustaining culture and transmitting it to future generations through public action (Council of Europe, 2005, section I, art. 2.). As such, heritage communities refer to the democratization of GLAM institutions by communities participating in acquiring, enriching, and documenting heritage, but also to communities identifying, preserving, and communicating heritage independent of GLAM institutions (Ciolfi et al. 2017 p. 35).

The concept of heritage communities can allude to communities that are stakeholders of heritage and have (potential) ownership over it, such as communities living in heritage locations, but it can also be used in order to deal with communities that are engaged in making their own heritage officially sanctioned and for making their voice and preference of heritage heard (Zagato, 2015, p. 147). In this way, it can refer to the "right to cultural heritage" and the right of the public to take part in selection of new and upcoming cultural heritage through shared commitment (Vicha, 2014, p. 34). Heritage communities are formed around geographical, social, historical, or cultural characteristics (i.e. through identification), but also through practice (Ciolfi et al., 2017, p. 26; Vicha, 2014, p. 33-34). As such, heritage communities are defined by how they are constantly reaffirming their commitment to their heritage of choice (Zagato, 2015, p. 159).

The "participatory agenda" (e.g. Kortbek et.al., 2016) expects heritage institutions to participate in the democratization of their practices. The benefits of participation have been argued to strengthen the relationship between institutions and their

23 (1) Client, government authorities, final users; (2) Sponsors, internal and external owners and investors; (3) ICOMOS (International Council on Monuments and Sites); (4) Environmental preservation organizations; (5) Research institutes, universities, specialists; (6) Consultants, contractors, suppliers, workers; (7) Local people in the site and around the site; (8) Tourists and tourism agencies; (9) Site manager, performing organization, management team; (10) Public, people not directly related to the acquisition, but have influence, positively or negatively and society.

public, while also increasing their efficiency and responding to government funding priorities (Kershaw et al., 2018). Similarly, participatory practices have been found to deliver greater public value (Scott, 2016), build new audiences (Brown et al., 2011), enhance self-reliance and awareness (Aas et al., 2005, p. 31), and to lead to consensus and shared sense of ownership (Araujo & Bramwell, 1999). As heritage institutions operate under specific policies with their own procedures and are limited by their own legal and budgetary concerns, they might need to employ community experts to work alongside curatorial subject experts (Roued-Cunliffe & Copeland, 2017, p. XV). Still, Kershaw et al. (2018) find that co-production in museums is hampered by "institutional inertia" and that full participatory design is difficult to attain.

Stakeholder involvement and collaboration theory have been criticized for the lack of understanding concerning the power positions and imbalances regarding stakeholders (Aas et al., 2005, p. 32; Waligo et al., 2013, p. 343). Examining levels of participation can be a functional addition to intersectional power structure analysis. Levels of participation can be measured with the help of Arnstein's "ladder of citizen participation" (1969), which as a simplified theoretical tool helps in understanding the power positions of the stakeholders involved in participatory practices. Arnstein's ladder is presented as a metaphorical ladder with eight rungs grouped into three groups (see Table 5), where each rung corresponds to the extent of power of citizens. The rungs reach from various forms of "nonparticipation" on the lower rungs to the various levels of "tokenism" on the middle rungs and full participation in the form of "citizen control" on the upper rungs.

8	Citizen Control	
7	Delegation	Citizen Control
6	Partnership	
5	Placation	
4	Consultation	Tokenism
3	Informing	
2	Therapy	
1	Manipulation	Nonparticipation

Table 5. An illustration of the eight degrees of citizen participation, further divided into three types of participation, as presented in Arnstein's "A Ladder of Citizen Participation" (1969)

For the purposes of this dissertation, the following focuses on the middle and upper rungs of the ladder, and especially on the changes that need to take effect for participation to become a form of citizen control instead of it relying on forms of tokenism. In Arnstein's (1969, p. 219) evaluation, while consultation (level 4) "can be a legitimate step towards [...] full participation", it still "offers no assurance that citizens' concerns and ideas will be taken into account", and can instead be used by the power holders to legitimize their claims by showing how a participatory agenda was followed. As such, it does not really make a stand for equal power relations

which requires some sense of "agonistic pluralism"[24] (Mouffe, 2013) and challenging of power relations. For Arnstein (1969, p. 221-222), full participation does not happen until citizen control in the form of partnership (level 6), which gives participants "*genuine bargaining influence over the outcome of the plan*".

With the help of Arnstein's ladder, the different relative power positions of various stakeholders in the participatory process can be better evaluated and the power imbalances in participatory projects critically analyzed. Participatory inclusion into heritage work might be expressed in ways that highlight how excluded groups become "invited" to "learn" and "share" about heritage values, and how excluded communities have the possibility to become "educated" about the authorized heritage values that tokenist actors are sharing (Smith, 2006, p. 44). To avoid tokenist forms of participation, there is a need to understand that "participation is not simply about joining the game, it is also about having the possibility to question the rules of the game" (Sternfeld, 2012:4). Only those who can defend their interests against the interests of other stakeholders and thus change the distribution of power have real power.

Sandis (2014, p. 17) points out how some stakeholders are deemed to have more important (or even exclusive) rights to a particular heritage than others, leading to authorized heritage discourses (Smith, 2006). These discourses end up representing their stakeholders' goals and viewpoints as "unchanging reality" (Wertsch, 2002, p. 60), and it becomes increasingly difficult to deal with conflicting views of heritage. Traditional, authoritarian heritage models are thus based on exclusion of certain stakeholders from actively engaging with heritage, as participation is not thought of as something desirable, but rather as something that "interferes" with the heritage processes and meaning-making dealt with by experts (Smith, 2006, p. 44).

Museum curators are in a key power position in deciding whether to invite participation or not, and reflexive museology is increasingly conscious of the power structures at work in heritagization (Butler, 2013). Curators can use their power position to break down power structures and engage in collaboration as well as share expertise, and much of the research on curators deals with co-curating and the sharing of power with various stakeholders in the heritage process (Rugg & Sedgwick, 2007). As curators are in a position of power in constructing heritage, they can be understood to function as gatekeepers, i.e. controlling and possibly

24 Agonistic pluralism is an alternative to consensus as an aim for a democratic society. A democratic society that aims for agonistic pluralism will attempt to create an arena for fair and respectful, violence-free struggle instead of consensus (Mouffe, 2013).

withholding the flow of information and possibly preventing access to information, status, or service. While gatekeeping might be rationalized as a screening of the suitability for passage for those that are being gatekeeped, gatekeepers in the end use their power to define who can or cannot participate, and thus partake in "social exclusion" and "social inclusion" (Coleman, 2015, p. 6).

The intersectional approach to social inequality dictates that multiple social divisions are constantly working towards inequality (e.g. Collins & Bilge, 2020). Race, gender, class, and other social divisions form a complex network, where the social and political conditions of individuals cannot be understood to be shaped by only one factor or power structure (p. 2). Inclusion in heritage institutions is a complex process and does not happen overnight. Ahmed (2012) notes how very basic power positions are at work when Western institutions start "including" people from other parts of the world and how this kind of inclusion can develop into tokenist forms, where power is still firmly nested in the hands of the heritage institution although it is supposedly letting other stakeholder groups participate. In a similar way, mid-level participatory structures tend to lead to museums exploiting the community for free labor without empowering it fully (Kershaw et al., 2018). Still, museums as educational institutions and social actors are in a unique position to invite participation and work for inclusion (ICOM, 2007). In the end, participation challenges the authority of museums and their curators, so there is no getting around the fact that higher levels of participation mean museums and their professionals must give away or share some of their power.

3.2 Games, play, and preservation

3.2.1 Games as artifacts and play as activity

In this sub-chapter, the research investigates accounts regarding the dual ontological nature of games as both artifacts and activity, as presented in game studies and game preservation research. As part of this examination, the study explores material, digital, and cultural game artifacts, but also play as an activity. A framework detailing the dual nature of games as it is perceived in game studies and game preservation research helps to clarify the game ontology discussion. This investigation is connected and mapped onto the wider heritage discussion about the nature of various kinds of heritage in sub-chapter 4.2 of the results.

Games are complex things, and much of game research has been dealing with how they should be understood ontologically. For the purposes of this dissertation, it is important to reflect on game ontology in the philosophical sense – since the way that games are understood influences them as heritage – but also in more concrete information sciences ontology (Stojanovic, 2004) terms. Dealing with this complexity, Konzack (2002) approaches games through "layers", ranging from hardware and code to socio-cultural meaning-making. Similarly, Bogost (2009) writes about how "videogames are a mess", as they contain elements of objects, experiences, and software, not to mention IPs, circuit boards and the like. For Taylor (2009), play is dependent on an assemblage of various components, ranging from actors (e.g. platforms, players, communities, game companies) and concepts, practices, and relations, that together constitute "play" as a cultural phenomenon. Additionally, as Guins (2014) notes, the very process of preservation changes games. Games are changing throughout their existence, as their lifespan advances from planning, manufacturing, design, and development on to marketing, sales, use, functionality, non-functionality, and finally to a possible "afterlife" in museum collections[25] (p. 8).

This dissertation focuses on the dual nature of "games as artifacts" (c.f. Björk & Holopainen, 2005; Bogost, 2007) and "play as activity" (c.f. Malaby, 2007; Sicart, 2014), the duality of which can be restated as approaches looking at games with or without the player (c.f. Toh, 2018, p. 3). To reiterate: it seeks to understand that games are activity in the sense that they do not really exist without player input, as "there is no game without a player" (Ermi & Mäyrä, 2005, p. 16), but that they are also artifacts in the sense that "players cannot exist without a game they are players of" (Aarseth, 2014, p. 130).

Firstly, games can be understood to be artifacts in at least three meanings of the term: they are material artifacts (physical objects), procedural artifacts (software programs), and cultural artifacts (cultural texts) (Sotamaa, 2014). While the materiality of games is not discussed that often, Sotamaa (p. 4) reminds us how material game artifacts have a "potential to capture, archive, and communicate"

25 Guins (2014) has examined the materiality of "game afterlife", i.e. in how games of various kinds are dealt with in heritage institutions and other preservation work. He shows how the various material processes associated with preserving games help to intensify games' materiality and "object-essence" when they are preserved (pp. 31-37). The material "game afterlife" of games in museums, "a "curious state after commodification and consumption" (p. 7), shows how various preservation practices actually change games in collections by making their materiality the focus of scrutiny instead of their interactivity.

aspects related to the economic, social, and cultural role of games. Similarly, game collecting, while primarily interested in the materiality of games, can have an important role in supporting gamer identities, reminiscence about past events, and as subcultural capital. Physical collecting of games has been called the "museum approach" in game preservation research (Guttenbrunner et al., 2010).

However, the materiality of games is not confined to machines and objects, but also to the global production, circulation, and working conditions that games as products are based on (Parikka, 2012). The game industry is not only to a large extent reliant on cheap labor working in undesirable conditions, but also a significant producer of electronic waste (Sotamaa, 2014). The material turn of game studies (Apperley & Jayemane, 2012), based on cultural studies, Marxist political economy, and ethnography, reminds us how games and play are tightly embedded in materiality. This includes forms of materiality such as the specific sounds of consoles (p. 15), but also all kinds of "ancillary supporting material" (p. 9), such as player and community developed maps and walkthroughs. This highlights the importance of "situated gaming" and "embodied players" (Apperley, 2010), which are taken as starting points to start examining the various "actual" playing practices of people all around the world and, in particular, situations with their particular timeframes, social cultures, and ways of playing, instead of dealing with players as abstractions or demographics.

Digital artifacts are different from material ones in various ways, but also intricately connected to the ways that hardware operates. Sotamaa (2014, p. 5) argues for how there is considerable overlap between the concepts of hardware and software, and how the two cannot be understood apart from each other, as the writing of software, for example, has meant manipulating hardware until at least the 1980s (Swalwell, 2012). A similar point is made in media archeology, where Kittler (1995) argues for ways in which all software is and must be intimately tied to the material hardware running it. Digital artifacts such as games are defined by their use (Hui, 2012) as well as by their malleability in the various ecosystems they exist in (Kallinikos et al., 2013). It means that games provide opportunities for co-creation and modding, making it difficult to speak of games without play (Sotamaa, 2014, p. 6). As such, it is difficult to exactly pinpoint digital artifacts without also looking at their users and the cultural meaning-making practices that they are engaging in.

Games are also cultural texts that can be played, analyzed, governed, and talked about (p. 7). While issues such as gameplay logic, game rules, and IP law are all largely and purposely left outside of the scope of this study, there is still a need to understand games as cultural texts in order to ascertain the role of players and play

in the meaning-making processes related to games. Games as cultural texts can be perceived to exist in various play centered sub-cultures and communities, but also as cultural meaning-making that influences society at large (Shaw, 2010). While social constructivist accounts explain how games acquire their meanings through complex social interactions, based on the discursive meaning-making practice of players and play communities, an actor-network theory approach understands games through the interplay between humans and the embodied material and digital artifacts they are interacting with (Sotamaa, 2014, p. 7).

Secondly, games need player input for them to exist (Aarseth, 2014; Ermi & Mäyrä, 2005; Stenros & Waern, 2011). This means that games are emergent in the sense that they manifest themselves differently depending on how they are played and by whom, in ways that go beyond active reading and meaning-making as defined in Roland Barthes' "Death of the Author" (1992). This makes games ambivalent, as they can be experienced in widely disparate ways, including playing against the storyline intended by the games' designers, griefing[26] others in online games, and other forms of transgressive play (Sicart, 2014). In game studies, "player experience research" (Pagulayan et al., 2002; Pagulayan & Steury, 2004), partly overlapping with user experience research (Jordan, 1999), examines the ways that players as individuals interact with game systems.

Games need players and play to exist, but play can mean many things for game preservation. Many game preservation accounts highlight playable games, whether emulated, migrated, or played on original hardware, as crucial for the preservation of games (e.g. Guttenbrunner et al., 2010), but others are more concerned with documenting play practice[27] (e.g. Newman, 2012). While Lowood, nearly two decades ago already, pointed out how "hardware and software objects alone cannot document the medium of the computer game" (2002, p. 8), and instead urged preservationists to look more closely at various play practices, the "techno-historic" approach of maintaining playable artifacts still sees widespread support with amateur collectors and preservationists (Ahm, 2018, p. 34).

The difference between keeping games playable and providing opportunities for interaction with them in exhibitions and collections, and documenting past play experiences, is analogous to issues that preservation efforts generally have dealt with

26 Griefing refers to acts that intentionally cause anxiety or otherwise confuse and distract other players of online games or members of online communities.

27 Newman (2012, p. 38-39) has proposed a shift from "game preservation to gameplay preservation" in order to understand how games as systems of meaning are played and engaged with.

(e.g. Greenhill, 1992), and it resonates with the discussion related to the "object-being" and "work-being" of museum collections (Guins, 2014, pp. 35-36). While games are special in that they can retain their work-being while being a part of collections, contemporary museum visitors might not possess the cultural know-how needed to play historical games and might be better served by documentation of how particular games were played than by being able to play the games themselves (Nylund, 2015).

3.2.2 Approaches to software preservation

In this sub-chapter, the study deals with various approaches to software (i.e. digital artifact) preservation. The preservation methods examined include hardware preservation, emulation, and migration, while metadata preservation is dealt with in the next sub-chapter. The overview is important in order to gain a better understanding of the concrete measures that can be used to preserve games, but also in order to better understand how various preservation methods are situated when compared with the original game experience. The various views on software preservation presented here are further examined in the results.

For many, keeping games in working condition is a key responsibility of game preservation. Game software consists of what has been called born-digital heritage (e.g. Abrams, 2015; Becker, 2018), i.e. digital artifacts that have been created in digital form. While the threats it faces are unlike the dangers posed to tangible and intangible heritage[28], it still is in danger of disappearing and needs safeguarding efforts in order to survive. The first problem related to the preservation of games is related to their malleability (Kallinikos et al., 2013). For games, this entails that modern games have various versions and patches that make it difficult to even identify a definite "original" in need of preservation, especially since games are also modified by their players (Sotamaa, 2009; Prax, 2016). Preservationists might need to pick between dozens, or if not thousands, of different versions and builds of a game to find the definite one. For many, the imperfections and technical flaws are a beloved part of gameplay, so even fixing them for a "perfect version" of a game might be counterproductive (Newman, 2012, p. 123-125). The second problem is

28 Tangible artifacts are threatened by the chemical aging processes (ICOM, 1995), while intangible heritage is threatened by disconnect with the way that skills and practices are passed on from generation to generation (UNESCO, 2003a).

related to the "bit rot" that threatens various kinds of digital artifacts and storage devices. Bit rot refers to both physical data degradation, i.e. data corruption due to hardware failures, and the processes related to software entropy, i.e. software becoming less responsive as the hardware and operating systems around it change (e.g. Canfora et al., 2014). The third, and perhaps the greatest, challenge is making sure digital artifacts can be operated and run by future users (Hunter & Choudhury, 2003).

For the purposes of this dissertation, hardware preservation is defined as the preservation of hardware in order to run "outdated" software (Anderson et al., 2013, p. 117). As such, its hands-on quality of operating historical games, by using e.g. tape loaders and BIOS tweaking in order to get them running, has resulted in it being deemed the most "authentic" form of preservation by hobbyists seeking "original experiences"[29] (Swalwell, 2013). Still, the problems of hardware preservation lie in the cost and labor associated with preserving large collections of hardware and backup systems from various periods[30], the detrimental effect constant use has on the components (Anderson et al., 2013), and an overly simplistic and positivist view on experiences and heritage.

While the "original experiences" approach propagates the use of hardware preservation in order to run historical games, it also has some problematic ideas related to "going back" into the past by using old equipment, and is in the end not compatible with a more critical approach to game preservation and exhibiting (Swalwell, 2013; Prax et al., 2016). The critique of authenticity in original experiences has parallels with the discussion on "authenticity" in tourist experiences, where the "heritage theme park" has been criticized as undermining the existence of heritage (c.f. Smith, 2006, p. 40). Still, while it is clear that using old technology can never be a time-machine, using old equipment can show many things about the context of what playing games has been like in the past (c.f. Nylund, 2015).

Emulation can be defined as a method for saving data as well as software environments which were used to originally create the data (Rothenberg, 1995), by

---

[29] An even more holistic experience is the period room approach, as utilized in e.g. Computerspielemuseum, the Finnish Museum of Games, or the National Videogame Museum, where playable original experiences are set up in contemporary rooms and environments, where the whole environment is made into a "time capsule" portraying e.g. a mid-80s Commodore 64 gaming in a Finnish teenage boy's room (Korkeamäki et al., 2017).

[30] For example, to satisfactorily play games on the Atari 2600 console, which was manufactured in the late 70s, researchers had to use contemporary television sets, as models from the 80s and 90s introduced various audiovisual problems (McDonough et al., 2010).

creating new software environments that emulate the operation of obsolete hardware environments (Newman, 2019b). This allows for the running of old games on new systems, which sidesteps the need for the troublesome and resource intensive practice of keeping old systems up and running. There is widespread consensus on the definite positive qualities of emulation for preservation purposes, which include its potential to deal with large quantities of games in a cost-effective manner (e.g. Anderson et al., 2012; Guttenbrunner et al., 2010; McDonough et al., 2010; Lowood, 2009), but critics have also pointed out the various flaws of the approach (e.g. Newman, 2012; Guins, 2014).

Newman (2012, p. 140) shows how emulation is always imperfect, as there is "variation between emulation and original hardware and software", and "variations between the performance and output of different emulators". These variations might not take into account the actual play practices, which might be dependent on glitches and imperfections in the games and hardware used for running them (p. 146), which can only be documented by additional emphasis on the preservation of gameplay and play practices (p. 153). While emulation theoretically leaves the original digital file untouched, and changes are made to the computational processes which run it, this is not necessarily the way that users experience emulations, as many game experiences and gameplay qualities are born out of the complex interactions between software and hardware.

While always imperfect, there are differences in quality between emulations. Guins (2014, endnote 25) makes the explicit connection to evaluating the "quality of reproduction". Game emulation should not be judged as a replacement for an original, or as an attempt to go back to a game that has disappeared, but rather a different version from the original, and one that can be used to evaluate other versions of a game. As such, and because it is very difficult to justify something as the "original" and the other versions as "copies", research should focus on the quality of the emulation. Newman (2019) embraces the "transformative nature" of emulation and indulges in the innovative ways that it can be used to remake the original game and its gameplay. Emulations thus become more like remixes than copies of the original, as shown by the intricate example of an "authentic" virtual reality environment in EmuVR.[31]

[31] EmuVR is a "VR simulation of those good old nostalgic days just playing video games in your room" which features authentic models of period rooms and game emulation embedded into a VR experience (EmuVR 2020).

Unlike emulation, migration entails a rewriting of the preserved data, in order to convert it from the original format to successive formats, repeating the process as the formats become obsolete, in order to use the data on a different platform (e.g. Hunter & Choudhury, 2003). Although migration is an established solution in the archival sphere, it has been deemed to be not that well suited for game preservation because of the difficulties and cost of migrating complex artifacts like games (e.g. Winget, 2011; Pinchbeck et al., 2009). While it has not been explored much in the game preservation context due its labor-intensive approach, there are some cases where migration has been used and is useful, e.g. "porting" games from rare operating systems and environments to modern use in cases where emulators are non-existent.[32] Migration needs access to the original source code and assets, or else everything about the game has to be redone from scratch (Sköld, 2018, p. 43), so it requires help from original developers in order to be fully applicable on a larger scale. As such, it has been seen as more of a case-by-case solution, rather than a mass solution like emulation.[33]

3.2.3 Preservation of and through metadata

In this sub-chapter, the dissertation explores various metadata approaches to digital game preservation, such as Let's Play videos, walkthroughs, screenshots, and game wikis. First, a theoretical framework for metadata, differentiating between documentation and re-mediation, is set up. Then, an intertextual structure for examining the different layers of metadata is examined. As metadata approaches are actively used in various online communities to document games and their play practices, they help to better understand game preservation as a participatory practice. Game metadata is further examined in the results, in order to further conceptualize its merit for game preservation and game heritage.

In digital preservation research, a fourth approach to preservation (alongside hardware preservation, emulation, and migration) has been called the metadata

[32] The LORD (1981) text adventure game, originally written for the DEC-20 mainframe computer and now on display on a modern system at the Finnish Museum of Games, is a case in point.

[33] Another way to use migration in game exhibitions is when games are shown as set-pieces. The larger than life-size Nintendo Entertainment System controllers at Strong Museum of Play or Snake (1997) playable on a human-sized Nokia 6110 at the Finnish Museum of Games, necessarily entail some form of migration in order to provide for novel controllers and user experiences. Another way to migrate games is to modify them for preservation and exhibiting purposes, in the way that Newman and Simons (2018) explore "deconstructed" versions of Sonic the Hedgehog (1991).

approach. It argues that sufficient metadata resources describing and defining original programs can in some cases dispense with the need for preserving and using said programs (Hunter & Choudhury, 2003). On a general level, metadata is data that provides information on other data. As such, it is an important part of existing GLAM work, describing and elaborating on artifacts that institutions are preserving. For institutional work, the most essential form of metadata is descriptive metadata, which includes information such as title, author, keywords, measurements, and placement in collections. While the metadata approach has been described more as a supportive function than an actual preservation strategy (p. 4), contemporary efforts in game preservation are dealing with various metadata approaches emphasizing the importance of preserving the various socio-cultural contexts surrounding games (Sköld, 2018). Player community generated documentation as metadata (Sköld, 2013), the preservation of player produced contextual artifacts like walkthroughs (Newman, 2011), or the re-mediation of games by e.g. Let's Play videos (e.g. Glas et al., 2017) are just some examples of this.

In this study, fan produced metadata is contextualized by two theoretical perspectives: as documentation and document-based research, and as re-mediation. While playing games is an ephemeral happening, which does not "naturally" leave any other traces than memories and log files of the event, many players and play-communities are engaging in various forms of self-documenting, and preservation of digital games "in and at play" can be accomplished by collecting player-created documentation of games and gameplay (Newman, 2012, p. 155). These "traces" of play are self-documenting the various ways players and game communities of different kinds are producing knowledge, and it has been examined as documentary practice (Sköld, 2013).

While documents and documentation have been studied in various disciplines, in preservation research the documentary approach is defined as a shift in research foci from abstract notions of information to the material (and digital) manifestations of information (Sköld, 2013). Document based research, following Sköld (2013), can produce knowledge about the ways documents are used, produced, and circulated, as well as the various functions they have in a social setting. Documenting the game world or one's gameplay experiences produces knowledge about the game and its content, but also about the players and their unique cultural contexts. Player engagement with games and its documentary traces in various rogue archives, whether they deal with play strategy, commentary of play, contextualizations of the play experience, or the social interactions between players, can be of use for preservation work in various institutions dealing with games.

Re-mediation (Bolter & Grusin, 2000), on the other hand, refers to the ways in which all kinds of media refashion and rework other media. The refashioning of earlier media into other types of media might, in the case of games, include phenomena as varied as the writing of walkthroughs (Newman, 2011), Let's Plays and other forms of videos (e.g. Nylund, 2015), screenshots and other screen captures (Lowood, 2011), or even document-centered approaches which transform the game experience into a form that can be enjoyed in other types of media (Sköld, 2013), but also preserved by them. Games are constantly remade into artifacts in other media by the players that play them, so that players might self-document their practices by recording Let's Play videos, taking screenshots, streaming their playing, or writing various play aids, as in walkthroughs and wikis. These kinds of re-mediations and documentations have qualities that Jenkins et al. (2013) attribute to spreadable media, which refers to how information is constantly remixed, manipulated, and re-worked (especially in online environments), and spread in various textual, visual, and audiovisual incarnations of the original information.

Interest in contextual traces and self-documentation is shared in game studies at large, as the "game as text" is slowly being de-centered by research focusing on the types of "paratexts" – including walkthroughs, wikis, and Let's Play videos – surrounding them (Consalvo, 2017, p. 182). Paratexts belong to the transtextual framework, as proposed by Genette (1997), which can be used to approach originality and its transcendence in games and game culture as well. For the purposes of this dissertation, the concepts of paratexts and metatexts are further explored in order to help clarify the ontological nature of various texts and their contexts. Paratexts are defined "as an aspect of a text that refers to the socio-historical reality and potentially comments on a text's position and role within this reality" (c.f. Švelch, 2016). In the game context, paratexts thus include artifacts made and approved of by the original makers of the game, i.e. official posters, marketing material, art books, development notes and the like. Metatexts, on the other hand, are understood to consist of fan made additions to the original text, including walkthroughs, game guides, and Let's Play videos, fan made figurines, props and costumes, playing notes, pirated disks and the like (c.f. Švelch, 2016).

In the game preservation context, these transtextual artifacts have been dealt with as the "expanded notion"[34] of games (Sköld, 2018), which Sköld understands as the

[34] Approaches dealing with the expanded notion of games, whether called document based collecting or re-mediation, have been propagated in connection to online virtual worlds in general (McDonough et al., 2010), or more specifically in connection with EVE Online (MacDonough et al., 2016). Similarly,

aspects of games beyond the material and digital, i.e. "game culture, cultural, and social aspects including experience, play, and community life and activity" (p. 134). According to Sköld (p. 141), the expanded notion of games can be understood as either (a) "an essential part of the videogame as an archival object" or (b) "a useful resource in the archiving of videogames, able to provide documentation of game culture and social context". These two frameworks for understanding game transtextuality are further explored in the results in sub-chapter 4.2.

3.3 Games as/in culture

3.3.1 Making and re-making games

In this sub-chapter, the study focuses on research concerning the making and re-making of games. First, it covers relevant issues about the game industry and game design, as covered in game production research, and then looks at various participatory practices of re-making games through free player labor. Lastly, it argues for game development to be, at its core, a field of participatory co-creation. The issues raised in the sub-chapter are expanded upon in results, in order to show that game production is a multifaceted practice with numerous stakeholders. This path of thought is further developed in the discussion.

A growing body of game research deals with game development, from O'Donnell's examination of game developers and studios in Developer's Dilemma (2014) to game design praxiology, as defined by Kultima (2018). In the game development research approach, ethnographic methods such as interviews and participant observation help to explore how games are made, by what kinds of people, and under what kinds of circumstances. Game studio ethnography helps us better understand the particulars of game development like crunch time, the clashes between creative vision and financial realities, gender issues in game development, iteration, and the importance of game literacy (O'Donnell, 2014).

In more theoretically aligned research, Kirkpatrick (2013, p. 98) has shown how work conditions in the present game industry originate from the commercialization

various collections and rogue archives become useful resources that are detailing game context via multiple document-based approaches, e.g. oral histories, documentation of gameplay experiences, screenshots etc. (Barwick et al., 2011).

of game production in the 1990s, whereby the early experimental game related "cottage industries" evolved into a global and ultra-commercial industry fighting for attention in a global marketplace. The professionalization and commercialization of the games industry has resulted in standardization of work conventions and a reliance on various middleware programs (p. 104 & 116). The commercialization of the game industry has not solved certain problematic issues at the core of game development, however, and the game industry still tends to rely on crunch-time and similar toxic work practices. Since games are mostly made by people who have a very passionate relationship with them, game makers' collective investment in games "places them at a disadvantage when it comes to negotiating terms and conditions" of their work and, accordingly, results in overworked developers (p. 108).

The last 20 years have seen a shift in game production towards the digital distribution of games (Nieborg, 2016). While this has meant that game developers are not as dependent on their publishers anymore (Sotamaa et al., 2011), they are now more than ever dependent on distribution channels like Valve's Steam, Apple's App Store, and Sony's PlayStation Network (Nieborg, 2016). It has also meant that, while game developers are controlling the servers and IPs used to run games, the games they make are to a larger degree dependent on the content made by player-producers (Humphreys et al., 2005). The question of who controls the IPs of player-produced content is still largely unanswered, but game developers are in a position where they alone have the power to "shut down" games despite player sensibilities and opinions (p. 28).

Looking at commercial production does not paint the full picture of game making. Games are not only made in professional studio environments, but also in very complex participatory networks. As such, they are firmly nestled in a participatory grassroots culture, i.e. they are something people make, not only something that is bought. Firstly, the aesthetics and production environments of "indie games" form an ecosystem of informal economies separate from the game industry (Keogh, 2019). Secondly, enthusiastic player-producers play and tinker with games, constantly building on and changing an earlier corpus of games and assets (Sotamaa, 2009). As such, it can be very difficult to separate play from production, at least in some game genres (Prax, 2016; Kirkpatrick, 2013, p. 128). This kind of participation goes further than just interactively engaging with game products, so it is fair to say that player-creators need to be considered as co-creators of the games they are modifying, hacking, subverting, and re-making (McDonough et al., 2010).

Co-creative activities make "the boundaries between play and production, work and leisure" blurred and intermingled (Pearce, 2006, p. 18). "Playbor" – a

portmanteau word coined by combining the words play and labor – can be used to explain player co-creation, modding, and other forms "free labor" that "do not fit the categories of wage labor, freelance or voluntary work, and neither do they fit the categories of leisure, play or art" (Kücklich, 2005). As such, participation and co-creation exist in spaces that are limited by the affordances (e.g. Gibson, 1979) of various games, but also by law, since copyrights and IPs generally stay with companies who want to limit the level of participation in order to keep control of their IPs (Prax, 2016, p. 81).

As seen, game development is a participatory process, in which games are always modded and changed by their player communities, who are in effect co-creating the games they are players of. While players and play communities enjoy modding and manipulating games, it is very much the game industry who "benefits from the perception that work in games industry is seen as a form of play" (Sotamaa, 2007). Players enjoy creating, but there are numerous examples where the industry has not properly compensated their player-creators for their efforts, as in, for example, the case of Blizzard using player-created content in *World of Warcraft* without attributing or reimbursing the original creators (Prax, 2016). This raises problematic issues related to the power positions between the game industry and players, but also makes way for understanding participatory design, co-creation, and modding as a struggle against the design vision and authority as well as the social, legal, and economic power position of the original publisher.

Players and play cultures have given birth to numerous participatory design practices and game genres. Many of the most popular games in the world, like *DoTA* and *Counter-Strike*, were originally designed by players for other players without any monetary compensation. Similar practices are also being applied outside the scope of the game code. Participatory modus operandis are contained in practices like the writing of fan fiction, the organization of wikis, recording of Let's Play videos and guides, programming of mods, and sewing of cosplay costumes. Player-creators are as central in the creation of digital games and game cultures today as they have been in creating games in the past. Actually, most game genres can be traced back to participatory design, as online multiplayer games like *World of Warcraft* have their origins in "multi user dungeons" (MUDs), casual games in various participatorily created puzzle genres, and computerized roleplaying games in the participatory nature of early tabletop roleplaying games. This kind of participatory culture has a

long history dating back to various fan APAs[35], miniature gaming, and the birth of tabletop roleplaying games, all of them examples of participatory co-creation of whole new game genres (Peterson, 2012).

3.3.2 Tensions in game cultures

In this sub-chapter, the research covers issues related to games as cultural artifacts. Games are at the center of complex cultural disputes having to do with ownership of game culture. But they are also part of society at large, being influenced by and influencing what happens in culture outside of games. In the following, the study first deals with how culture as a concept can be applied to games, and then covers relevant topics, including the dispute between national and global perspectives on games, gender issues, and various strategies used for exclusion in game culture. This sub-chapter is relevant for the results in order to frame the discussion on ownership and it helps in defining the stakeholders of game heritage. The issues covered here are further expanded upon in the discussion.

Games are played by innumerable people, all of whom have their particular playing styles (e.g. Sicart, 2014; Consalvo, 2009), but also particular environments in which they play. Play is thus a situated activity, performed by particular people in particular environments (Apperley & Jayemane, 2012). Examining these specific play practices makes it possible to gain an understanding of game cultures at large (Mäyrä, 2014), which have diverse and individual aims and operating models. Some cultures may be interested in competitive play, while others are focusing on helping other players. Similarly, the demographic composition of these various groups is widely varied, and they all face challenges depending on their unique qualities. Games thus exist within broader gaming culture(s) that extend(s) beyond the games themselves (Sotamaa, 2009).

Elmezeny and Wimmer (2018, p. 82) suggest that game cultures should be approached on three different levels: (a) on the micro level as cultures born around a specific game or community, (b) on the meso level as game communities dealing with common, unifying interests, and (c) on the macro level as overlying overall culture of games and players, as in a national or even a global game culture. Shaw (2010, p. 416) conversely argues that perceiving games as a separate sub-culture is

[35] An amateur press association (APA) consists of a group of people who produce individual pages or articles that are sent to a Central Mailer for duplication and distribution to all members of the group.

problematic, as games also exist in culture at large, not to mention that they are played by a majority of the population in Western countries,[36] and as the players come from varied demographic groups. Game cultures should not be seen as a set of detached self-governing communities separate from other aspects of society, but more as part of the overall structure of society. As such, games exist in and share political and social issues with culture at large (Shaw, 2010). In the following, the research deals with game cultures on the level of individual games, as larger communities dealing with common interests, but also on the macro level. Throughout, emphasis is placed on games as a part of culture at large, joined in and sharing the same issues. While games can give rise to specific sub-cultures on the level of individual games, game communities, or even globally, they also exist in culture, sharing cultural values and disputes with human culture at large.

Still, game culture(s) have been dominated by an international and global, instead of national and local, point of view. This has emphasized US and Japanese perspectives, brands, companies, and games, putting them at the forefront at the expense of other game cultures (e.g. Penix-Tadsen, 2019). Game studies has shown how seeing games and game cultures from a local and national perspective might open up new interesting new perspectives (Mäyrä, 2006) and recent research into the game cultures of the global south (Penix-Tadsen, 2019), India (Mukherjee, 2018), or "gaming behind the iron curtain" (Švelch, 2018) shows that games and game cultures take different forms all around the world. Similarly, while games in New Zealand might be said to have been helpful in domesticating computers into average homes (Swalwell, 2007), they can be argued to have been tools for resistance and creativity in Poland (Wasiak, 2010) and Czechoslovakia (Švelch, 2018).

While a global discourse has dominated game exhibitions (Eklund et al., 2019), the national perspective has also been highlighted in preservation work. For example, the Finnish Museum of Games deals explicitly with Finnish games and game cultures through a "short list" of 100 Finnish games, where a lot of effort was put in by the curatorial team to be inclusive of all kinds of different types of games, e.g. commercial and non-commercial, successful and failed, digital and analog and so forth (Heinonen, 2017). While the curatorial team of the Finnish Museum of Games was careful not to call the list a canon list, an effort to explicitly canonize the 50 most important Dutch game titles met with various forms of resistance (Glas & van

[36] According to research, 97.8% of Finns play something, if analog games as well as digital games are assessed and 76.1% of respondents play digital games at least occasionally (Kinnunen et al., 2018). Findahl (2014) and EEDAR (2017) give similar figures for Sweden and the USA, respectively.

Vught, 2019). The Dutch case shows how national games canons are just as susceptible to marginalization and other power structures as other canon lists, and that attention needs to be put on e.g. the composition of curatorial groups and inclusiveness.

In addition to the national and local perspectives, game cultures are at the center of social issues related to inclusion, as some ways of playing are prioritized while others are marginalized. Kirkpatrick (2013, p. 71) argues that games have had to be established as a cultural field in order to be part of the meaning-making processes going on around them. Thus, concepts such as "gamer" had to be culturally invented in order to be used. This act of discursively "inventing" games, game culture, and gaming was to a large extent based on exclusion, as games were staked out as a cultural territory by young and middle-aged men not at all interested in creating a community that would be inclusive. Thus, games and game cultures became associated with a particular type of youthful masculinity, existing outside of society at large (p. 73-90). Kocurek (2015, p. 188) similarly examines how early arcades in the USA became "populated almost exclusively by young white men with both the time and money to play video games as much as they wanted", but that their domination has continued in the nostalgia processes associated with game heritage, where a similar bias towards representation of white males playing games can be seen (Paul, 2018, p. 19). As Hall (1997) has shown, representation (as a discursive system) builds up our understanding of reality by repeating certain depictions and ways to express things, while omitting others.

Phenomena like Gamergate demonstrate how player identities are not only actively negotiated on the personal level, but how they are also scenes of political struggles, re-writes, and revisions. Research shows that female players are still in many ways marginalized by the community (Paaßen et al., 2017), and that there is an active push to exclude players other than straight white males from the online games spaces that have sprung into existence. Female players and members of the game industry are treated markedly differently from their male counterparts.[37] In addition, Gamergate and other online communities have ties to movements like the alt-right, which are actively recruiting new members, but also testing new media influencing strategies, in game communities (Bezio, 2018). These kinds of instances show how game cultures are at the center of cultural struggles for defining and policing the meaning and extent of what games mean for their players (Mortensen, 2018).

[37] Female developers are getting four times as many harassing messages than their male counterparts (Paul 2018, p. 85).

Paul (2018, p. 88) connects these discursive meaning-making struggles not only to sexism, but also to the underlying meritocracy in games and play cultures. Games and play cultures valorize skill and technique and embrace meritocratic values and thinking. Gamers have invested huge amounts of time and effort into games which they have become good at, and are now holding on to that feeling of merit with toxic masculine strategies aiming to define who should be seen as "real gamers" and who get to decide what games mean (Mortensen, 2018). Instead of policing the play and identities of others, a "big tent approach", which would be able to include lots of different types of games, as well as types of play, ranging from competitive to casual, would help play cultures open up to the scope of different ways of playing, making them equal parts in "game culture" (Paul, 2018, pp. 163-164). As meritocratic trends in game cultures have similarities with those of e.g. competitive sports, where powerful media campaigns and educational movements have been set up to diminish the meritocratic influence, there seem to be opportunities for making game cultures more diverse, self-reflective, and inclusive through these kinds of remedies (pp. 149-155).

3.3.3 Participatory game heritage processes

In this sub-chapter, the study examines the memory-making practices at work in participatory game cultures. As seen, the work practices and heritagization processes of amateur historians and collectors have been essential in defining key aspects of game heritage. In order to better understand these practices, the research first provides a framework for defining the stakeholders involved, then looks at nostalgia and monumentalization as motives for documenting games and play. Then, it looks at the ways game collectors engage with games as collectible items, and how these practices are constituting a "self-authorized" game heritage. Lastly, the research looks at fan curating as a form of resistance and an ownership strategy of game heritage. These patterns are examined in order to better understand the participatory preservation efforts that influence game heritage, and in order to engage with these views in the results and in the discussion.

The historiographic processes of games have to a large extent been defined by the work done by amateur actors outside academic research and GLAM institutions, such as collector communities and game journalists (Suominen, 2011; Kirkpatrick, 2012). Suominen and Sivula (2016) present a framework which perceives histories (and by extension heritage) as being produced in three different fields: the (a)

academic field that is producing peer-reviewed knowledge, the (b) public sphere of politically controlled and publicly funded GLAM institutions, and the (c) unregulated field of amateurs and hobbyists. The three fields are interrelated, so that amateurs can frame their history production by peer-reviewed knowledge and participate in the public discourse on history, and academic researchers promote and consolidate their own hobbies through their research.

As seen, various game related communities and cultures have a long history of documenting and preserving their own activities, thus producing unregulated histories and heritage outside of the control of the ethical guidelines and other forms of professional knowledge present in of GLAM institutions (Ciolfi et al., 2017 p. 26). These participatory networks and "heritage communities" (Suominen et al., 2018) of e.g. amateur historians, retrogamers, collectors, and rogue archives are contributing to the heritagization (Fontal & Gómez-Redondo, 2016) of games. The meaning-making work done in heritage communities is also valuable as identity work (i.e. identization) for the communities involved (Suominen & Sivula, 2016). These communities dedicate their time and effort in order to preserve and spread knowledge about various games and game systems, which might also be appreciated in an ironic or camp context (Mora-Cantallops & Bergillos, 2018, p. 217).

One example of an unregulated game heritage culture is retro-gaming. Suominen et al. (2015, p. 77) define retro-gaming as "the practice of playing and collecting original ("classic") video and computer games of the 1970s, 1980s, and early 1990s, or using, for instance, emulators for playing them", but also as a cultural form consisting of other kinds of activities, like producing consumer products such as plush toys, books, and game related music videos and other artistic creations, as well as various preservation practices, both online and offline. Retro-gaming is thus a consumer stance, but also a cultural production stance (p. 77). As such, retro game heritage communities are actively organizing their own online collections, "museums", conventions and publications, which are working towards the heritagization of games (p. 87).

These heritage community activities have been pivotal in constructing a shared game heritage, which can bring similar nostalgic feelings about e.g. Super Mario to people all around the world, although their particularities and situated practices of actually playing Super Mario are and have been very different from each other (Suominen et al., 2015, p. 78). Heritage communities are thus producing a monumentalization of history and heritage (Suominen & Sivula, 2016), which is grounded and naturalized by actual historical cultural symbols (Smith, 2006, p. 48),

such as Super Mario and the Commodore 64, and which exists outside of actual play practice and in shared meaning-making.

These monuments and symbols function as a trigger for nostalgic experiences (Suominen et al., 2015, p. 78). Lowenthal (1985, p. 214) has shown how heritage provides feelings of belonging and continuity, which are made more powerful by the "timeless values" that heritage work is perceived to deal with. In this way, retro-gaming and similar subcultures can become very important for the sense of identity of those participating in these kinds of activities, but also for producing a sense of shared heritage. As such, nostalgia is often associated with a stance called "restorative nostalgia" (Boym, 2017), which is celebrating and upholding the cultural values of those involved in the name of truth and tradition, helping in using the symbols and monuments of the past in order to construct universal truths and values (Smith, 2006).

However, nostalgia can also aim to challenge the values of those involved. This kind of "reflective nostalgia" (Boym, 2017) is aware of the meaning-making involved and challenges persistent constructs about truth. Gazzard (2016) pays attention to the embodied and situated play of arcade machines in 1980s New Zealand, as pictured in the images of Mahara Gallery.[38] The images show players interacting with arcade machines in situated and embodied ways. She (p. 160) shows how these images give space for reflective nostalgia, initializing a reflexive process by which commentators start to make sense of the way games have been played and their own relationship to that time and place that has been once experienced, not by adhering to tradition and truth, but by providing opportunities for meaning-making beyond those values.

Another way of contributing to the participatory heritage communities of games is collecting. Fans and retro-gaming communities are defined by their focus on the material aspects of heritage (Mora-Cantallops & Bergillos, 2018, p. 226). Hobbyist forms of collecting can be understood as interested mainly in what has been called "fetish objects" (Pearce, 1994, pp. 196-200), which are detached from their social relationships and all the tensions that these imply. This detachment is the very source of fetish objects' "attraction for their collectors who use them to create a private universe" (p. 200) as an attempt to freeze time, which gives them a "peculiarly lifeless

[38] The Mahara Gallery is the district public gallery for the Kāpiti Coast in New Zealand. Their online gallery "More than a craze", curated by Melanie Swalwell, records 1980s arcades by some of New Zealand's best-known documentary photographers with images from newspaper archives (Mahara Gallery, 2011).

quality" (p. 200) that objects without context have. Systematic collections (pp. 201-202) in e.g. museums, on the other hand, depend "upon principles of organization which are perceived to have external reality beyond the specific material under consideration", and work by accumulating objects that have rich relationships with their surrounding reality. When collectors acquire and justify their acquisitions, they remove objects from the sphere of "secular, profane, undifferentiated realm of the commodity, and ritually transform it into a personally and socially significant", even sacred, artifact (Belk, 1994, p. 320).

Moncunill-Piñas (2017, p. 5) has researched "amateur museums" and the ways in which they both produce and consume their own collections by naturalizing the subject matter they are dealing with by perceiving it as natural and unchanging, instead of a result of certain historical events or chance. She shows how amateur museums mimic professional museums in their exhibitions and collections, simultaneously expressing doubts about how legitimate their work is in the eyes of professionals and criticizing and distrusting the work done in professional museums (pp. 13-15). Collectors, in building their own collections and exhibitions, are thus emulating the ways that collection management and exhibitions are produced in established professional museums, but they are also in a position to change the logic that is operating in this context.

While the heritage processes of fan communities, retrogamers, and other self-authorized heritage communities are working in many ways towards preserving game heritage, these communities do not necessarily work with heritage in a methodological way. Fans and other self-authorized heritage groups need the methodological systemization of academics and museums in order to take their collections towards systematic forms, just as GLAM institutions such as museums need the documentation efforts that online heritage communities and their collectors are engaged in (Mora-Cantallops & Bergillos, 2018, p. 226).

Fan curating has been seen as more anarchic and less rigorous than professional heritage institution curating, which can engage with aspects of game culture that might otherwise be overlooked (Navarro-Remesal, 2017, p. 128-129). In various fan preservation efforts, fans highlight games that would perhaps not otherwise be seen as preservation-worthy. These bad and failed games are seen by fan curators as interesting and worthy simply because they are failures. Fan curator activities highlighting failed games can be understood as a type of resistance against established game histories (p. 143), accommodating titles that might have been overlooked by the game industry or official heritage institutions. They can thus redefine game heritage and the rules by which it should be engaged with.

Fan efforts in preserving forgotten games are a reminder that game heritage can, perhaps too easily, rely on what is already remembered and canonized by game industry practices and popular engagement with familiar games. While these, perhaps too convenient, sources reassert the official heritage of games, fans can try to remember what is already forgotten, or what the game industry wants to forget, which will make for a more critical and holistic heritage of games (c.f. Apperley & Parikka, 2018). As fans and other heritage communities engage with game heritage, their aim to preserve "everything" related with games, even never released titles or commercial failures (Mora-Cantallops & Bergillos, 2018, p. 214), can be seen as a form of resistance (Navarro-Remesal, 2017) that looks beyond curated canons and aims to realize game heritage as an archive[39] (c.f. Assman, 2008). As such, fans make it possible for forgotten game artifacts (i.e. the archive) to be rediscovered and appropriated into the game heritage canon.

The various heritage communities thus engage with heritage from multiple viewpoints (Stuckey et al., 2013). Ahm (2018, p. 63) shows how heritage communities can be understood to be interested in (1) a focus on nostalgia (going back to one's past), (2) unearthing historical curiosities, (3) discursively amplifying the central role of certain classics, (4) thinking of games as techno-historic artifacts, and (5) highlighting the aesthetic values of old game design (seeing old games as more pleasing). What they have in common, though, is that they are aiming to self-authorize their heritage by way of unregulated heritagization happening outside of research and heritage institutions (Suominen et al., 2018, p. 181). In the case of game heritage, this shift from "non-authorized" game heritage via self-authorization into "officially authorized heritage" is dependent in key areas on collectors and retro-gaming communities. In this setting, questions like who keeps ownership and what is needed to successfully turn participatory cultures into heritage gather increased importance. Suominen et al. (2018, p. 181) show how game heritagization initiatives need to have the trust both (1) professionals (e.g. museum curators, game scholars), (2) hobbyists (e.g. game collectors), and (3) gamers (e.g. player and their experiences), in order to be successful.

Bollier (2013, pp. 180-181) notices how abstract concepts like "loyalty", "respect", and "trust" become more important in these unregulated and self-authorized heritage communities. Conventional economics has no way of

[39] A canon consists of those cultural materials that are being actively remembered and kept alive by a given culture, while an archive is composed of a wide variety of artifacts including those that have been forgotten (Assmann, 2008, p. 99).

understanding the logic of abstract concepts like these which are dependent on "group identities, collective purpose, and collaboration", instead of "rational, materialistic self-interest". These forms of social value are at the core of participatory online cultures, where "people are developing new technological, legal, and social vehicles to protect socially created value" (p. 181). Counterintuitively, it seems that restricting the spread of cultural content diminishes its value (p. 171), and that participatory internet culture is "generating enormous reservoirs of intangible value" by going against strict copyright laws and inviting participation, shared access, and collaboration.

4 RESULTS

In chapter 4, the study lays out the results. While the results are based on the four articles included in the dissertation, they also go beyond them by utilizing observations and discoveries that are made possible by the study as a whole. As such, the findings from the articles function as a starting point for constructing a comprehensive theory of game heritage. The theory building presented in this chapter is made possible by applying participant observation and interpretive research methodologies, as well as theoretical triangulation with the help of the extensive literature review, as discussed in sub-chapter 2.2. In this manner, the results map out game heritage stakeholders in 4.1, game heritage ontology in 4.2, heritagization of games in 4.3, and stakeholder tensions of games heritage in 4.4.

4.1 Stakeholders of game heritage

In this sub-chapter, a taxonomy of game heritage stakeholders is provided by operationalizing sub-research question (1): *Who are the stakeholders of digital game heritage?* This sub-chapter relies on a methodology of participant observation in museums and heuristic assessment of museum work practices as well as on the findings of Articles I, III, and IV, which are further theoretically triangulated against research in game studies, game preservation, and heritage studies. A working taxonomy of game heritage stakeholders is provided in Table 6. The taxonomy is created in order to better understand what kinds of interests are present in defining game heritage and to what ends, and what kinds of social actors are responsible for the complex social and institutional practices by which games become heritage.

In the theoretical overview, several stakeholders involved in game cultures and their preservation were identified. As seen, the heritagization of game cultures has to a large extent depended on various participatory heritage communities documenting and re-mediating game content (e.g. Sköld, 2018; Mora-Cantallops & Bergillos, 2018; Newman, 2012), as well as on popular accounts by game journalists (Suominen, 2011; Kirkpatrick, 2012). These groups have been aiming to self-authorize (Suominen et al., 2018) games as heritage, thus working in parallel and in

competition with established GLAM institutions and as a form of resistance and counter-memory to their established work practices (Navarro-Remesal, 2017).

Article IV shows how these self-authorized heritagizations are prone to look at game heritage as something that would not otherwise be dealt with by established heritage processes. This has resulted in a situation where game heritage communities feel the need to champion their chosen field of heritage, often at the expense of other groups or at the risk of marginalizing and excluding some aspects of that heritage. And, as Article IV argues, while the resistance and counter-memories of game heritage communities are questioning the values and processes of established GLAM institutions, it can also result in a situation where they are questioning the inclusive and participatory values at the core of progressive heritage work, and constructing a game heritage that is only valuable and topical for a certain insider group of core gamers.

Article IV further shows how the self-authorized heritage community is prone to deal with games as collectible products of a uniform global game industry, instead of a participatory field of co-creation. This means that unregulated heritage communities concentrate on collecting and exhibiting games made and endorsed by companies. The resistance of fan collectors can mean that amateur historians are looking at the fringes of the game industry and its products, but they are not looking beyond the idea of games as products. Conversely, game studies and Articles I, III, and IV highlight how games are at the center of participatory networks that are creating content in complex non-commercial ways, and which heritage communities are not as prone to look at, resulting in potential blind spots for game heritage.

Article I examines the varicolored motivations for making, creating, and modifying games, e.g. modding, non-commercial work, playbor, and players as content-creators. The findings of Article I make it possible to distinguish game making motivations and show the breadth of game making work, ranging from the AAA industry to hobbyist game makers and participatory game making practices. It also shows how game maker interests can be distinguished from the interests of IP and rights holders and the game industry. Article IV supports these findings by arguing that existing heritagizations are prone to emphasize the role of the game industry and games as products instead of participatory and non-commercial game making practices. Thus, game heritagization should look beyond the game industry and IP holder interests in order to provide a more nuanced understanding of the stakeholders involved.

Game cultures and popular histories of games tend to overplay and replicate accounts of US and Japanese game heritage, without paying attention to local and

national game histories. Articles I, III, and IV, on the other hand, emphasize the local and national elements of game heritage. Article IV shows how local perspectives on games in museums have mostly been overshadowed by accounts of the global game industry, as seen in e.g. the Game On[40] exhibitions or the Nexon Computer Museum[41] in South Korea. While a national perspective on heritage has its potential drawbacks and pitfalls (e.g. Bennett, 2013), it can still highlight aspects of game cultures that would not otherwise be part of the discussion. In the Finnish Museum of Games, the national framework has allowed the curatorial group to approach games inclusively by exhibiting the traditional games of ethnic minorities (e.g. Sámi games) and co-created games instead of highlighting the game industry, but the national scope could just as well have been used as a method for exclusion, by silencing minorities and showcasing game heritage as a national export industry or as a source of jingoism. Still, a national perspective makes it possible to examine and consider social stakeholders such as national funding and state legislation bodies, non-profit organizations, and local minorities, that would be left out by a global viewpoint.

A national perspective also sheds light on the public at large as a stakeholder (c.f. Hajialikhan, 2008). As already roughly 70% of people in several Western countries play digital games of some kind (e.g. Kinnunen et al., 2018; Findahl, 2014; EEDAR, 2017), the public clearly also has a say on what kinds of games and play styles should be heritagized. As Article IV shows, existing heritagizations are excluding casual play styles from the game heritage discourse, not to mention the play of marginalized groups. Game studies shows us how game cultures tend to over-represent men and cater to (especially young) white males and their interests, although surveys and studies show us that games interest a much wider demographic. These distortions should be addressed in the heritage processes associated with games as acts of marginalization, aiming to exclude and "other" those players who are not perceived to be gamers.

---

[40] The Game On and its follow up Game On 2.0 have been on display in institutions as varied as the Helsinki City Art Museum, the Swedish National Museum of Science and Technology, Blooming Investment in Shenzhen, the Science Museum in London, VAM Design Center in Budapest, the Australian Centre for the Moving Image, Melbourne. Game On initially included many features exploring the social condition of games production and reception, which were dropped from the touring versions of the exhibition (Stuckey, 2012).

[41] The Nexon Computer Museum, located on Jeju Island in South Korea, is partly funded by South Korean online game developer Nexon, and it deals primarily with international game history.

Because game heritage has been perceived as a self-authorized heritage field existing outside of society and culture at large (c.f. Shaw, 2010), not much emphasis has been put on the kinds of stakeholders that are routinely dealt with in established heritage fields. Article IV investigates how there has been a tendency to downplay or outright sidestep the role of e.g. national stakeholders, such as the nation state and established heritage agencies, as well as the public at large, and instead focus on the stakeholders important for the self-authorized heritagization processes. This has meant that game heritage has been perceived as only concerning gamers and collectors, instead of being understood as existing in society at large, and thus being subordinate to the same processes and affordances as other kinds of heritage. Heritage studies employ theoretical frameworks and methodologies that can help in highlighting game heritage as influenced by various stakeholders, ranging from state funding bodies to municipalities, NGOs, lobbyists, and various participatory support groups. While established heritage institutions have not been instrumental to the processes of defining game heritage, they often do have a legal obligation to preserve it. As these kinds of responsibilities are increasingly affecting the work of e.g. national libraries, they are looking at the example set by game collectors and various other participatory communities engaged with game heritage.

While the literature review showed how heritage institutions are involved in institutional gatekeeping and a propagation of authorized heritage discourse in an effort to monopolize heritage by excluding minorities and indigenous peoples, Articles III and IV point towards a potentially more reflexive, inclusive, and progressive role for GLAM institutions as game heritage stakeholders. Projects such as the Finnish Museum of Games, in exhibiting and preserving non-commercial game making practices and local game histories, exhibitions such as Rainbow Arcade,[42] in dealing explicitly with queer game history (Shaw, 2019), and Play Beyond Play[43] and Design/Play/Disrupt,[44] in engaging with problematic gaming and a wider array of player viewpoints (e.g. Du Rietz, 2018), have shown the potential of established museums in engaging with game heritage in a critical light.

These examples show how GLAM institution efforts are all different, and how game museums are born out of very dissimilar starting points. Their basis in collections and funding might be garnered by individuals, communities,

[42] A changing exhibition on display at the Schwules Museum in Berlin from 2018 - 2019 and based on the LGBTQ Game Archive.

[43] A permanent exhibition on display at the National Swedish Museum of Science and Technology.

[44] A changing exhibition on display at the Victoria and Albert Museum in 2018 - 2019.

municipalities, the state, or a combination of these, making their stakeholder networks very different from each other. This is echoed by Article IV, which sees game museums as being composed of three dissimilar groups i.e. established heritage institutions, game collectors turned professional museums, and hobbyist collections. In Table 6, the different game heritage stakeholders are categorized into five high-level categories, which are further divided into individual stakeholder groups based on sources drawn from the included articles as well as the literature review. Some of the stakeholders are overlapping, as are the high-level categories they are organized under.

Category	*Stakeholder*	*Source*	*Complementary source*
Game making ecosystems	Game makers & developers including player co-creators	Article I	Keogh, 2019; Prax, 2016
	Game industry & IP rights holders	Article III, Article IV	O'Donnell, 2012
	Promotional actors such as game journalists	Article IV	Suominen, 2011; Kirkpatrick, 2012
Unregulated heritage communities	Rogue archives & other repositories of game knowledge	Article III, Article IV	De Kosnik, 2016
	Amateur historians (collectors, fans, retro-gamers)	Article IV	Navarro-Remesal, 2019; Suominen et al., 2015
	Amateur collections turned professional museums	Article IV	Moncunill-Piñas, 2017
Politically justified GLAM institutions and funding bodies	Established heritage institutions (e.g. national libraries)	Article III, Article IV	Styliano-Lambert et al., 2014
	Game museums with political funding	Article I, Article III, Article IV	Moncunill-Piñas, 2017
	Top level heritage organizations (e.g. ICOMOS/ICOM)		Hajialikhan, 2008
	Sponsors and tourist agencies	Article IV	Hajialikhan, 2008
	State funding bodies and cultural foundations	Article III	Styliano-Lambert et al., 2014
Peer-reviewed research	Academics, research organizations		Hajialikhan, 2008
Public at large	Various play communities	Article IV	Newman, 2011; Sköld, 2018
	Non-players	Article IV	Shaw, 2010
	Municipalities & NGOs		Hajialikhan, 2008

Table 6. Overview of the stakeholders of game heritage, their high-level categories, and the sources they are based on

4.2 Ontology of game heritage artifacts

This sub-chapter examines the high-level ontology of games as heritage artifacts with the help of sub-research question (2): *How can the ontology of game heritage artifacts be articulated?* This is done by organizing and utilizing the results of Articles I, II, and IV, and then theoretically triangulating them with respect to the overall theoretical discussion introduced in the literature review, as well as by reflexively applying insider knowledge of museum work practices. The resulting high-level working vocabulary for understanding game ontology is laid out in order to unify various disciplines and provide a basis for a systematic approach on games in museums and other GLAM institutions.

Article II provides a starting point from which to approach games as ontological assemblages consisting of various preservation techniques and the interplay between play and artifacts. While it does not explicitly cover games as digital software artifacts, the framework of material, contextual, and experiential aspects[45] argued for in Article II provides a holistic approach for dealing with games in museums. It further raises awareness of all the possible ways that games can be preserved by arguing for a model in which their various components exist in a symbiotic relationship with each other. As various preservation components can cover different preservation motivations for different games, some game heritage stakeholders might concentrate on keeping games playable, while others might need or want to apply a documentary approach to game preservation, especially if playable games are not available for technical or legal reasons. In the following, the framework laid out in Article II is developed further by supplementing it with findings from Articles I and IV, as well as by theoretically triangulating it with heritage studies, where artifacts have regularly been conceptualized as either tangible, intangible, or digital.

Firstly, games are understood to be physical artifacts with a material presence, as all games are run and controlled with the help of various technological implements. Until the 2010s, most commercially released games were sold in physical retail boxes containing various kinds of storage media and all kinds of ephemeral paraphernalia like manuals, "feelies",[46] ordering forms, and the like. While the advent of digital

[45] Article II adopts a slightly different terminology, identifying the components of game heritage as objects (material artifacts), experiences (the act of play), and context (intangible meaning-making).

[46] Feelies refer to the intricate material or "creative props" originally produced by Infocom in the 1980s to accompany their text adventure games.

distribution makes the tangibility of games less apparent,[47] games are still firmly rooted in materiality via the consoles, computers, mobile phones, and VR glasses they are played on, not to mention the plethora of various commercial and non-commercial props, figurines, plush toys, and similar objects that have some kind of relationship to the game as an artifact.

Secondly, games are defined by intangible meaning-making processes. Intangible meaning-making practices as a means to preserve game heritage have been explored in e.g. the context of Let's Play videos (Glas et al., 2017), walkthroughs (Newman, 2011), and the context of photographs of play (Stuckey et al., 2013). The idea of meaning-making as intangible heritage aligns nicely with the idea of games as cultural artifacts, as both perspectives deal with discursive meaning-making practices. The concept of intangible heritage can thus be used to map out the experiences of e.g. play practices, game reminiscence, recorded (re-mediated) play, tips, and strategy for playing that are difficult to place within the framework of preservation research. Article I explores these cultural aspects of games by looking at game maker video interviews and their role in preservation. It shows how re-mediated intangible heritage should be understood as independent preservation artifacts, instead of as metadata contextualizing game artifacts (c.f. Sköld, 2018, p. 141), in order to preserve the experiences of making games. Similarly, the concept of intangible games heritage can also cover the ways that games are dealt with in the public discourse about games and the heritagization and heritage-based identization processes taking place there.

Thirdly, games are digital software artifacts that are supposed to be run on computer hardware. Similarly, websites dedicated to games, forum discussions, log files and the like only exist in digital form and require preservation processes such as emulation, migration, hardware preservation, and metadata documentation in order to survive. In this complex situation, and facing a plethora of means of preservation, Article II points towards case-specific preservation by arguing that different games require custom-made measures in order to be preserved and exhibited, as they and the stakeholders preserving them have distinct needs and affordances. Similarly, Article IV has shown how exhibitions and collections exist in a complex relationship with IP holders, copyright law, and the affordances of individual games.

The intertextual taxonomy of Genette (1997; see also Švelch, 2016) provides a framework for understanding the various levels of ephemeral components that exist

[47] Various vanity publishers are, interestingly, realizing there is a collector's market for limited physical editions of modern (digitally distributed) games. Publishers include e.g. Limited Run Games and Fangamer.

around games and play. Players produce a wide range of documentary traces (Sköld, 2013) that are not affiliated with the official IP holders, e.g. pirated disks, artworks inspired by games, and activities like cosplay. For the purposes of game ontology, these documentary efforts that are recording and re-mediating play should be understood as material and digital extensions of the intangible meaning-making processes of play. The results thus assume that game heritage consists of three transtextual modes: primary texts, official transtextual artifacts, and unofficial (i.e. fan made) metatexts. Primary texts consist of material, digital, and cultural artifacts required for running games (i.e. storage media, copy protection dongles, software, patches), official transtextual artifacts include components produced or endorsed by the rights holders (e.g. retail boxes, posters, screenshots, trailers, developer interviews), and unofficial metatextual documentary traces include artifacts produced by players (e.g. fan made paraphernalia, mods, player reminiscence, Let's Play videos). The intertextual taxonomy emphasizes how game context and ephemera are important for game preservation in line with Sköld's (2018) category (a), which understands the context ("expanded notion") of games as an important part of game preservation and heritage by and of itself.

However, games are also a form of activity. As they only come alive when played, and because there is no definite and perfect example of how a game should be played, including playable games in preservation efforts and exhibitions is a self-evident way to proceed in order to let visitors and other heritage users understand games by directly engaging with them. This makes games (and other software artifacts) "technical objects", which are made for and are defined by their use. Still, the importance of the role of visitor play has been criticized by Newman (2012), who argues that preservation efforts should rather aim to re-mediate actual play experiences by various means (walkthrough, Let's Play video) in order to preserve past and existing modes of play. Similarly, museums have traditionally concentrated on preserving the object-being of technical objects in their collections, letting visitors surmise the work-being from the exhibition context, metadata, or pedagogical efforts, as material artifacts in collections are no longer supposed to be used (c.f. Heidegger, 2017). Games, however, make it possible to preserve and exhibit both the object-being and work-being at the same time with the help of technologies such as emulation, as shown in Article II. Still, it could be argued that emulated play is no longer an original form. Emulation, thus, might be seen more as a replica of the original than the original itself, making play as an activity more a form of interacting with replicas than with the originals themselves. This is echoed by Swalwell (2013), who contests the role of originals and original experiences in game preservation.

This ontological discussion about originality can further be connected to the debate concerning the aura of originals (c.f. Benjamin, 2015; Bolter et al., 2006), as research needs to examine how faithful to the original play as activity needs to be to still be considered original. As Article II shows, whether emulated forms of Super Mario or games migrated into e.g. human-sized versions of Nintendo Entertainment System Controllers at the National Videogame Museum or a similarly huge version of a Nokia 6110 at the Finnish Museum of Games are still faithful reproductions of the original, relies more on quality and familiarity than on anything that is an intrinsic part of the original hardware. Still, the aura of particular hardware does have meaning, whether interacting with it is affective (as in collecting) or critical (as in a media-archeological approach).

In the above, this sub-chapter has provided a theoretical framework for defining games in museums as an intertwined assemblage of material, intangible, and digital components, where individual aspects and artifacts cannot be separated from the whole (c.f. Carpentier, 2017). Further, it argues that play cannot exist without the material, digital, and intangible artifacts that make it possible. As such, game heritage is defined by the (1) materiality of hardware and game collecting, the (2) digitality of software and functional games, and the (3) intangible and discursive meaning-making processes situated around games and play. In some cases, classifying these artifacts as either textual, paratextual, or metatextual can facilitate the systemic classification of games in museums. These three aspects further support and make possible the (4) actual playing of games. Table 7 illustrates how the three aspects of material, discursive, and digital game artifacts make games as activity possible.

Games as activity

Material artifacts	**Cultural artifacts**, i.e. discursive and intangible meaning-making practices	**Digital artifacts**
a) textual, e.g. game disk b) paratextual, e.g. poster, retail box c) metatextual, e.g. fan art -c.f. material artifact (Sotamaa, 2014) -c.f. tangible heritage (Mairesse & Desvallées, 2010)	a) textual, e.g. player experiences b) paratextual, e.g. official game maker announcements, brands c) metatextual, i.e. cultural meaning-making -c.f. cultural artifact (Sotamaa, 2014) -c.f. intangible heritage (Smith, 2006)	a) textual, original playable game b) paratextual, e.g. official screenshot, trailer c) metatextual, e.g. walkthrough, Let's Play video -c.f. software artifact (Sotamaa, 2014) -c.f. digital heritage (Karp, 2004)

Table 7. Overview of the various material, digital, and intangible artifacts of games, and their relationship with each other and with games as activity

4.3 Heritagization of games and play

This sub-chapter of the dissertation deals with meaning-making in game heritage as operationalized by sub-research question (3): *How does heritagization affect games?* The research question is examined by applying the findings of Articles I, II, III, and IV against a theoretical triangulation of the literature review. In order to answer the sub-research question, the research examines the meaning-making processes of heritage communities and professional heritage institutions which change games as part of the musealization and heritagization processes. The findings are further expanded on in the discussion, in order to argue for a reflexive heritagization practice.

Museums are curators and custodians of meanings, who are interacting with games and changing them as they are adding them to their collections, but they are not the only stakeholders involved in constructing and manipulating heritage. Because of the scope and purpose of this dissertation, both the terms heritagization (Fontal & Gómez-Redondo, 2016) and musealization (Maranda & Emerita, 2009) are used when examining how various stakeholders are making, changing, and legitimizing games as heritage. These concepts are used to illustrate how games (and individual game artifacts) are changed by the very processes they undergo in their metamorphosis from non-heritage to heritage, as well as to illustrate how the making of heritage can become meaningful for the identities of those involved. This includes the use of artifacts as representations of the past: firstly, as artifacts that are making the past seem present and, secondly, as representations of reality (Prendergast, 2000, p. 4).

As such, musealization explains how museums transform artifacts when moving them into their collections, e.g. by providing metadata and transforming artifacts from their "work-being" into their "object-being". Heritagization, on the other hand, explains how other stakeholders become involved in the legitimizing of heritage as well as examining how stakeholders use heritage as a building-block for their identities and to raise self-knowledge. While heritagization is used more widely in this study because of its scope, both concepts are used side-by-side, in order to differentiate between the processes happening in museums (musealization) and the overall legitimization of heritage (heritagization). In the following, the results show how musealization and heritagization of games happens on three different levels: (1) through the production of new knowledge and artifacts when games are added into

collections, (2) through changes in artifacts when made into heritage, (3) through new meaning that the artifacts gain when they are included in collections.

First, this sub-chapter examines knowledge and artifact production heritagization in museums and in heritage communities, and further considers the ontological role of the knowledge and artifacts produced as part of this process. As seen, museums construct heritage by including artifacts into their collections, but the musealization process also produces knowledge and artifacts as this happens. The metadata production that museums are engaging in is one form of knowledge production enabled by collection management. On a basic level, it means that the musealization of games produces additional information about what is being musealized. However, the documentation and metadata produced upon musealization also defines how heritage should be dealt with and understood in the future.

Article II points towards understanding metadata as part of the power structures inherent in heritage. Depending on how a game is approached, very different results and systems of metadata will be obtained. If the curatorial practices used in heritagization favor playable games, that is the kind of knowledge that will be produced, as witnessed in e.g. online rogue archives. If the curatorial practices, on the other hand, favor provenance as metadata, that is what will be produced through the heritagization of games. Provenance can provide individuality even to mass-produced artifacts, and provenance, as a form of metadata, can highlight knowledge about artifacts' past when they are heritagized. Examples like the Atari 2600 cartridges dug up from the Alamagordo archeological site[48] are exciting because of their unique history, not because of how they function as software. Thus, even the ways how games are dealt as collection artifacts changes them, as they might be catalogued in widely disparate ways even when overarching guidelines are provided for.

The research shows how metadata as knowledge production can also produce new artifacts. Article I indicates how making video interviews with game makers produces additional information by grounding the intangible oral histories of game makers and connecting them with individual games. At the Finnish Museum of Games, close to 50 video interviews with Finnish game designers, artists, writers and producers are on display, as well as contained in the museum collections. When

[48] The US game company Atari buried hundreds of thousands of unsold video game cartridges, consoles, and computers in a New Mexico landfill site in 1983, an event which later fueled various urban legends and birthed exciting rumors in game collector circles. In 2014, an archeological dig unearthed thousands of games, which were either donated to museums or auctioned (e.g. Guins, 2014, p. 207).

heritagizing games, museums produce new information that would otherwise not exist. Similarly, as Article IV shows, when heritage communities are engaging with game heritage, they are also producing new artifacts that can be preserved as documentary traces of their activities. Both stakeholders are thus producing knowledge that can be engaged with as data about data, and as independent new data, i.e. categories (a) and (b) as defined by Sköld (2018).

Secondly, artifacts legitimized as heritage are changed by the process of making them heritage. In the following, the results differentiate between changes to the artifact proper and changes in the ways that it can be interacted with. Article II deals with how games as digital artifacts are changed by heritagization practices. In museums, changes to the software might aim to make the games manageable in an exhibition setting. This might mean removing copy protection and DRM[49] systems from games (i.e. "cracking"[50] them) or migrating the games into another software environment. As Newman (2012) has shown, emulation also changes games, as it entails running games in non-original software environments. The changes are digital, but they can also fundamentally affect the whole game assemblage. As such, emulated games in collections and databases (such as the Internet Archive) highlight games as playable artifacts by diminishing their material and cultural existence, thus shifting focus from the intangibility of their past meaning-making processes to the present ways they can be interacted with. As Article II has shown, such processes can shift the focus from play as a historical, context-bound, and embodied practice, to play as a present activity happening here and now, and hide the fact that the playing of games does not equal understanding them as embodied practices or the circumstances under which they were made.

Article III shows how heritage communities are producing various material, digital, and intangible artifacts when dealing with games. As seen, this includes extensive metadata schemes, but it might also mean changing the games themselves. Most online repositories and rogue archives include games in a form free from copy protection, distributing these non-original digital artifacts because of their ease of use. Similarly, when game makers and game communities cooperated with the Finnish Museum of Games in order to make displays out of games they were affiliated with, they manipulated software to make it more playable, participated in interviews, and otherwise produced custom made displays for the museum. While

[49] Digital Rights Management.

[50] Cracking refers to the modification of software to remove and disable features, such as copy protection, which are considered undesirable by the crackers.

this produced new forms of knowledge about the games they were affiliated with, it also changed the games themselves.

Heritagization processes also change the essence of games, or rather focus on one or more aspects of the assemblage of games. Article IV suggests that rogue archives highlight the work-being of games and do not engage with their object-being, while collectors in turn engage mostly with the object-being of games and might not operate the work-being at all, especially if collecting new-in-box specimens. Musealization, on the other hand, makes games into ex-games, in the sense that they are no longer playable but instead defined by their material presence only, as they cannot be operated or powered on for risk of damage to them. This has interesting repercussions for the authenticity of games. While traditional musealization practices have aimed at protecting the object-being of material artifacts at the expense of their work-being, Article II and Guins (2014) point towards an interpretation that games in museums could have both their object-being and work-being intact, if visitors engaged with emulated versions of the games.

Thirdly, heritagization changes the cultural meanings of games. While positivist materialist and essentialist views would understand heritagized artifacts as accumulating and conveying information by documenting the reality and culture they come from, social constructivist views understand heritage artifacts as representations of both the past and of cultural meanings in general. As seen, artifacts acquire new cultural meanings when they are made into and legitimized as heritage through the heritagization process. Thus, "normal" un-heritagized artifacts "in the wild", be they material, digital, or intangible, change into heritage and thus acquire a new set of cultural meanings.

Articles II, III, and IV show that game heritage is inherently political. Games in collections become representations of the past, in that they are used as to bring the past to life. As representations of reality, games in collections are also partaking in constructing reality (Hall, 1997). Article IV shows how stakeholders need to acknowledge these processes if they want to be reflexive of the power structures that are beginning to define game heritage. How, and with what kinds of artifacts, heritage communities and GLAM institutions start to represent the past constructs the present as well as the future. Similarly, the kinds of artifacts that start to represent what a typical gamer looks like and what kinds of games they play in museum collections partake in constructing reality. In this manner, the cultural meanings of games start to be disputed in discursive power struggles, and various stakeholders begin to influence the meanings of games as heritage. While much of game heritage work has been done in various participatory amateur history cultures, museums and

other heritage institutions are in a unique position to provide an additional layer of introspection and reflexiveness of power structures, making it possible to introduce issues such as power inequalities and inclusion into the game heritage process.

While it is natural for digital games to be understood through the lens of existing museum collections, stakeholders also need to acknowledge how previous collection management policies and heritagization processes influence how games are understood in the political and ideological sense (c.f. Cameron, 2007). If museums stick to their old collection policies, the musealization of games can happen on conditions similar to earlier collections, i.e. that they are dealt with more as artifacts than continuous intangible meaning-making processes. Thus, curators (both in museums and heritage communities) have an important role in constructing games through the choices they make concerning representativeness and artifact categories.

In the above, this sub-chapter has dealt with various heritagization processes and how they are affecting our understanding of games as heritage and changing the games themselves and their cultural status. Table 8 compiles the various heritagization systems that affect games as they are becoming heritage through the actions of heritage communities and GLAM institutions.

	Heritagization	
Games "in the wild" →	a) Knowledge and artifact production b) Changes to original artifacts c) Production of new cultural meanings	→ Games as heritage

Table 8. Presentation of the process by which musealization and heritagization produce new kinds of artifacts as games are made into heritage

4.4 Stakeholder tensions in game heritage

The last sub-chapter of the results addresses questions related to participation and stakeholder power positions in game heritage. Sub-research question (4): *How does participation affect the power positions of heritage stakeholders* is set in order to identify curatorial power positions, gatekeeping, and levels of participation. The research question is approached with the help of theoretical triangulation of various fields of research dealt with in the literature review as well as the findings of Articles II, III,

and IV. Stakeholder power positions are examined in order to explore game heritage as a site of conflict. Conflicts in game heritage and stakeholder tension mitigation are further discussed in chapter 5.

Power positions in heritagization are dependent on the power to choose what is made into heritage and what is left outside. When museums and heritage communities are legitimizing heritage, they are using their curatorial power to include, but also exclude, certain topics and types of artifacts. Curating is a method used by heritage institutions to construct heritage, but Articles II, III, and IV show how curatorial processes are not confined to the institutional sphere. Instead, all heritage stakeholders are making curatorial choices in order to exercise power. These choices define what is legitimized as heritage, but also how. The curatorial choices made in various heritage communities, such as rogue archives and private game collections, influence our understanding of game heritage, and the repetitions and representations present in these participatory curating efforts work discursively towards constructing game heritage. As such, participatory re-mediations are based on curatorial choices, such as the choice of angle in a screenshot, the level of abstraction in a walkthrough, or the level of player input and verbalization in a Let's Play video, just as heritage institutions exercise power by making decisions about whether to include games in their collections or not, or what kinds of metadata schemes to apply to them.

Article II highlights how the conceptualization of games as assemblages that are constructed out of diverse components and discursive practices that are grouped together under the concept of a (digital) game makes it possible to see how all stakeholders are defining game heritage through their curatorial choices. This way, curatorial choices define what becomes game heritage, but curators are also bound by a complex set of material, digital, and intangible affordances (Gibson, 1979) of the games they are dealing with. For some games, preserving a playable version can prove impossible due to disbanded servers or infeasible hardware requirements. Other games are bound by IPs and DRMs, making it difficult to preserve them in playable form. Further still, displaying official transtextual material artifacts of digitally distributed games is impossible as they do not exist, and making player interviews requires the existence of some sort of play culture of the game in question.

The practice of constructing game heritage is bound by the power relations between stakeholders, and by their gatekeeping powers. Institutional curators possess gatekeeping power, as witnessed by how the authorized heritage discourse excludes stakeholders from heritage meaning-making, but their curatorial power is also constantly challenged by various counter-memories produced in self-authorized

heritage communities. As Article IV shows, game heritage, as emerging and self-authorized heritage, has been defined mostly by non-institutional heritage communities, such as game collectors, retro-gamers, and online rogue archives, who might have very different values and aims than heritage institutions. Still, the early efforts in heritagization by game related heritage communities can nonetheless amount to gatekeeping, as their activities restrict access of other stakeholders. As amateur historians like retrogamers and collectors have already defined the central symbols and artifacts that should be included in game heritage, new perspectives have a hard time getting included.

The clashing interests of game heritage stakeholders are dealt with in Article III, which examines how participatory amateur preservationists are interacting with artifacts through cooperation with GLAM institutions. Heritage communities are working towards preserving and legitimizing games, not out of a legal obligation, but rather out of love and respect for games, as a form of identization (Fontal & Gómez-Redondo, 2016). This can mean "cracking" and otherwise manipulating digital game artifacts in order to make them more usable for heritage community interests, which would be impossible in GLAM institutions according to the current legislation, but also by documenting and cataloguing games. Article IV further explains how the representations of game heritage done in heritage communities are relying on commercially released symbolic games, brands, characters, and playable games, instead of intangible meaning-making practices of participatory play communities, or games as participatorily created artifacts. As such, the personal motives of individuals in the heritage communities are, to a large extent, responsible for self-authorizing and heritagizing games.

Article IV also points towards games as a popular sphere with very broad ownership rights. While digital game culture(s) are not based on excluding and suppressing cultural practices of indigenous populations for the benefit of unified Western values, as in many cases of authorized heritage (Smith, 2006), but are rather born from the sense of importance and identization in play communities and the subsequent heritagization by heritage communities of popular culture and mass marketed products, this identization process does not necessarily include all potential stakeholders. This makes issues related to ownership in game heritage different from those dealt with in e.g. ethnographic museums, but institutions still need to be reflexive regarding whether they are working for the best interest of their stakeholders, or if they are merely promoting the interests of some stakeholders at the expense of others.

Similarly, the game industry's double role in the game heritage process needs to be reflexively scrutinized. The focus on games (instead of play) in game heritage means that it relies heavily on products made by and controlled by the game industry. This can potentially lead to power imbalances (the industry has leverage to lobby for its preferred outcomes) and conflicts of interest in exhibiting games produced by companies financing game exhibitions. This can influence game exhibition curators, who will find it harder to be critical of the practices of the funding companies, such as the labor conditions of their employees. It can also make it more difficult to deal critically with game content. IP ownership means that certain stakeholders have more say over the ways games can be exhibited, and they might not react favorably to exhibiting games that have been modified by the player community, for example. Games are always co-created, and it is not rare that players' creative contributions are exploited by game developers and publishers, and this might also influence how said games are heritagized.

As shown by Article III, curation does not only happen in professional heritage institutions, but also in the various participatory preservation initiatives and heritage communities surrounding games. Established heritage institutions are motivated to work together with heritage communities, as well as to use the expertise of these communities in order to further their own endeavors in preserving game heritage by e.g. acquiring the relevant skills for technical game preservation, or in metadata collection. As explored by Article III, examples of official institutions collaborating with communities include e.g. the National Swedish Museum of Science and Technology interviewing various influencers from game communities and placing those on display in the Play Beyond Play exhibition, the Finnish Museum of Games working together with Finnish game makers in order to set up its permanent exhibition, or the Internet Archive operating with the help of content donations.

However, co-curation entails a true dialogue with collaborators, and as Article III has shown, participation does not automatically integrate the stakeholders fully into the decision-making process. In engaging with participatory communities, it is important to also shed light on the power relations between the actors concerned. Levels of participation can be measured by e.g. Arnstein's ladder (1969) or similar means, which sheds light on the power relationships between stakeholders. Article III shows how full collaboration, i.e. partnership and beyond, requires trust. Participation aiming for forms of agonistic pluralism is by necessity a dialogue, meaning that stakeholders (both participatory networks and institutions) need to be able to listen and discuss, but also leave some of their power behind in order to more fully cooperate with their participant partners. This kind of reflexiveness and

abandoning of power positions is not always possible, and most GLAM institutions are reluctant to fully abandon their gatekeeping positions. Article III further proposes that participation works better with equal power relations which help to foster a climate of equality and trust, since the more powerful partner has relinquished some of their power in order to work on equal terms. GLAM institutions need to relinquish some of their curatorial power in order to let the participatory preservation process take full effect. Collaborators, on the other hand, need to trust GLAM institutions, since they are giving away some of the control of their actions to the heritage organization.

Article IV further examines how representations of game heritage are now being legitimized into an authorized game heritage, as curatorial choices made in the hobbyist preservationist scene begin to be authorized by emerging cooperation with professional heritage institutions. It notes that game heritage exists and is defined outside of society at large and is seen as the domain of white male gamers, although research shows that digital games are played by a majority of the population. When game heritage is now being authorized by GLAM institutions, these institutions are in many ways depending on and replicating the patterns of exclusion already present in the participatory heritage communities. However, institutions are also in a unique position to mitigate the various tensions in game heritage. Professional memory institutions, at least those in the Nordic countries, are equipped and motivated for applying stakeholder management strategies and providing critical perspectives on game heritage. Article IV argues how museums as social actors can use this opportunity in order to work towards a more inclusive game heritage, by embracing players and communities otherwise left out.

As Article IV shows, there is a need for added reflexiveness in the game heritage process. Museums and other heritage institutions, more so than other stakeholders, are at the center of heritage processes, but they also have more tools for reflecting on the processes, tools, and practices used. Reflexive curators are aware of their power position as gatekeepers and might seek to deconstruct their power position by various means, for example through participatory practices or steps towards social inclusion, or by making the museum into a vehicle for social change. These themes are further explored in the discussion.

5 DISCUSSION

Chapter 5 elaborates on the four findings that were presented in chapter 4. First, it examines the broader implications of the findings for game preservation research and heritage studies and synthesizes the results into an overarching conceptualization of game heritage. In 5.2, it elaborates on issues related to the concept of reflexiveness and how it can be applied to game heritage by GLAM institutions as well as theorizing around the processes of inclusion and exclusion in game heritage. These latter theorizations are pragmatic in the sense that they can be directly applied to curatorial work dealing with games, while the opening implications are primarily relevant as high-level theoretical conceptualizations that can serve as inspiration and directions for day-to-day work practices. Lastly, the chapter investigates the delimitations of the study as well as considering avenues for further research.

5.1 Implications of results

Firstly, the study has implications for game preservation research. In 4.1, the results demonstrated how game preservation research needs to acknowledge the aims and goals of stakeholders beyond those that have been involved in the hobbyist game preservation discourse. While existing game preservation work has acknowledged the interests of game heritage communities, i.e. amateur historians, collectors, and participatory preservationist networks, as well as the game industry, it has not been sensitive to the needs of e.g. GLAM institutions, player-creators, or the breadth of play communities. As such, 4.3 provided theoretical concepts and frameworks for understanding heritagization as a process concerning various stakeholders with asymmetric power positions, as well as insight into how preservation and heritagization changes games as they become heritage.

Further, 4.2 showed how games as preservation artifacts are not confined to digital software, but that they are composed of a complex assemblage of various kinds of artifacts that game preservation research could (and perhaps should) acknowledge and utilize in preserving game heritage. As the types of artifacts that are being preserved define game heritage, in 4.4 the study showed that game

preservation research needs more reflexiveness concerning the power positions present in the game heritage process and awareness of the various gatekeeping mechanisms in place. In order to mitigate tensions between stakeholders, game preservation research needs to apply stakeholder management practices and other methodologies from heritage studies in order to fully understand the inequalities present and to be able to respond to challenges rising from marginalization.

Secondly, the dissertation has implications for heritage studies. By dealing with the ontology of digital games in 4.2, the study provided a more nuanced understanding of digital heritage and the interplay between tangible, intangible, and digital artefacts, and showed how traditional preservation technologies in use at GLAM institutions can be applied to digital artifacts as well. In 4.3, by shedding light on heritage as an assemblage of various components fitted together that cannot be ontologically separated from each other, it also provided an account of how ideology is tied to the curatorial process and the choice of artifact type. Further, the study showed how the heritagization processes used by amateur preservation efforts, i.e. the various physical and virtual collection and exhibition spaces of participatory historians, and professional preservation efforts at GLAM institutions are changing heritage in various ways.

In 4.1, the study demonstrated how game heritage is influenced by a very complex assortment of stakeholders. As such, the dissertation can function as a case study for heritage studies, indicating that self-authorized digital heritage requires new theoretical models for stakeholder management, as the circumstances and stakeholder power positions in digital heritage differ from the dynamics in more traditional site or object-based heritage work. In 4.4, the study further provided a critical case study of the role of participation in heritage work. As such, the study serves as an illuminating case study testing various heritage studies methodologies and a proving ground for theories related to self-authorized digital heritage and its relationship with other forms of heritage.

The findings and their implications indicate how there is a need for a new kind of interdisciplinary dialogue that combines theories and methodologies from both heritage studies and game preservation research. The interdisciplinary field thus mapped out has, in this study, been tentatively called game heritage, which can be summarized as a theoretical framework that combines concepts and perspectives from game studies, game preservation research, and heritage studies. Game heritage research can help stakeholders, especially GLAM institutions, to better understand the cultural processes happening around games as they are becoming heritage. As such, it should provide high-level theoretical insight into the work processes required

for dealing with games as heritage, as well as pointing towards methodologies of critical inquiry.

The results further define game heritage as an assemblage of various artifacts types, some of which are born in and through the musealization and heritagization processes. The results also indicate that game heritage should be interpreted as a cultural and discursive process, by which heritage is constructed through curatorial choices. As such, it is influenced by gatekeeping by institutions, heritage communities, and individuals. In this manner, game heritage is not a neutral transmission of information, but rather constructed through the active agency of stakeholders such as institution curators, heritage communities, and game makers. The interplay between these various stakeholders is at the center of the game heritage process. Consequently, reaching the target state of agonistic pluralism needs active measures from social actors such as GLAM institutions.

The findings show how research should look beyond games as digital software artifacts, and into the complex world in which games are played and played with. While play as a key component of game heritage has been dealt with by Newman (e.g. 2012), he has accentuated play as something that constantly modifies games and resists the cultural meanings that game makers place on their games, but not as an intangible process which actually defines games. In order to fully appreciate the role of play in game heritage, there is a need to remind ourselves, as Sicart (2014, p. 6) does, that play is always contextual, and it needs various things to take place. In 4.2, the results showed how play here-and-now is dependent on material, digital, and cultural artifacts, in the sense that it needs all of these to exist. If GLAM institutions want to display playable games in exhibitions, they need to consider that play is dependent on these aspects in order to be able to exist in a meaningful manner. Situated play practices, on the other hand, can be preserved by recordings and re-mediations of play practices, which then can function as representations of past play, instead of modern players having to surmise past play practices by engaging with games here-and-now.

However, research also needs to acknowledge that play is essential for game heritage in other ways as well. Since play follows its own "autotelic" rules and has its own goals and purposes, it can also be disruptive (Sicart, 2014, p. 15-16). This can lead to dark play practices, the importance of which for game heritage has been touched upon in the above. As such, play is trolling, play is exclusion, play is bullying, and whether these should be part of game heritage is of course an issue of debate, but our understanding of present play cultures is lacking if they are not taken into account. Dark play is something that game preservation research has not really dealt

with before, but the game heritage framework hopefully makes it easier to look beyond restorative nostalgia and into reflective nostalgia that is aware of the power structures in place. As such, it would provide stakeholders with tools for setting various kinds of play into perspective and enable them to enter into ethical dialogues about game culture values.

5.2 Towards reflexive and inclusive game heritage

Based on the findings outlined in chapter 4 above, the study in the following argues that GLAM institutions need to be more reflexive in their dealings with stakeholders, artifact acquisition, preservation methods, and curation practices. This means that GLAM institutions need to understand that the kinds of artifacts they include in exhibitions and collections shape these games and game heritage as a whole ("reflexive curation"), understand how different stakeholders are dealing with games from different starting points, and aim to facilitate a more inclusive understanding of the stakeholders involved and their power positions ("reflexive heritagization"). These measures help them to work towards more inclusive forms of game heritage, catering to the needs of a wider variety of stakeholders.

Firstly, GLAM institutions need to engage in reflexive curation practices when dealing with exhibitions and collection policies. To begin with, reflexive curation entails perceiving and questioning how preserving games requires curatorial choices regarding types of artifacts. As seen, game heritage consists of a material/discursive/digital ontological knot, but curators can and will focus on some or all of the material, discursive, and digital aspects of games. These curatorial decisions define games as heritage. This means that the curatorial "lenses" used by curators (whether they are amateur curators or GLAM professionals) when dealing with games – i.e. whether games should be understood as primarily playable technical artefacts, as memories and reminiscence, or as various kinds of paratextual and metatextual objects – actually shape games as heritage. This happens on two levels, both discursively through representations of game heritage in museum exhibitions and collections, but also through artifact heritagization, which defines the types of artifacts that become game heritage in the long run (c.f. Prendergast, 2000).

The discursive/material/digital knot of games entails a challenge, since so much of the work done in established museums and by game collectors is still based on the collection and care of material artifacts. Similarly, online heritage communities are engaging with digital artifacts, and not with their material aspects or the various

intangible practices that surround them. However, as games exist as material, digital, and intangible artifacts, their preservation should not rely exclusively on any one of the above categories. So, in order to be more reflexive of game heritage, curators in GLAM institutions and heritage communities need to acknowledge that games exist in many places at once, and that different types of games need different accents in curation, and that the choice of artifacts actually constructs our understanding of game heritage.

Reflexive curation goes beyond choice of artifact type and into questions related to different types of games and play cultures. As seen, game culture consists of malleable digital artifacts that are shaped by both their original makers and also by various player-creators and modders engaging with them. In this sense, collecting material game boxes and playable digital artifacts does not consider the complex ways that games change, but also exist in many places at once. As such, games are not only commodities, but rather something people do together in complex participatory networks, which preservation needs to take into account. Reflexive curation means looking at these kinds of practices, and including them in collections, instead of focusing on games as products.

Similarly, GLAM institutions might want to look beyond playable games and material artifacts, and into the meaning-making processes happening around games and make them the main aim of their exhibition and collecting policies. Reflexive GLAM institutions might want to engage in curating types of artifacts that have previously not been preserved. They can also try out playful and alternative curating styles, shedding light on the curation process itself. This might entail deciding whether games are displayed in a reverential art museum-like setting, or if the very displaying of them should include playful aspects. It also means that all games in museums and other collections are not preserved in the same way. The preservation circumstances, affordances, and vision of the preserving and exhibiting partners influence how games are approached.

Secondly, reflexive game heritagization entails sensitivity towards power positions, processes, and tensions between stakeholders and their various interests. Different stakeholders have different ways and reasons for legitimizing games as heritage. For some, games and preservation are important as identization, while others engage with games from a legal obligation. In order to mitigate tension between these different interests, this study argues for a reflexive game heritagization which considers these various positions and aims. As Article III argues, this entails working together in agonistic pluralism, instead of heritage institutions using their power position in order to allow only tokenist forms of participation. The skills for

preserving game heritage are already out there, but reflexiveness is needed to understand what kinds of skills the different stakeholders can bring to the collaboration.

Reflexive game heritagization needs to be critical of how curatorial practices favored by collectors are now being normalized into an authorized view of games as heritage, without problematizing the kinds of artifacts and aspects included in the process. While the authorized game discourse is increasingly being institutionalized in actual heritage institutions working together with various hobbyist preservationist groups, and in game collections turned professional museums, reflexive curation can question the starting points of these stakeholders and argue for a more inclusive curation policy engaging with a wider variety of artifacts and stakeholders. Thus, reflexive curation considers that game heritage is not inclusive by nature, but rather requires active measures from game museums and other actors, making room for those whose voice would otherwise be silenced.

However, GLAM institutions and researchers also need to understand and acknowledge the work done in heritage communities, as they shed new light on digital artifacts and participatory curation. The experiences of amateur collectors and participatory game preservation efforts show us how to deal with malleable digital artifacts and their numerous versions on different platforms, but also the complex structures of patches and versions. Material things and digital software are important for collectors and heritage communities, and established heritage institutions should in no sense force them to move onto different forms of preservation. Still, in order to understand the complexity of games, there is a need to acknowledge that different stakeholders have different needs and aims, but also different skills that can assist in providing new perspectives on games, instead of overemphasizing the discursive nature of meaning-making.

Nevertheless, this study argues that some stakeholders are more inclined to act in a reflexive manner than others. Museums, as social actors, have more incentives to work for stakeholder mitigation and agonistic pluralism. They can (and perhaps should) aim to introduce elements so far lacking in the game heritage process, such as the experiences of players and game communities, dark game heritage, and participatory game development. This can be compared to the ways that trust in a museum crowdfunding campaign is dependent on the participatory communities that have already been involved in starting the heritage process of games (c.f. Suominen et al., 2018). A game museum needs to work like a non-commercial network instead of a commercial company or undertaking, listening to the various stakeholders' voices interested in the subject, and building on the work of previous

amateur historians. Moving on to more complete forms of participation between rogue archives, players, and game makers requires even more dialogue and trust. If museums want to provide for long-term preservation of artifacts that participatory groups pick out, without using their own curatorial power or making decisions in tandem, this requires many changes to the way museums operate.

Participatory heritage practices also raise the question of free labor. Can museums and other heritage institutions rely on participatory networks for producing heritage artifacts without compensating them for the work they are doing? These kinds of power imbalances need to be addressed in some way if GLAM institutions want to pursue participatory heritage practices in earnest. While investigating this matter further is outside of the context of this study, it is an unmentioned and undealt case at the heart of participatory heritage. While game museums such as the Finnish Museum of Games are dependent on the work and creations of game developers and player communities in making exhibitions about making games, various events and other subjects, reimbursing the co-curators is not always possible or a high priority for institutions, as shown by Article III.

Thirdly, in order to work towards a more inclusive game heritage, museums need to understand the tensions between stakeholders, but also their position in potentially managing stakeholders. As Smith (2006) reminds us, heritage as a process does not automatically work towards social inclusion and progressive ideals. Instead, it can be used for conservative or downright oppressive agendas, and often is. Still, museums self-define themselves to be in the service of society and its development, striving to be active in cultural and social debates (ICOM, 2007). In order for them to work in an inclusive and progressive manner, museums need to be reflexive of what they are doing, making sure that all kinds of stakeholder groups are included, instead of functioning as gatekeepers maintaining the status quo and unfair power relations in the representation of various stakeholder groups.

Therefore, in order to work towards a more inclusive understanding of game heritage, institutions need to (a) focus on the representations of game heritage, e.g. who is portrayed playing and in what ways. As seen, when representations of game history prominently feature (young) white males, or portray other social divisions in a negative light, game museums, as active societal actors, can step in and actively strive to change society, either by providing other kinds of representations or intersectionally engaging with other kinds of game heritage stakeholders in order to actually produce new kinds of representations that provide a more demographically constitutive approach to who actually plays and under which kinds of conditions. As such, GLAM institutions need to take into account the breadth of play culture and

start to co-curate the intangible memories and digital and tangible artifacts that these cultures deem important, and take steps into incorporating these artifacts into GLAM collections.

Additionally, they need to (b) focus on play memories, documents, and traces of play, which shifts the preservation focus from tangible artifacts and digital artifacts to intangible meaning-making practices. By focusing on the various documentary traces of gameplay, instead of playable games or games as objects, museums start to interact more directly with heritage stakeholders. As seen, heritage stakeholders interact with the intangible aspects of heritage, even when heritage is naturalized by the various objects or playable games. When museums start becoming interested in the intangible aspects of game heritage, it provides ways of going beyond the authorized heritage discourses of collecting objects and revering playable games in their original guises, and on to the actual and varied gameplay conditions and community meaning-making practices.

Lastly, institutions need to start (c) engaging with new player groups and communities from a reflexive and inclusive point of view. This entails including all kinds of player communities into participatory co-curating practices, instead of preserving the ways that the authorized heritage discourse of games is expressed in its various forms. Thus, museums as active meaning-makers can make game heritage more inclusive by engaging directly with various heritage and player communities, taking care to engage with a wide range of demographics, both in regard to the age of the community members, but also to their sexual orientation, their ethnicity, gender, disabilities and social class. This is not to imply that shared identities would immediately result in certain "group traits" shared between members of the community. Instead of understanding shared identities as composed of similar or identical qualities, we need to remember that human identities are complex and that shared identities do not automatically result in specific ideals or valuations. This is further emphasized by the fact that heritage and player communities are organized around common interests and practices rather than shared identities, so the identities and valuations of those involved are not necessarily neatly aligned to cultural demographics. Still, the appeal for a wider base of stakeholders in defining game heritage is still topical and the musealization of game heritage can work to diversify the authorized heritage discourse of games.

To summarize, and in order to reach these goals, stakeholders need to look beyond the nostalgia-infused technological determinism of the playable games discourse and realize that playing does not mean understanding, and that games exist even when not played. In order to understand games as heritage and games in

culture, there is a need to set games in context and look beyond original experiences and playable games. This means contextualizing games as historical artifacts, based on historically and materially situated technologies, production environments, fan-behaviors, and cultural meaning-making processes. It also means that playable digital artifacts need to be joined by paratextual and metatextual materiality, and that stakeholders need to engage with play as a preservation artifact and preserve and explain the ways that people have engaged with games in the past.

The paradigmatic shift in game preservation outlined above, which moves away from playable games and towards new kinds of artifacts, as well as away from gamers and towards other kinds of stakeholders, entails understanding games in culture, but also as being shaped by the stakeholders involved in their heritagization. Collectors, GLAM institutions, rogue archives, and other stakeholders all have their own agendas that need to be ascertained by reflexive methodologies. In order to avoid exclusive gatekeeping mechanisms at place in self-authorized heritage, other stakeholders need to actively work towards inclusion in game heritage. As Article IV shows, museums and other GLAM institutions, at least professional museums in the Nordic countries, have the tools and expertise to do this. This would help game heritage transform from a positivistic "gamer heritage" on to a critical "heritage of games and play".

5.3 Delimitations and further research

This dissertation is, at its core, a theoretical examination of the nature of digital games as cultural heritage. It is interested in implementing a framework for understanding games as heritage. As such, it is engaged in theory building and seeks to provide conceptualizations of the various stakeholders, theoretical concepts, and processes involved in game heritage. Its pragmatic knowledge interest entails that it seeks to answer high-level ontological questions, as well as pragmatic taxonomies of the stakeholders and actors present. Due to the scope of its aims, it is still early research dealing with its topic in broad brush strokes in order to set new emancipatory priorities and goals for research dealing with games as heritage.

As such, it is not based on empirical studies or interviews other than heuristic observations made possible by my personal work experience in curating game exhibitions and collections, and the experiences of colleagues, hobbyist collectors, and game preservationists who have shared their views with me. While the dissertation introduction is based on the results of four articles, it expands on their

scope by way of theoretical inquiry. Without any actual case examples or more rigorous empirical investigations of game exhibitions and collections, the various findings presented in the study would need to be empirically examined in order to test their truth value and to validate the findings provided in the results. Theoretical reasoning, however, provides a starting point for understanding the conceptual spheres involved in game heritage, as well as their relationships with each other.

Further, the study deals exclusively with digital games, which are understood as games played with the aid of digital computers, smartphones, consoles, and the like. As such, the research does not explicitly cover various kinds of analog games or sports games, or games that are hybrids with both digital and analog features. Still, the study does perceive digital games to exist in a broader context beyond playable technological files, and its take on digital games as assemblages of materiality, intangibility, digitality, and play, can also be applied to other kinds of games and their play cultures. This will help to distinguish the different aspects of e.g. analog games and their players, but also the complex assemblages of paratextual and metatextual elements associated with them, i.e. manuals, player notes, marketing material, artwork, online communities, and the like.

The key findings of the study point in various directions for future research. To begin with, the dissertation tentatively maps out a new field of inquiry, aspects of which could very well be developed further. While the topic of games as heritage conceptualized in this dissertation has been mentioned in previous studies (e.g. Ahm, 2018; Eklund et al., 2019; Glas & van Vught, 2017), it has not been examined in a systematic manner. Similarly, research centered around play (Newman, 2012) and heritagization of games (Guins, 2014) has been produced in the field of game preservation research, but ethical and ideological questions related to game heritage have not been examined further. As such, earlier research has seen issues of game heritage as a sub-field or particular research question to be dealt with in game preservation research.

In this study, however, game heritage and the heritage of play are set center field. As this study is a first effort to systematically define game heritage, the field is obviously still in need of closer examination and development. This includes introducing new themes into game heritage research, as well as expanding on the existing discussions dealing with e.g. the problematic and dark heritage of games, or the topic of inclusivity in game heritage. New empirical research on topics covered in this study would, on the other hand, shed welcome pragmatic light on the questions and issues introduced. Empirical research could, for example, examine the motivations and interests of the various stakeholders of game heritage, such as

collectors and hobbyist preservationists, utilizing interviews and questionnaires. Furthermore, empirical research could look in greater detail at the various power positions inherent in the game heritage discussion using those same means. This kind of research could shed further light on the various themes of the dissertation, as well as authenticate the results presented in this study.

Another strand of empirical inquiry could study particular game museums and game heritage initiatives, examining how these actors are verbalizing and justifying their particular way to heritagize and legitimize game heritage. It could also further examine the practicalities and differences between long term preservation in collections and the exhibiting of games. This kind of research might use empirical interviews, questionnaires, or visitor research in order to examine how games as heritage are represented in game museums around the world. This would include examining the curatorial stances used by these stakeholders and their work processes in collection management and exhibition design. Similarly, future research could provide critical readings of exhibitions and collections as texts, thus further deconstructing the ways that games are represented as heritage and examining what kinds of aspects are or are not included in game heritage representations.

Additionally, further research could highlight the ways the complex affordances of games influence game preservation. Especially the role of legal affordances for game preservation need closer scrutiny in order to supplement the prevalence of research dealing with technical affordances of preserving games. As alluded to in this study, games exist in society and are thus defined by complex legal interests. IPs, DRMs, and server operating rights have already proved to be problematic with regards to game preservation, as has the role of player created content for otherwise disappeared or threatened games. Similarly, the ethical aspects of game preservation could be dealt with in more detail. This kind of research could deal with questions regarding what kinds of games should be preserved, and whether changing games for preservation purposes is ethically sound and recommendable.

The dissertation is also possibly of merit for new research dealing with types of digital heritage beyond digital games. Further research can examine how online activities or software use and development are heritagized and what kinds of power positions and stakeholder interests are present. In such an examination, the assemblage model of digital games can help to explain the relationships between tangible, intangible, and digital aspects of the subjects being dealt with. Similarly, the discussions related to the paratextual and metatextual elements present might become useful. The conceptualizations and theory building provided for in this study can potentially help to map out the largely undealt with field of digital heritage.

6 CONCLUSION

This collection of articles and the accompanying introduction have been a theoretical account of games as heritage. The work was originally informed and inspired by my experiences as part of the team planning and realizing the Finnish Museum of Games. As such, it was motivated by both pragmatic concerns about how to deal with digital games in museums and academic interests, which resulted in an in-depth interplay between theory and practice. It also meant that the dissertation was based a broad and interdisciplinary analytical toolkit utilizing my insider knowledge of museum work practices on one hand, a vast literature review of game preservation research, game studies, and heritage studies on the other hand, and interpretive methodologies for analyzing the power positions of the stakeholders involved. Using theoretical triangulation methods, the study expanded on the theoretical frameworks provided by game preservation research in order to introduce concerns from game studies and heritage studies.

These methodologies were used in order to point towards issues and themes previously left unexplored in the game preservation framework, and to provide conceptualizations of game heritage issues. As such, the methodological dialogue between critical academic scrutiny and pragmatic museum work highlighted areas and topics in need of scholarly scrutiny. This included examining topics such as the role of participation, both in game making and in co-operative preservation efforts, games as new kinds of artifacts requiring new kinds of skills, work practices, and ontological perspectives, and implicit issues related to power in game heritagization, as in who has the power to decide what kinds of games are made into heritage, and how.

Gradually, the research topics moved away from particularities concerning the Finnish Museum of Games and into issues regarding games in GLAM institutions in general, as well as theoretical concerns with implications for research beyond game preservation. As such, while the dissertation process initially got its start because of the various questions and practical issues regarding games that I had come across in my experiences as a game museum researcher and curator, the work has since moved into areas where it is able to help museums to deal with issues of participation, digital heritage, and stakeholder tensions in general. This way, the study has been informed

by both pragmatic and emancipatory knowledge interests, as it has aimed to provide theoretical tools and frameworks for understanding games as heritage, as well as the processes and stakeholders that are affected by game heritagization, and to point towards methods of operation that could contribute towards more inclusive work practices. The methodologies, aims, and purpose of the study were summarized by the research question *What is game heritage and how can the stakeholders involved be treated in an inclusive manner?*

Based on these foundations, the main findings of the study explained how (1) game heritage has stakeholders beyond the game industry and heritage communities, such as retro-gamers, fans, and rogue archives. The findings showed how game heritage stakeholders include social actors such as GLAM institutions, funding bodies such as nation states, those play communities yet not active in the game heritagization discourse, and the public at large. These stakeholders all have a say in what is and what should be understood as game heritage, and they should be included in game heritagization processes. The findings further explained how (2) game heritage consists of a complex assemblage of different components. As such, game heritage is defined by the (2a) materiality of hardware and game collecting, the (2b) digitality of software and functional games, the (2c) intangible meaning-making processes situated around games and play, and (2d) play as an activity here-and-now. The complex ontology of game heritage functions as a discursive/material/digital knot, whose individual aspects cannot acceptably be separated from each other. That further implicates that game heritage stakeholders such as GLAM institutions should use diverse means, tools, and approaches when preserving games.

The third sub-chapter of the results explained how the (3) musealization and heritagization processes in game heritage affect and change games as they are becoming heritage. It further showed how various stakeholders emphasize different components and aspects of game ontology when legitimizing and heritagizing games, which means that games are, in effect, transformed when various stakeholders of game heritage engage with them in order to preserve them in museum collections, museum exhibitions, and various heritage communities. The fourth and final result further showed how (4) game heritage is defined by discursive power struggles between the various stakeholders involved and their heritagization strategies. While participation is an important element of game heritage, with heritage communities such as rogue archives, collectors, retrogamers, and institutions all heritagizing game heritage from their own perspectives, the on-going power struggle is based on asymmetric power positions and gatekeeping.

The study showed how the findings have wider implications for heritage studies, game studies, and game preservation research, and GLAM institution practices. Game preservation research needs to understand that games and game heritage are not separate from society and heritage at large, but that they are social phenomena that exist *in* culture and in interaction with complex social actors. As such, game heritage was shown to share similar issues and concerns to those of cultural heritage in general, the realization of which can help future research to expand the scope of game preservation. This means exploring issues beyond games as playable artifacts and dealing with ideological issues related to play, play cultures, and games as intangible heritage, such as covering the dark heritage of games alongside their positive sides.

The discussion then pointed towards reflexive work practices for game museums and other heritage communities as well as dealing with issues related to inclusion and exclusion in game heritage. The gatekeeping processes already happening in the heritagization of games have potentially far-reaching ramifications that can still be mitigated when established heritage institutions start heritagizing games. Reflexive heritage institutions can make sure that game heritage becomes a social phenomenon of interest to a wide variety of stakeholders instead of the domain of narrower gamer sensibilities. Thus, established GLAM institutions can use their reflexive resources and methods of operation in order to work for inclusion in game heritage, just as institutions benefit from the specialized methods and work practices that heritage communities are using when preserving games.

The dissertation further pointed towards possible avenues of future research in order to deal with these issues. It recommended commissioning and delivering research into previously forgotten or ignored game heritage stakeholders and their motives, exploring how the high-level ontological conceptualizations provided for can be implemented in practice, examining the heritagization processes of games in added detail and through empirical scrutiny, and further looking into the possible stakeholder tensions through observational research. The dissertation showed how these kinds of inquiries would be needed in order to work around the shortages of technical game preservation framework. As such, the research provided an overview of the potential problems and shortages of a technical game preservation framework and showed how power positions and gatekeeping positions can be spotted and mitigated in order to work for an inclusive heritage of games and play instead of an exclusive gamer heritage.

In addition, the findings of this dissertation indicated implications for research and practice beyond games. The conceptualizations regarding participatory museum

practice could be utilized in fields other than game related preservation work, just as the ontological examinations provided could clarify the role and relations between digital artifacts, materiality, meaning-making, and practice in other fields and subjects as well. Beyond that, the research could function as a case study for museums exploring the potential of artifact categories beyond the collecting and care of material artifacts. As such, the provided conceptualizations of complex assemblage phenomena consisting of digitality, intangible meaning-making, interactivity and practice, could be used by museums looking into cultural phenomena beyond games.

LIST OF REFERENCES

Aarseth, E. (2014). I fought the law: Transgressive play and the implied player. In *From literature to cultural literacy* (pp. 180–188). Springer.

Aas, C., Ladkin, A., & Fletcher, J. (2005). Stakeholder collaboration and heritage management. *Annals of Tourism Research*, *32*(1), 28–48.

Abrams, S. (2015). A Foundational Framework for Digital Curation: The Sept Domain Model. *Proceedings of the 12th International Conference on Digital Preservation*, *2015*, 11.

Ahm, K. R. (2018). *Moving beyond Retrogaming* [PhD Thesis]. The IT-University of Copenhagen.

Ahmed, S. (2012). *On being included: Racism and diversity in institutional life*. Duke University Press.

Anderson, D., Delve, J., Dobreva, M., & Konstantelos, L. (2012). *The preservation of complex objects. Vol. 3, Gaming environments and virtual worlds*. University of Portsmouth.

Antonacopoulou, E. P. (2004). The dynamics of reflexive practice: The relationship between learning and changing. *Organizing Reflection*, 47–64.

Apperley, T. (2010). *Gaming rhythms: Play and counterplay from the situated to the global* (Vol. 6). Institute of Network Cultures.

Apperley, T., & Jayemane, D. (2012). Game studies' material turn. *Westminster Papers in Communication and Culture*, *9*(1), 5–25.

Apperley, T., & Parikka, J. (2018). Platform studies' epistemic threshold. *Games and Culture*, *13*(4), 349–369.

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, *35*(4), 216–224.

Ashworth, G. J., & Tunbridge, J. E. (2000). *A geography of heritage: Power, culture, and economy*. Arnold.

Assman, A. (2008). Canon and archive. In *Cultural memory studies: An international and interdisciplinary handbook* (Vol. 8, pp. 97–107). Walter de Gruyter.

Barthel-Bouchier, D. (2016). *Cultural heritage and the challenge of sustainability*. Routledge.

Barthes, R. (1992). The death of the author. In *Image, Music, Text* (pp. 142–148). Fontana.

Barwick, J., Dearnley, J., & Muir, A. (2011). Playing games with cultural heritage: A comparative case study analysis of the current status of digital game preservation. *Games and Culture*, *6*(4), 373–390.

Becker, C. (2018). Metaphors we work by: Reframing digital objects, significant properties, and the design of digital preservation systems. *Archivaria*, *85*, 6–37.

Belk, R. W. (1994). Collectors and collecting. *Interpreting Objects and Collections*, 317–326.

Benjamin, W. (2015). The Work of Art in the Age of Mechanical Reproduction. In *Historical Perspectives in the Conservation of Works of Art on Paper*. Getty Publications.

Bennett, T. (2013). *The birth of the museum: History, theory, politics*. Routledge.

Bezio, K. M. (2018). Ctrl-Alt-Del: GamerGate as a precursor to the rise of the alt-right. *Leadership*, *14*(5), 556–566.

Bhattacherjee, A. (2012). *Social science research pinciples, methods and practies*. Scholar Commons, University of South Florida.

Bjork, S., & Holopainen, J. (2005). *Patterns in game design* (Vol. 11). Charles River Media Hingham.
Bogost, I. (2007). *Persuasive games* (Vol. 5). MIT Press.
Bogost, I. (2009). *Videogames are a mess.* http://bogost.com/writing/videogames_are_a_mess/
Bollier, D. (2013). Digital Commons. In L. La Follette (Ed.), *Negotiating Culture* (pp. 170–187). University of Massachusetts Press; JSTOR. www.jstor.org/stable/j.ctt5vk9x7.10
Bolter, J. D., & Grusin, R. A. (2000). *Remediation: Understanding new media*. MIT Press.
Bolter, J. D., MacIntyre, B., Gandy, M., & Schweitzer, P. (2006). New media and the permanent crisis of aura. *Convergence*, *12*(1), 21–39.
Bontchev, B. (2015). Serious games for and as cultural heritage. *Digital Presentation and Preservation of Cultural and Scientific Heritage*, *V*, 43–58.
Bouchenaki, M. (2003). *The interdependency of the tangible and intangible cultural heritage*. 1–5. http://www.international.icomos.org/victoriafalls2003/papers/2%20-%20Allocution%20Bouchenaki.pdf
Bourdieu, P., & Wacquant, L. J. (1992). *An invitation to reflexive sociology*. University of Chicago Press.
Boym, S. (2007). Nostalgia and its discontents. *The Hedgehog Review*, *9*(2), 7–19.
Brewer, J. (2000). *Ethnography*. McGraw-Hill Education (UK).
Brown, A. S., Gilbride, S., & Novak, J. (2011). *Getting in on the act: How arts groups are creating opportunities for active participation*.
Butler, S. R. (2013). Reflexive museology: Lost and found. *The International Handbooks of Museum Studies*, 159–182.
Byrne, D. (2008). Heritage as social action. *The Heritage Reader*, 149–173.
Cameron, F. (2007). Beyond the cult of the replicant: Museums and historical digital objects : traditional concerns, new discourses. In *Theorizing Digital Cultural Heritage: A Critical Discourse*. MIT Press. https://researchdirect.westernsydney.edu.au/islandora/object/uws%3A11475/
Canfora, G., Cerulo, L., Cimitile, M., & Di Penta, M. (2014). How changes affect software entropy: An empirical study. *Empirical Software Engineering*, *19*(1), 1–38.
Caple, C. (2012). *Preventive conservation in museums*. Routledge.
Carboni, N., & de Luca, L. (2016). Towards a conceptual foundation for documenting tangible and intangible elements of a cultural object. *Digital Applications in Archaeology and Cultural Heritage*, *3*(4), 108–116.
Carman, J. (2010). Promotion to heritage: How museum objects are made. *Encouraging Collections Mobility*, 74–85.
Carpentier, N. (2017). *The discursive-material knot: Cyprus in conflict and community media participation*. Peter Lang Publishing Group.
Carroll, J. M. (2000). *Making use: Scenario-based design of human-computer interactions*. MIT Press.
Ciolfi, L., Damala, A., Hornecker, E., Lechner, M., & Maye, L. (Eds.). (2018). *Cultural heritage communities: Technologies and challenges*. Routledge, Taylor & Francis Group.
Coleman, L.-E. S. (2015). Socially Inclusive Museum: A Typology Re-imagined. *International Journal of the Inclusive Museum*.
Collins, P. H., & Bilge, S. (2020). *Intersectionality*. John Wiley & Sons.
Consalvo, M. (2009). *Cheating: Gaining advantage in videogames*. MIT Press.

Consalvo, M. (2017). When paratexts become texts: De-centering the game-as-text. *Critical Studies in Media Communication*, *34*(2), 177–183.
Consalvo, M. (2019). Games Aren't Special. *ROMchip*, *1*(1).
Council of Europe. (2005). Framework Convention on the Value of Cultural Heritage for Society, 1724 (2005). https://doi.org/10.1007/978-1-4419-0465-2_1051
Cunliffe, A. L. (2004). On becoming a critically reflexive practitioner. *Journal of Management Education*, *28*(4), 407–426.
Cunliffe, A. L. (2009). Reflexivity, learning and reflexive practice. *The SAGE Handbook of Management Learning, Education and Development*, 405–418.
Davis, M. (2013). Conflict of interest. *International Encyclopedia of Ethics*, 1–4.
De Kosnik, A. (2016). *Rogue archives: Digital cultural memory and media fandom*. MIT Press.
Delve, J., & Anderson, D. (2014). *Preserving complex digital objects*. Facet.
Denzin, N. K. (2017). *The research act: A theoretical introduction to sociological methods*. Transaction publishers.
Dobreva, M., & Duff, W. M. (2015). The ever changing face of digital curation: Introduction to the special issue on digital curation. *Archival Science*, *15*(2), 97–100. https://doi.org/10.1007/s10502-015-9243-7
Du Rietz, P. (Ed.). (2018). *Dataspelens världar: Digitala spel som kultur och kulturarv*. Tekniska museet.
Dudley, S. H. (2013). Museum materialities: Objects, sense and feeling. In *Museum Materialities* (pp. 1–19). Routledge.
Eklund, L., Sjöblom, B., & Prax, P. (2019). Lost in Translation: Video Games Becoming Cultural Heritage? *Cultural Sociology*, *13*(4), 444–460.
Electronic Entertainment Design and Research (EEDAR). (2017). *Gaming infrastructure survey*. https://www.akamai.com/uk/en/multimedia/documents/report/akamai-eedar-gaming-infrastructure-survey.pdf
Elmezeny, A., & Wimmer, J. (2018). Games without frontiers: A framework for analyzing digital game cultures comparatively. *Media and Communication*, *6*(2), 80–89.
EmuVR. (n.d.). *EmuVR*. EmuVR. Retrieved May 15, 2020, from http://www.emuvr.net
Ermi, L., & Mäyrä, F. (2005). Fundamental components of the gameplay experience: Analysing immersion. *Worlds in Play: International Perspectives on Digital Games Research*, *37*(2), 37–53.
Fairclough, N., & Wodak, R. (1997). Critical discourse analysis. *Discourse Studies: A Multidisciplinary Introduction*, *2*, 258–284.
Fontal, O., & Gómez-Redondo, C. (2016). Heritage education and heritagization processes: SHEO metodology for educational programs evaluation. *Interchange*, *47*(1), 65–90.
Gajendran, T., Askland, H., Dainty, A., & Brewer, G. (2012). *Cognitive interests, epistemological space and aspirational identity: How does identity form part of construction?*
Gash, S. (2000). *Effective literature searching for research*. Gower.
Gazzard, A. (2016). Between pixels and play: The role of the photograph in videogame nostalgias. *Photography and Culture*, *9*(2), 151–162.
Genette, G. (1997). *Paratexts: Thresholds of interpretation* (Vol. 20). Cambridge University Press.
Gibson, J. J. (1979). *The ecological approach to visual perception. Boston, MA, US*. Houghton, Mifflin and Company.
Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. University of California Press.

Glas, R., de Vos, J., van Vught, J., & Zijlstra, H. (2017). Playing the Archive. "Let's Play" videos, game preservation, and the exhibition of play. *The Interactive Past. Archaeology, Heritage and Video Games*, 135–151.

Glas, R., & van Vught, J. (2019). *The politics of game canonization: Tales from the frontlines of creating a national history of games*.

Golding, V. (2013). Collaborative museums: Curators, communities, collections. *Museums and Communities: Curators, Collections and Collaboration*, 13–31.

Gonzalez Zarandona, J. A., Chapman, A., & Jayemanne, D. (2018). Heritage destruction and videogames: Ethical challenges of the representation of cultural heritage. *Transactions of the Digital Games Research Association*, *4*(2), 173–203.

Greenhill, E. H. (1992). *Museums and the Shaping of Knowledge*. Routledge.

Griseri, P., & Seppala, N. (2010). *Business ethics and corporate social responsibility*. Cengage Learning.

Gruber, T. R. (1993). A translation approach to portable ontology specifications. *Knowledge Acquisition*, *5*(2), 199–221.

Guarino, N., Oberle, D., & Staab, S. (2009). What is an ontology? In *Handbook on ontologies* (pp. 1–17). Springer.

Guins, R. (2014). *Game after: A cultural study of video game afterlife*. MIT Press.

Guttenbrunner, M., Becker, C., & Rauber, A. (2010). Keeping the Game Alive: Evaluating Strategies for the Preservation of Console Video Games. *International Journal of Digital Curation*, *5*(1), 64–90. https://doi.org/10.2218/ijdc.v5i1.144

Habermas, J. (1972). *Knowledge and Human Interests (Shapiro, JJ trans.) Heinemann*. London.

Hajialikhani, M. (2008). *A Systematic Stakeholders Management Approach for Protecting the Spirit of Cultural Heritage Sites*. 1–10. http://www.international.icomos.org/quebec2008/cd/toindex/77_pdf/77-CP7D-12.pdf

Hakamies, I. (2017). Practice Makes 'Museum People.' *Museum and Society*, *15*(2), 142–152.

Hall, S. (1997). The work of representation. *Representation: Cultural Representations and Signifying Practices*, *2*, 13–74.

Hammady, R., Ma, M., & Temple, N. (2016). Augmented Reality and Gamification in Heritage Museums. In T. Marsh, M. Ma, M. F. Oliveira, J. Baalsrud Hauge, & S. Göbel (Eds.), *Serious Games* (Vol. 9894, pp. 181–187). Springer International Publishing. https://doi.org/10.1007/978-3-319-45841-0_17

Hart, C. (2018). *Doing a literature review: Releasing the research imagination*. Sage.

Heidegger, M. (2017). The origin of the work of art. In *The continental aesthetics reader* (pp. 79–122). Routledge.

Heinonen, M. (2017). From Our Garage to the Finnish Museum of Games-History in the Making. *Skrolli International Edition E*, *1*, 82–83.

Hoberman, R. (2003). In quest of a museal aura: Turn of the century narratives about museum-displayed objects. *Victorian Literature and Culture*, *31*(2), 467–482.

Hui, Y. (2012). What is a digital object? *Metaphilosophy*, *43*(4), 380–395.

Humphreys, S., Fitzgerald, B., Banks, J., & Suzor, N. (2005). Fan-based production for computer games: User-led innovation, the 'Drift of Value'and intellectual property rights. *Media International Australia Incorporating Culture and Policy*, *114*(1), 16–29.

Hunter, J., & Choudhury, S. (2003). Implementing preservation strategies for complex multimedia objects. *International Conference on Theory and Practice of Digital Libraries*, 473–486.

ICOM. (1995). Protection Security and Conservation of Collections. *Collection Management, Leicester Readers in Museum Studies*, 251–273.
ICOM. (2007). Statutes. http://archives.icom.museum/statutes.html#3
Ioannides, M., Magnenat-Thalmann, N., & Papagiannakis, G. (2017). *Mixed reality and gamification for cultural heritage* (Vol. 2). Springer.
Jenkins, H., Ford, S., & Green, J. (2013). *Spreadable Media: Creating Meaning and Value in a Networked Media Culture*. New York: New York University Press.
Jones, D., Bench-Capon, T., & Visser, P. (1998). Methodologies for ontology development. *IFIP World Computer Congress*, 62–75.
Jordan, P. W. (1999). Pleasure with products: Human factors for body, mind and soul. *Human Factors in Product Design: Current Practice and Future Trends*, 206–217.
Kallinikos, J., Aaltonen, A., & Marton, A. (2013). The ambivalent ontology of digital artifacts. *Mis Quarterly*, 357–370.
Karp, C. (2004). Digital Heritage in Digital Museums. *Museum International*, *56*(1–2), 45–51. https://doi.org/10.1111/j.1350-0775.2004.00457.x
Kerr, A. (2006). *The business and culture of digital games: Gamework and gameplay*. Sage.
Kershaw, A., Bridson, K., & Parris, M. A. (2018). Encouraging Writing on the White Walls: Co-production in Museums and the Influence of Professional Bodies. *Australian Journal of Public Administration*, *77*(1), 19–34.
Kirkpatrick, G. (2012). Constitutive tensions of gaming's field: UK gaming magazines and the formation of gaming culture 1981–1995. *Game Studies*, *12*(1), 3.
Kirkpatrick, G. (2013). *Computer games and the social imaginary*. Polity.
Kittler, F. (1995). There is no software. *Ctheory*, 10–18.
Kline, S., Dyer-Witheford, N., & De Peuter, G. (2003). *Digital play: The interaction of technology, culture, and marketing*. McGill-Queen's Press-MQUP.
Kocurek, C. A. (2015). *Coin-operated Americans: Rebooting boyhood at the video game arcade*. University of Minnesota Press.
Konzack, L. (2002). Computer Game Criticism: A Method for Computer Game Analysis. *Computer Games and Digital Culture Conference, 2002*, 89–100.
Korhonen, H. (2016). *Evaluating Playability of Mobile Games with the Expert Review Method* [Tampere University Press]. https://trepo.tuni.fi/handle/10024/99584
Korkeamäki, S., Nylund, N., Ojanen, R., & Wiik, E. (2017). Suomen pelimuseo – joukkorahoituskampanjasta museonäyttelyksi. *Ennen ja nyt*. https://www.ennenjanyt.net/2017/01/suomen-pelimuseo-joukkorahoituskampanjasta-museonayttelyksi/
Kortbek, H. B., Schwartz, C. P., Sørensen, A. S., & Thobo-Carlsen, M. (2016). The participatory agenda-A post-critical, anticipatory intervention. *Nordisk Kulturpolitisk Tidsskrift*, *19*(01), 19–35.
Kücklich, J. (2005). Precarious playbour: Modders and the digital games industry. *Fibreculture*, *5*(1).
Kultima, A. (2018). *Game design praxiology*. Tampere University.
Larsen, A. H., & Jakobsen, L. S. (2018). Disciplinary borders within Museology. *Where Are the Borders? Challenges in Nordic Museology*.
Latham, K. F., & Simmons, J. E. (2019). Whither Museum Studies? *Journal of Education for Library and Information Science*, *60*(2), 102–117.
Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.

Lo, B., & Field, M. J. (2009). Principles for identifying and assessing conflicts of interest. In *Conflict of interest in medical research, education, and practice*. National Academies Press (US).
Lowenthal, D. (1985). The past is a foreign country. *Cambridge: Cambridge UP*.
Lowood, H. (2002). *Shall We Play a Game: Thoughts on the Computer Game Archive of the Future*.
Lowood, H. (2011). Perfect capture: Three takes on replay, machinima and the history of virtual worlds. *Journal of Visual Culture*, *10*(1), 113–124.
Lowood, H., Monnens, D., Vowell, Z., Ruggill, J., McAllister, K., & Armstrong, A. (2009). Before It's Too Late: A Digital Game Preservation White Paper. *American Journal of Play*, *2*(2), 139–166.
MacDonough, K., Fraimow, R., Erdman, D., Gronsbell, K., & Titkemeyer, E. (2016). On the EVE of Preservation: Conserving a Complex Universe. In *Internet spaceships are serious business: An EVE Online reader* (pp. 210–220). University of Minnesota Press.
MacLeod, S. (2001). Making museum studies: Training, education, research and practice. *Museum Management and Curatorship*, *19*(1), 51–61.
MacRae, R. (2007). 'Insider'and 'outsider'issues in youth research. In *Youth Cultures* (pp. 61–72). Routledge.
Mahara Gallery. (2011). *More than a Craze*. Mahara Gallery Waikanae. http://www.maharagallery.org.nz:80/mahara/generate_section_Final.cgi?secno=65005
Mairesse, F., & Desvallées, A. (2010). Key concepts of museology. *International Council of Museums: Armand Colin*.
Malaby, T. M. (2007). Beyond play: A new approach to games. *Games and Culture*, *2*(2), 95–113.
Malaro, M. (2005). Collection management policies. In *Collections management* (pp. 23–40). Routledge.
Maranda, L., & Emerita, C. (2009). Museology: Back to the basics–Musealization. *ICOFOM Study Series*, *38*, 251–258.
Maroevic, I. (1998). *Introduction to museology: The European approach*. Vlg. Dr. C. Müller-Straten.
Mäyrä, F. (2006). Welcome to mapping the global game cultures: Issues for a socio-cultural study of games and players. *Gaming Realities Conference Proceedings, Greece*.
Mäyrä, F. (2008). *An introduction to game studies*. Sage.
Mäyrä, F. (2014). Culture. In *The Routledge companion to video game studies* (pp. 293– 300). Routledge.
McDonough, J. P., Olendorf, R., Kirschenbaum, M., Kraus, K., Reside, D., Donahue, R., Phelps, A., Egert, C., Lowood, H., & Rojo, S. (2010). *Preserving virtual worlds final report*.
McKemmish, S., Burstein, F., Manaszewicz, R., Fisher, J., & Evans, J. (2012). Inclusive research design: Unravelling the double hermeneutic spiral. *Information, Communication & Society*, *15*(7), 1106–1135.
Moncunill-Piñas, M. (2017). The practice of everyday museum making: Naturalization and empowerment in the amateur consumption of museographic language. *European Journal of Cultural Studies*, 1367549417722113.
Mora-Cantallops, M., & Bergillos, I. (2018). Fan preservation of 'flopped'games and systems: The case of the Virtual Boy in Spain. *Catalan Journal of Communication & Cultural Studies*, *10*(2), 213–229.
Mortensen, T. E. (2018). Anger, fear, and games: The long event of# GamerGate. *Games and Culture*, *13*(8), 787–806.
Mouffe, C. (2013). *Agonistics: Thinking the world politically*. Verso Books.

Mulcahy, K. (2006). Cultural Policy: Definitions and Theoretical Approaches. *The Journal of Arts Management, Law, and Society*, *35*(4), 319–330. https://doi.org/10.3200/JAML.35.4.319-330

Munjeri, D. (2004). Tangible and intangible heritage: From difference to convergence. *Museum International*, *56*(1–2), 12–20.

Murray, S. (2019). The Triumphal Procession. *ROMchip*, *1*(1).

Musante, K., & DeWalt, B. R. (2010). *Participant observation: A guide for fieldworkers*. Rowman Altamira.

Navarro-Remesal, V. (2017). Museums of Failure: Fans as Curators of "Bad", Unreleased, and "Flopped" Videogames. In *Fans and Videogames* (pp. 128–145). Routledge.

Newman, J. (2019a). Minecraft: User-Generated Content. In *How to Play Video Games* (pp. 277–285). NYU Press.

Newman, J. (2019b). Saving (and re-saving) videogames: Rethinking emulation for preservation, exhibition and interpretation. *The International Journal of Creative Media Research*, *1*.

Newman, J. (2011). (Not) playing games: Player-produced walkthroughs as archival documents of digital gameplay. *International Journal of Digital Curation*, *6*(2), 109–127.

Newman, J. (2012). *Best before: Videogames, supersession and obsolescence*. Routledge.

Newman, J. (2018). The Game Inspector: A case study in gameplay preservation. *Special Issue, Kinephanos. Https://Www. Kinephanos. ca/2018/the-Game-Inspector-a-Case-Study-in-Gameplay-Preservation*.

Newman, J., & Simons, I. (2018). *Game Over? Curating, Preserving and Exhibiting Videogames: A White Paper*. https://drive.google.com/file/d/11vWx_5LMK6qxW-3rqqvB-MemW6Sk-Ep3/view

Nicholls, R. (2009a). Research and Indigenous participation: Critical reflexive methods. *International Journal of Social Research Methodology*, *12*(2), 117–126.

Nicholls, R. (2009b). Research and Indigenous participation: Critical reflexive methods. *International Journal of Social Research Methodology*, *12*(2), 117–126.

Nieborg, D. (2016). From premium to freemium: The political economy of the app. *Social, Casual and Mobile Games: The Changing Gaming Landscape*, 225–240.

Nylund, N. (2015). Walkthrough and let's play: Evaluating preservation methods for digital games. *Proceedings of the 19th International Academic Mindtrek Conference on - AcademicMindTrek '15*, 55–62. https://doi.org/10.1145/2818187.2818283

O'Donnell, C. (2014). *Developer's dilemma: The secret world of videogame creators*. MIT Press.

Onwuegbuzie, A. J., & Frels, R. (2016). *Seven steps to a comprehensive literature review: A multimodal and cultural approach*. Sage.

Paaßen, B., Morgenroth, T., & Stratemeyer, M. (2017). What is a true gamer? The male gamer stereotype and the marginalization of women in video game culture. *Sex Roles*, *76*(7–8), 421–435.

Paavilainen, J., Korhonen, H., Koskinen, E., & Alha, K. (2018). Heuristic evaluation of playability: Examples from social games research and free-to-play heuristics. *Games User Research*, 257–280.

Pagulayan, R. J., Keeker, K., Wixon, D., Romero, R. L., & Fuller, T. (2002). User-centered design in games. In *The human-computer interaction handbook* (pp. 915–938). CRC Press.

Pagulayan, R., & Steury, K. (2004). Beyond usability in games. *Interactions*, *11*(5), 70–71.

Paliokas, I., & Sylaiou, S. (2016). The Use of Serious Games in Museum Visits and Exhibitions: A Systematic Mapping Study. *2016 8th International Conference on Games*

and Virtual Worlds for Serious Applications (VS-GAMES), 1–8. https://doi.org/10.1109/VS-GAMES.2016.7590371
Parikka, J. (2012). New materialism as media theory: Medianatures and dirty matter. *Communication and Critical/Cultural Studies*, *9*(1), 95–100.
Parisi, D. (2019). Rumble/Control. *ROMchip*, *1*(2).
Paul, C. A. (2018). *The toxic meritocracy of video games: Why gaming culture is the worst*. University of Minnesota Press.
Pearce, C. (2006). Productive play: Game culture from the bottom up. *Games and Culture*, *1*(1), 17–24.
Pearce, S. M. (1994). Collecting reconsidered. *Interpreting Objects and Collections*, *193*, 204.
Penix-Tadsen, P. (2019). *Video Games and the Global South*. Carnegie Mellon University. https://doi.org/10.1184/R1/8148680.v1
Peterson, J. (2012). *Playing at the world: A history of simulating wars, people and fantastic adventures, from chess to role-playing games*. Unreason Press San Diego.
Pimple, K. D. (2002). Six domains of research ethics. *Science and Engineering Ethics*, *8*(2), 191–205.
Pinchbeck, D., Anderson, D., Delve, J., Alemu, G., Ciuffreda, A., & Lange, A. (2009). Emulation as a strategy for the preservation of games: The KEEP project. *DiGRA 2009-Breaking New Ground: Innovation in Games, Play, Practice and Theory*.
Pow, W. (2019). Outside of the Folder, the Box, the Archive. *ROMchip*, *1*(1).
Prax, P. (2016). *Co-creative game design as participatory alternative media* [PhD Thesis]. Acta Universitatis Upsaliensis.
Prax, P., Sjöblom, B., & Eklund, L. (2016). GameOff: Moving Beyond the 'Original Experience'in the Exhibition of Games. *SIRG Research Reports*, *2016*, 1–17.
Prendergast, C. (2000). *The triangle of representation*. Columbia University Press.
Reunanen, M. (2017). *Times of Change in the Demoscene: A Creative Community and Its Relationship with Technology*. Turun yliopisto, University of Turku.
Ridley, D. (2012). *The literature review: A step-by-step guide for students*. Sage.
Rizzo, I., & Throsby, D. (2006). Cultural heritage: Economic analysis and public policy. *Handbook of the Economics of Art and Culture*, *1*, 983–1016.
Rose, G. (1997). Situating knowledges: Positionality, reflexivities and other tactics. *Progress in Human Geography*, *21*(3), 305–320.
Rothenberg, J. (1995). Ensuring the longevity of digital documents. *Scientific American*, *272*(1), 42–47.
Roued-Cunliffe, H., & Copeland, A. (2017). Introduction. In *Participatory heritage*. Facet Publishing.
Rugg, J., & Sedgwick, M. (2007). *Issues in curating contemporary art and performance*. Intellect Books.
Sandis (ed.), C. (2014). Culture, heritage, and ethics. In *Cultural Heritage Ethics: Between Theory and Practice* (pp. 11–20). Open Book Publishers. https://doi.org/10.11647/OBP.0047
Saukko, P. (2003). *Doing research in cultural studies: An introduction to classical and new methodological approaches*. Sage.
Schofield, J. (2016). Heritage expertise and the everyday: Citizens and authority in the twenty-first century. In *Who Needs Experts?* (pp. 17–28). Routledge.
Scott, C. A. (2016). *Museums and public value: Creating sustainable futures*. Routledge.
Scullion, A., & Garcia, B. (2005). What is cultural policy research? *International Journal of Cultural Policy*, *11*(2), 113–127.

Severo, M., & Venturini, T. (2016). Intangible cultural heritage webs: Comparing national networks with digital methods. *New Media & Society*, *18*(8), 1616–1635.
Shaw, A. (2010). What is video game culture? Cultural studies and game studies. *Games and Culture*, *5*(4), 403–424.
Shaw, A. (2019). Archival Serendipity, Excitement, and Whiplash. *ROMchip*, *1*(2).
Shields, P. M., & Rangarajan, N. (2013). *A playbook for research methods: Integrating conceptual frameworks and project management*. New Forums Press.
Sicart, M. (2014). *Play matters*. MIT Press.
Silverman, H. (2015). Heritage and authenticity. In *The Palgrave handbook of contemporary heritage research* (pp. 69–88). Springer.
Sköld, O. (2018). Understanding the "expanded notion" of videogames as archival objects: A review of priorities, methods, and conceptions. *Journal of the Association for Information Science and Technology*, *69*(1), 134–145.
Sköld, O. (2013). Tracing traces: A document-centred approach to the preservation of virtual world communities. *Information Research*, *18*.
Smith, L. (2006). *Uses of heritage*. Routledge.
Sørensen, M. L. S., & Carman, J. (2009). *Heritage studies: Methods and approaches*. Routledge.
Sotamaa, O. (2007). On modder labour, commodification of play, and mod competitions. *First Monday*, *12*(9).
Sotamaa, O. (2009). *The player's game: Towards understanding player production among computer game cultures*. Tampere University.
Sotamaa, O. (2014). Artifact. In *The Routledge Companion to Video Game Studies*. Routledge. https://doi.org/10.4324/9780203114261.ch1
Sotamaa, O., Tyni, H., Toivonen, S., Malinen, T., & Rautio, E. (2011). *New Paradigms for Digital Games: The Finnish Perspective Future Play Project, Final Report*.
Stebbins, R. A. (2001). *Exploratory research in the social sciences* (Vol. 48). Sage.
Steiner, E. (1988). *Methodology of theory building*. Educology Research Associates.
Stenros, J., & Waern, A. (2011). Games as Activity: Correcting the Digital Fallacy. In *Videogame Studies: Concepts, Cultures and Communication*. Inter-Disciplinary Press.
Sternfeld, N. (2013). Playing by the Rules of the Game: Participation in the Post-Representative Museum. *CuMMA Papers*, *1*.
Stojanovic, M. S. L. (2004). *Methods and Tools for Ontology Evolution* [PhD Thesis]. University of Karslruhe.
Stuckey, H. (2012). Mods and Museums: Gaming the Future of Art and Institutions. In *Game Masters: The Exhibition*. Australian Centre for the Moving Image.
Stuckey, H., Swalwell, M., & Ndalianis, A. (2013). The popular memory archive: Collecting and exhibiting player culture from the 1980s. In *Making the history of computing relevant* (pp. 215–225). Springer.
Stylianou-Lambert, T., Boukas, N., & Christodoulou-Yerali, M. (2014). Museums and cultural sustainability: Stakeholders, forces, and cultural policies. *International Journal of Cultural Policy*, *20*(5), 566–587.
Suominen, J. (2011). Game reviews as tools in the construction of game historical awareness in Finland, 1984-2010: Case MikroBitti Magazine. *DiGRA Conference*.
Suominen, J., Reunanen, M., & Remes, S. (2015). Return in Play: The Emergence of Retrogaming in Finnish Computer Hobbyist and Game Magazines from the 1980s to the 2000s. *Kinephanos–Canadian Journal of Media Studies*.

Suominen, J., & Sivula, A. (2016). Participatory Historians in Digital Cultural Heritage Process—Monumentalization of the First Finnish Commercial Computer Game. *Refractory–A Journal of Entertainment Media*, *27*.

Suominen, J., Sivula, A., & Garda, M. B. (2018). Incorporating Curator, Collector and Player Credibilities: Crowdfunding Campaign for the Finnish Museum of Games and the Creation of Game Heritage Community. *Kinephanos–Canadian Journal of Media Studies*.

Švelch, J. (2016). "Footage not representative": Redefining paratextuality for the analysis of official communication in the video game industry. In *Contemporary Research on Intertextuality in Video Games* (pp. 297–315). IGI Global.

Švelch, J. (2018). *Gaming the iron curtain: How teenagers and amateurs in communist Czechoslovakia claimed the medium of computer games*. MIT Press.

Swalwell, M. (2007). The Remembering and the Forgetting of Early Digital Games: From Novelty to Detritus and Back Again. *Journal of Visual Culture*, *6*(2), 255–273.

Swalwell, M. (2012). The Early Micro User: Games writing, hardware hacking, and the will to mod. *Proceedings of DiGRA Nordic 2012 Conference: Local and Global—Games in Culture and Society*.

Swalwell, M. (2013). Moving on from the Original Experience: Games history, preservation and presentation. *DiGRA Conference*.

Taylor, S. P. (2018). Critical realism vs social constructionism & social constructivism: Application to a social housing research study. *International Journal of Sciences: Basic and Applied Research*, *37*(2), 216–222.

Thompson, D. F. (1993). Understanding financial conflicts of interest. *New England Journal of Medicine*, *329*, 573–573.

Toh, W. (2018). *A multimodal approach to video games and the player experience*. Routledge.

UNESCO. (2003a). Convention for the Safeguarding of the Intangible Cultural Heritage. http://portal.unesco.org/en/ev.php-URL_ID=17716&URL_DO=DO_TOPIC&URL_SECTION=201.html

UNESCO. (2003b). Charter on the Preservation of Digital Heritage. http://portal.unesco.org/en/ev.php-URL_ID=17721&URL_DO=DO_TOPIC&URL_SECTION=201.html

Van der Tuin, I., & Dolphijn, R. (2010). The transversality of new materialism. *Women: A Cultural Review*, *21*(2), 153–171.

Vergo, P. (1997). *New museology*. Reaktion Books.

Vícha, O. (2014). The Concept of the Right to Cultural Heritage within the Faro Convention. *International and Comparative Law Review*, *14*(2), 25–40. https://doi.org/10.1515/iclr-2016-0049

Waligo, V. M., Clarke, J., & Hawkins, R. (2013). Implementing sustainable tourism: A multi-stakeholder involvement management framework. *Tourism Management*, *36*, 342–353.

Walker, A. (2019). The History of Games Could Be a History of What Play Felt Like. *ROMchip*, *1*(1).

Waller, L. (2016). Curating actor-network theory: Testing object-oriented sociology in the Science Museum. *Museum and Society*, *14*(1), 193–206.

Walsham, G. (2006). Doing interpretive research. *European Journal of Information Systems*, *15*(3), 320–330.

Wasiak, P. (2010). *Computing behind the Iron Curtain: Social Impact of*.

Wells, L. (2007). Curatorial strategy as critical intervention: The genesis of facing east. *Issues in Curating Contemporary Art and Performance*, 28–43.

Wertsch, J. V. (2002). *Voices of collective remembering*. Cambridge University Press.

Winget, M. A. (2011). Videogame preservation and massively multiplayer online role-playing games: A review of the literature. *Journal of the American Society for Information Science and Technology*, *62*(10), 1869–1883.

Winter, T. (2013). Clarifying the critical in critical heritage studies. *International Journal of Heritage Studies*, *19*(6), 532–545. https://doi.org/10.1080/13527258.2012.720997

Wodak, R., & Meyer, M. (2015). *Methods of critical discourse studies*. Sage.

Wu, Z., & Hou, S. (2015). Heritage and discourse. In *The Palgrave handbook of contemporary heritage research* (pp. 37–51). Springer.

Zagato, L. (2015). The notion of "Heritage Community" in the Council of Europe's Faro Convention. Its impact on the European legal framework. In *Between Imagined Communities and Communities of Practice* (p. 141). Universitätsverlag Göttingen.

PUBLICATIONS

Article I — Nylund, N. (2017). Preserving game heritage with video interviews: A case study of the Finnish Museum of Games. *Finskt Museum*, *124*(1), 8–27.

Article II — Nylund, N. (2018). Constructing Digital Game Exhibitions: Objects, Experiences, and Context. *Arts*, *7*(4), 103–117.

Article III — Prax, P., Sjöblom, B., Eklund, L., Nylund, N., & Sköld, O. (2019). Drawing Things Together: Understanding the Challenges and Opportunities of a Cross-LAM Approach to Digital Game Preservation and Exhibition. *Nordisk Kulturpolitisk Tidsskrift*, *22*(02), 332–354.

Article IV — Nylund, N., Prax, P., & Sotamaa, O. (2020). Rethinking game heritage–towards reflexivity in game preservation. *International Journal of Heritage Studies*, 1–13.

PUBLICATION I

Preserving game heritage with video interviews: A case study of the Finnish Museum of Games

Niklas Nylund

Finskt Museum, 124(1), 8–27.

Niklas Nylund

PRESERVING GAME HERITAGE WITH VIDEO INTERVIEWS

A Case Study of the Finnish Museum of Games

ABSTRAKT

Att bevara spelens arv med videointervjuer:
En fallstudie om Finlands Spelmuseum

"Digitala spel är i färd att försvinna" är ett uttryck man ofta hör idag. Spelutvecklare, samlare och entusiaster har nu längre än ett årtionde oroat sig över att inte kunna köra och spela gamla spel. Då museer börjar spara spel i sina samlingar, är de intresserade av konserveringsmetoder utöver dem, som behåller spelen spelbara. Eftersom dessa metoder inte ännu analyserats, återstår många obesvarade frågor gällande spelens kulturarv. Denna artikel underlättar definitionen av olika sorters museiobjekt inom spelkonservering. Den är en analys av 14 videointervjuer, som Finlands Spelmuseum utfört med finska spelutvecklare år 2016. Syftet är att analysera spelutvecklarnas presentationer av sina spel, och hur dessa diskussioner motiverar intervjuernas värde för museer. Den avslutande diskussionen beaktar hur dylika intervjuer ter sig som ogripbara museiobjekt. Artikelns slutsatser är värdefulla för alla kulturarvsorganisationer intresserade av spelkultur och dess bevaring.

Keywords: preservation, museum, heritage, game, interview

INTRODUCTION

Digital games[1] have entered a stage surpassing their initial use as *entertainment products*. As the opening of several museums dedicated to games proves, digital games are now widely perceived, not only as products or collectibles, but also as *cultural artefacts* and *museum objects*.[2] Institutions have begun preserving games and realised the complexity of game preservation and what it entails.[3] This article dives into this ocean of questions by examining how game developers talk about making games and what preservation potential their views contain.

"There is no such thing as a videogame", game scholar James Newman (2012) reminds us, because digital games tend to change over time and across

different platforms. [4] Digital games have numerous different builds and versions – of which some are modified by players – and it is difficult to decide whether some are more essential from a preservation standpoint. What is more, preserving digital games may mean anything from saving game boxes and discs (in cases they exist), recordings and transcriptions of gameplay; making sure copies of the game remain playable; dealing with problems of understanding the context in which the games have been played.[5] The question of what should be considered when preserving games remains unanswered.

The aim of this article is to discuss the potential of game developer video interviews for museum work. By analysing 14 interviews with game developers, the article explores how game developers talk about their games and investigates how game preservation may benefit from considering the way game developers contextualize their own productions. The analysed interviews, displayed in the museum exhibition and registered in the museum's collections, were conducted in 2016 by the Finnish Museum of Games, opened in Tampere in January 2017.[6]

The theoretical framework is built upon the issues of cultural heritage, problems associated with game preservation as well as the discussion related to contemporary collecting. By analysing key concepts related to game cultures and cultural heritage, the discussion aims to clarify how the museum preservation object should be understood when preserving digital games.

The preservation of digital games is not by any measure a new field of study, but previous work has concentrated on the preservation of digital games from a technological perspective.[7] Earlier research into alternative digital game preservation techniques has focused on preserving context and game play: for example, Newman (2012) and Raiford Guins (2014).[8] The use of video interviews for game preservation has not previously been discussed; instead, previous studies have investigated the play of games or the use of Let's Play - videos in preservation work.[9] This article aims to define what position video interviews should have in museum collections.

The analysis develops in three chapters. First, a theoretical framework is built by defining the issues of game cultures, cultural heritage and museum objects. Then, the discussion expands into a case study of the views expressed by game developers in the selected videos and how the described work processes and design development accounts may be considered valuable as traces of game heritage. The section follows a thematic approach. The interviews have systematically been classified and organized into four thematic categories. These categories are further analysed and juxtaposed with the theoretical framework of game preservation. The analysis concludes with a

discussion and evaluation of video interviews as museum objects and the suitability of video interviews for preserving digital games.

To summarize, this analysis helps to clarify what kind of museum objects video interviews are. This is done by (1) *examining how game makers talk about their games in a museum context* and (2) *investigating how it makes such video interviews valuable from a museum perspective.*

The focus of the analysis is on the interview content, not on the interview process *per se*. The article provides first steps into looking at how game developers talk about their know-how and how it relates to museums. Game heritage is in this case study understood as a process, which is affected by how game developers talk about their games, how such statements are presented in relation to other exhibits and how museum visitors react to the developers' reminiscence.[10] The analysis being a case study based on specific examples, however, wider conclusions are not yet possible.

GAME CULTURE AND MUSEUM OBJECTS IN THE TWENTY-FIRST CENTURY

Investigating the benefits of video interviews for preservation work requires a deeper understanding of several cultural concepts. These key concepts include game culture(s), cultural heritage, artefacts, tangible and intangible museum objects.

According to recent research, as many as 60 % of Finns play digital games at least once a month, and the average gamer is 40 years old.[11] These statistics make it difficult to argue that games are not part of Finnish culture. Digital games are, however, not only played, but are also subjects of very complex social interactions that are included in any game culture, in addition to game play, per se. Game development, game collecting, and inter-textual relations between games and other cultural forms could all be argued to be part of game culture. In this article, game culture is understood as existing in the intersection of activities, including the ones mentioned above.[12]

Following game scholar Frans Mäyrä, game culture is seen as consisting of several networks existing side by side, often overlapping each other.[13] Games are thus talked about and experienced in many different contexts and situations. Following Mäyrä, this article assumes the existence of several game *cultures* instead of a single monolithic *culture*. These game cultures are understood as being in the centre of ongoing negotiations, by which their symbolic meanings are defined.[14] Game cultures are processes, constantly moving and evolving as a result of how people experience and talk about games.

According to the International Council on Monuments and Sites, cultural heritage is "an expression of the ways of living developed by a community and passed on from generation to generation".[15] It can be understood as a shared bond and a "bond to the past, to our present, and the future", or as "the past made present".[16] For the purposes of this article, cultural heritage is understood as a process by which objects, ideas and experiences, 'things', become respected and deemed fit for preservation.

Cultural heritage is made up of artefacts. Artefacts can be defined as "(intentional or unintentional) consequences of human actions", and as such, they need not be physical objects, but can also be intangible.[17] UNESCO defines tangible cultural heritage as including physical objects and material, whereas intangible cultural heritage is made up of "practices, representations, expressions, knowledge, skills [...] that communities, groups and, in some cases, individuals recognize as part of their cultural heritage".[18] Thus, intangible cultural heritage can include anything from values, traditions, cuisine, clothing, religious ceremonies and performing arts, to skills and knowledge.

Relying on the definitions above and following the conventions used in museums and other heritage institutions, a cultural artefact can be understood as something that provides information about the activities of a group and the culture of its user(s). Elevating cultural artefacts to a position of cultural heritage can lead to a process of preservation (in museums and other heritage institutions). Museums can be seen as institutions "with the principal mission of transforming things into objects".[19] Museums are not only venues where *museum objects* are stored and displayed, but also locations where they are actually *made*. Museums and their curators are thus active participants in the transition of cultural artefacts into museum objects.[20]

In this article, the term museum object is used for (both tangible and intangible) cultural artefacts that are preserved and exhibited in museums.

Transforming cultural artefacts into museum objects has a long history with varied implementations. The Nordic trend of contemporary collecting was once a novel way of perceiving museum work, and various preservation techniques were used to complement tangible objects.[21] These preservation techniques could range from ethnographic observation to photography, audio and video to interviews in different media. In contemporary collecting, focus is often placed on intangible phenomena and the context in which cultural artefacts are used. Contemporary collecting produces both tangible and intangible museum objects.

Aspects of game cultures can, as all human activities, be elevated to a position where they become cultural heritage. The analysed interviews clarify the role of games as both developments and end products. Whether game

development may be considered cultural heritage, however, is debatable. As defined, cultural heritage implies some collective mind sets and memories. When the usually hidden game development process is made public, as in the museum exhibition, it simultaneously becomes a more visible part of game heritage. The preservation process *produces* museum objects and a deeper understanding of game cultures.[22]

Summing up the theoretical discussion, game heritage may be perceived as a process of looking back into our past and deciding upon what kind of tangible and intangible objects we want to preserve for the future. This can mean anything from game boxes, game magazines and game marketing materials (tangible museum objects) to ideas, anecdotes, tactics, memories, press kits and views on successful game development (intangible museum objects).[23] Game heritage is thus born from the tangible and intangible cultural artefacts that members of game cultures have deemed as important and from the *passing on* of them to future generations. When museum collections make game developers' know-how and ideas about games known to a wider audience, their role as game heritage becomes apparent.

GAME DEVELOPMENT IN VIDEO INTERVIEWS

The interviews analysed in this study are part of the Finnish Museum of Games' first exhibition, which consists of *inter alia* 100 games, game design material, prizes, fan feedback, game making hardware, game boxes and marketing material.[24] The museum conducted the interviews to support the narrative of the exhibition and preserve the game making process as part of the Finnish game culture's heritage. Interviews were made against a neutral white or grey background, with head and upper body closely cropped and subtitles provided at the bottom of the screen (Fig. 1).

In 18 of 30 interviews, game developers, professional and hobbyists, express their views on digital games. The rest of the interviews deal with non-digital games, for example role playing games, board games and larps (Table 1). The interviews begin with an 8–45 minute informal portion, where developers discuss the game making process. This is followed by a more structured, 2–5 minute interview.

In the following, 14 of the collected 18 interviews on digital game development are analysed. The analysis follows a thematic approach: the author has systematically gone through all interviews and arranged the views expressed therein into thematic categories. First, all 18 interviews on digital game development were analysed and grouped into eleven thematic categories ac-

cording to their content. Then, the categories were evaluated according to how well they addressed developer know-how and other accounts not otherwise emphasised in game heritage discourse. Finally, four categories were chosen for closer scrutiny: what kind of social and technological limitations might influence game development, the passion for self-improvement, fan influence and the central role of game development in many designers' lives.

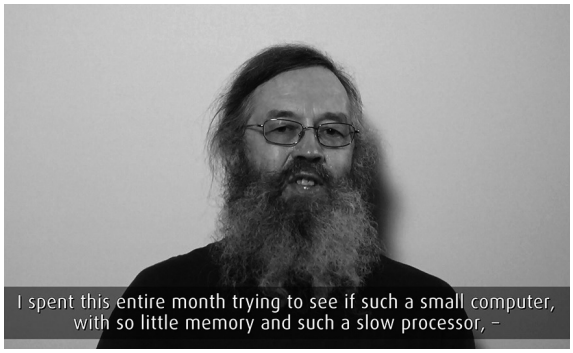

Figure 1. Screen capture of the interview video with Raimo Suonio.

All interviews were originally made in Finnish, but for the purpose of this article, the English translations in use in the museum exhibition will be referenced.[25]

Technological and legislative limitations in game development

In the examined material, many developers point out that the games they made turned out the way they did because of limitations. This is most apparent in the older games or games developed for new platforms. Taneli Armanto, the designer of *Snake* (1997), a successful mobile game for early Nokia phones, voices this concern: "You had to consider the limitations of the phone: the small screen, the keys – in practice, you could only use the number keys". [26]

Snake was first introduced in the Nokia 6110 and found its way onto hundreds of millions of mobile phones, and before long "everyone at school was playing it".[27] Armanto's reminiscence of the development of *Snake* highlights the technological conditions of the time, and how they affected the game designs. Armanto continues by addressing the limitations in processing power and how "the game could not use a lot of memory, since we had to fit the entire user interface with all of its functions, calendars and phone books into a small amount of memory". Armanto identifies many different aspects that determined the game design, none of which really touch on innovation, but rather on the circumstances limiting it: "we had very strict limits to work with", he sums up.[28]

Table 1: Interviews in the collections of The Finnish Museum of Games. The first length is for the extended version, the second for the one on display in the exhibition.

Taneli Armanto: *Snake* (1997) [length 38:42 / 4:27]	Mariina Hallikainen: *Cities: Skylines* (2015) [length 18:30 / 2:45]	Mikko Happo: *Propilkki* (1999) [length 37:01 / 4:28]	Mikko Hämäläinen: *Shadow Cities* (2010) [length 33:41 / 3:43]	Sami Järvi: *Max Payne* (2001) [length 29:10 / 4:03]
Sampo Karjalainen: *Habbo* (2000) [length 2:59]	Jussi-Pekka Koskiranta: *Hugo* (1993) [length 37:15 / 4:25	Sami Maaranen / Erkka Lehmus: *UnReal World* (1992) [length 25:25 / 3:54]	Tony Manninen: *Air Buccaneers* (2004) [length 31:35 / 4:06]	Harri Mononen: *Nopeustesti* (1990) [length 17:08 / 3:24]
Olli Paavola: *LORD* (1981) [length 22:55 / 2:49]	Antero Pulli: *Suunnistussimulaattori* (2007) [length 19:50 / 1:54]	Manu Pärssinen: *VecSports Boxing* (2002) [length 15:41 / 3:49]	Miha Rinne: *Furry Dragons* (2002) [length 24:46 / 2:30]	Henry Roth: *Galilei* (1997) [length 15:10 / 3:39]
Raimo Suonio: *Chesmac* (1979) [length 26:30 / 4:21]	Kai Torstila: *Angry Birds* (2009) [length 24:19 / 3:23]	Johannes Vuorinen: *Badland* (2013) [length 8:12 / 3:50]	Venla Aalto / Sami Mäntylä / Janne Vuonnelsalo: *Rajakatse* (1995) [length 45:55 / 2:53]	Esko Eronen: *Afrikan Tähti* (1951) [length 19:13 / 2:36]
Risto Hieta: *Miekka ja Magia* (1987) [length 12:27 / 2:47]	Mikko Koivusalo: *Alias* (1989) [length 27:10 / 3:43]	Sami Laakso: *Dale of Merchants* (2015) [length 16:21 / 1:59]	Andy Pilke: *Lohikäärmepuu* (1990) [length 17:10 / 3:33]	Tuomas Pirinen: *Mordheim* (1999) [length 26:55 / 2:29]
Pasi Silander: *Kuninkaiden aika* (1993) [length 21:58 / 3:58]	Touko Tahkokallio: *Eclipse* (2011) [length 18:23 / 3:14]	Tuomas Hoppu: *Punaisten ja valkoisten taistelu Suomessa 1918* (1918) [length 20:09 / 2:55]	Petri Paju: *Aapeli* (1955) [length 3:51]	Mikko Saari: *Ristikontra* (trad.) [length 24:55 / 3:17]

Digital games Non-digital games Researches

The role of technological limitations is discussed in other interviews as well. *Shadow Cities* (2010), developed by Finnish studio Grey Area, is one of the first pervasive mobile games. It is a location-based game similar to *Pokémon GO!* (2016),[29] as it is based on GPS location and the player's actual location affects the game. When it was introduced, it attracted positive attention and was seen to represent the future of mobile gaming.

The game's development was delayed until suitable technology appeared on the market, but even when technological limitations yielded, it was difficult to find a sufficient market share for keeping the game profitable. "When it became clear that the iPhone can do some very cool stuff, where you have a large touchscreen and GPS, a few friends and I decided to start a company and start making this game", co-founder and CTO Mikko Hämäläinen reminisces.[30] However, the game did not reach enough players and the *Shadow Cities* servers shut down in 2013.

Technology could thus also be perceived as an active factor in game development. Many ideas never gain momentum until technological advancement make them possible. Technological innovation stimulates designers, but sometimes old technology enables features that the latest technology fails to support. Interactive TV game *Hugo* (1993), where viewers could call in and use a tone-dialling phone to control the character on the screen, relied on the analogue technology of its time. The producer responsible for broadcasting *Hugo* on Finnish national TV, Jussi-Pekka Koskiranta, talks about how analogue phone technology made it possible to broadcast *Hugo* live on TV: "[Hugo] was possible since we were on analogue TV, but now in the age of digital broadcasts, the signal arrives in packets and they are unpacked in a different order, so there may be a delay. So this is no longer possible."[31]

The role of technology appeared in many of the interviews, but all limitations need not be of a technological nature. Celebrities playing games on Speden Spelit, a game show hosted by Pertti "Spede" Pasanen, caught the attention of Coinline's Harri Mononen. Mononen offered a reaction tester[32] called *Nopeustesti* ("Speed test", 1990), which he had built with Seppo Korhonen, for Spede to use on the show. With the help of Speden Spelit, *Nopeustesti* became a huge gaming phenomenon in early 1990s Finland.

When reminiscing about the development of *Nopeustesti,* Mononen emphasized how the game was produced because of the legislative situation in Finland regarding operating coin-operated games: "the only devices that private companies could operate were children's swings, bubble gum machines and testers. Testers were legal because the Court of Appeal ruled that a reaction tester is not an amusement game. This allowed us to start the manufacturing, sales and operation of testers in Finland."[33]

As the analysed interviews attest, many early digital game developers felt they had little control over the circumstances they produced games in. The circumstances also shaped the types of games the designers were able to produce. These types of circumstances presumably still characterise game development, but the diversity of contemporary platforms makes it doubtful that a lack of designer control defines game development in such a dramatic way. Still, the interviewees repeatedly emphasised that the games they made depended on prevailing technological and socio-economic circumstances and not on the designers' creativity, for example.

A passion for self-improvement

In addition to legislation and technological advancement, personal factors affected game design. The coders' skills, for example, affected their ability to design games, as did their limited spare time and their discernible motivation for making games.

Such personal circumstances determined Olli Paavola's design of the oldest digital game discussed in the interviews, LORD (1981). Paavola programmed *LORD* for the DEC-20 mainframe computer while studying at the Helsinki University of Technology in the early 1980s. *LORD* was one of the first games set entirely in Tolkien's Middle-Earth. It offered the player an astonishing 550 locations. *LORD* is a 'text adventure game' and Paavola emphasizes that it, as such, relied heavily on the influence of its predecessors like *Colossal Cave Adventure* (1976) and *Zork* (1977).[34]

Paaola wanted to make a similar game, but doing so was possible only after he learned the needed skills. An important step was learning a specific coding language, Pascal, which made emulating the exemplar games possible: "Back then in Otaniemi we found a proper programming language, Pascal, after all the BASICs and such, and after playing [*Colossal Cave*] *Adventure* and *Zork* we decided to try to see if we could make something like that in Pascal."[35]

Self-improvement is in many of the interviews expressed as one reason for making games. The chess game *Chesmac* (1979) was the first commercially published computer game in Finland. It was made for the Finnish Telmac kit computer, and was originally a hobby project for Raimo Suonio, who wanted to demonstrate that the low processing power of the Telmac was sufficient for chess. In the end, 104 copies were sold by the Topdata store in Helsinki.

Suonio articulated his reasons for making the game by stating that "I don't know why I chose chess of all things, but a clear motivator was that I was fired by Kone Osakeyhtiö at the end of January in 1979 and I became unem-

ployed." While unemployed, he had ample time to develop the game as a sort of test of his own abilities as a coder. In a way, Suonio's reasons for making the game were born out of boredom, but the underlying motivation is bound to self-improvement. When not being "forced" to work, one has the time and possibility to best oneself by making games: "[my unemployment] lasted for about a month. I spent this entire month trying to see if such a small computer, with so little memory and such a slow processor, could fit a chess program that would play at least a decent game."[36]

Even today, designing games is, for many game designers, still a hobby or a pleasurable way to learn and develop new skills. *VecSports Boxing* (2002) is a hobbyist-created sports game for the Vectrex console that was released in the 1980s. A small group of enthusiastic hobbyists have been keeping the old console alive by releasing games for it long after it disappeared from stores. One of these hobbyists, Manu Pärssinen, talks about why he made a boxing game for the Vectrex: "I asked a friend if our group could make a demo for the Vectrex. He suggested that I should write the code myself. I said I'd try, and started reading about how to write assembler and how to use the different instructions."[37]

"The feedback was good, mostly because this sort of game had not been made for the Vectrex before. [...] The most important feedback came when I posted the steps of my progress online. [...] This had inspired other hobbyists to start writing games, and they sent me feedback that it was my website that started it all. To me, keeping the machine alive was the most important feedback", Pärssinen continues.[38] The development of *VecSports Boxing* impacted on Pärssinen's relationship with the console and the community that has formed around it.

Although game development is tied to prevailing circumstances and the views expressed previously in various game cultures, development is never static or predictable. A central motivator for making games is to emulate earlier types of games, but also to bend the limits of what can be done, both technologically and artistically. Existing game making paradigms can change through the will for self-improvement, a will to aim higher and test one's limits. In a hobbyist community, prestige is earned by showing one's love and sharing the skills thus learned with others.

The importance of community

There are other reasons for sharing one's work. According to the interviews, many of the games would not exist without fans encouraging and rooting for

the making of the game. One of the biggest successes of the Finnish game industry, *Angry Birds* (2009) by Rovio, has also been developed in close cooperation with fans, who according to marketing director Kai Torstila are largely responsible for the series' phenomenal success.[39]

Over the years, the simple puzzle game has developed into a brand that is known for its extensive product selection. "The fans have always been central for Rovio and *Angry Birds*", Torstila continues, as he explains how the fans have influenced the making of the *Angry Birds* franchise and the *Angry Birds* games. "[W]hen the App Store came on the scene [it was] an enormous distribution mechanism that gave millions of people access to our games. Social media was also on the rise, Facebook and YouTube were growing. We started creating content for them and it was extremely well received. These channels gave us a lot of different ideas and wishes."[40]

Implementing player ideas and feedback is another recurring theme in the analysed game development interviews. Fans can be vocal when demanding features, or commenting on what works and what does not. Mariina Hallikainen, CEO of Colossal Order, the studio behind *Cities: Skylines* (2015), believes game companies need to listen to their fans. "We have many players who give their opinions about what they would like to see in the game and what is and isn't working", she states.[41] An open mind toward player communities and suggestions seems to work, as *Cities: Skylines'* versatile support for player-generated content has received praise.

Fans are demanding, but they can also be a positive force in the development of various game genres. *Suunnistussimulaattori* ("Orienteering Simulator", 2007) is developed by Antero Pulli in his free time. The aim of the freeware game is to develop a true-to-life simulation of orienteering, but also a training platform for orienteers. The game carefully models terrain based on real-life orienteering tracks and Pulli has confirmed the running speeds in the game by running across the scenery several hundred times in real life. The game's weekly virtual contests support the training of Finnish orienteers, and Pulli highlights that "feedback from the community has been the largest motivator [for making the game]. There have been a few individual encouraging messages and the overall feedback has been very positive."[42]

Habbo (2000), a virtual online community for young people, was not primarily developed as a game but rather as a virtual gathering place. It gained immense popularity in the early 2000s. *Habbo* became a place where players were expected to invent their own content, almost as a form of child's play, or an extension of play into the teenage years. "[W]e did not consider *Habbo* a virtual world or a game, but more like a meeting spot that the players give life to by participating", says Sampo Karjalainen.[43] He also states that "the most

interesting part is the play. It may not be a popular word among teenagers, but the most interesting content in *Habbo* is created through play. The game shows, stables, gangs, quizzes and contests created by the visitors are what make *Habbo* interesting each day."

In this way, designers can intentionally try not to limit what players (or users) can do in the game, but rather opt for making a sandbox in which the community can develop and prosper. Although *Habbo* is more of a virtual world than an actual game, it includes several games and game-like features that appeal to teenagers all over the world. In this way, players are more likely to make the game their own. "When you create something of your own in the world, your relationship with it becomes very personal and important", Karjalainen continues.[44]

All in all, games are not developed in a vacuum. Development is influenced by many factors, including the communities that form around games. The wishes and ideas of players can shape games, since many developers try to accommodate their views. If players are understood as co-creators, it suggests that games are never really finished, but rather continuing cultural processes on which gamers have lasting impact.

Game development as a way of life

The relationship between game makers and fans can, especially in smaller productions, become intimate. Sami Maaranen is the main game developer of the Kalevala inspired survival roguelike *UnReal World* (1992). *UnReal World* has been in constant development since 1992, gaining a reference in the Guinness Book of Records. The sounds, graphics and coding of *UnReal World* are all made by a two-man development team, Maaranen and his longtime friend Erkka Lehmus. "The first version came out when I was 15, so I have been working on the game for most of my life", Maaranen recounts.[45]

UnReal World is placed in a very lifelike fantasy world that is reminiscent of ancient Finland. The game is an excellent example of how games have the potential of becoming the centre point of game designers' existence; many designers commit to developing their games and even to learning the skills enacted in them. "The real world and game world sometimes become so intertwined that it is difficult to tell which is which; all the real-life experiences, trekking and adventures link with the game and add to its content", Maaranen states.[46]

Maaranen and Lehmus discuss the game's realistic simulation of real life skills and the way of life of ancient Finns. They find it important that they

have real life expertise in the various survival and trekking skills used in the game. The game's detailed hunting simulation is based on experience and on the study of the secrets of ancient hunters to a point where "the game world […] influences real-life trekking [and] experiments with ancient technology".[47]

The close-knit community of people playing *UnReal World* has had a profound impact on Maaranen's and Lehmus' personal life. Maaranen and Lehmus have, "over the years, […] met with […] players, when people from France or Canada, for example, have ended up on holiday in Finland and we have spent several days together, either trekking or doing something in the spirit of *UnReal World*, or at least talking about it. Over the course of this long history, we have formed new friendships with some players; the feeling of community is a large and pleasant part of this entire story." In this manner, communities around games can become very tight.[48]

Finnish ice-fishing classic *Propilkki* (1999) is another game in which it is difficult to discern the boundaries between game and real life. It has been developed for the PC since 1999 by two friends, Mikko Happo and Janne Olkkonen, originally from Kajaani in the north of Finland. It is currently available also for mobile platforms. The game is an institution in fishing games, and it is especially noted for its high level of accuracy and realism. The realism is made possible by the developers' lifelong interest in ice fishing and Happo's studies in biology.[49]

"The history of *Propilkki* goes quite far back. As small children, we would play ice fishing by placing quilts on different pieces of furniture", Happo reminiscences about how the game is rooted in his pre-school years. The shift from play to games and game making seems to have been very natural in *Propilkki's* case and ice fishing continued to be a focus when Happo and Olkkonen learned coding. "By the time we got our Commodore 64s and started playing with them, we started thinking about moving this game to the computer, and we did make one, but it was a text-only game since we did not know how to do graphics." As the coding skills of Happo and Olkkonen improved, they were able to make "a PC game about this very same subject and taking it several steps further."[50]

As we have seen, games are not isolated from life in general. They have the potential to become central parts of the lives of their developers, but also for the people who play them. Game cultures are not separate from other cultural activities, either, and more care needs to be taken to ascertain that game cultures are seen in as broad a light as possible. This applies to game preservation efforts, since games and gaming should be understood as complex social phenomena instead of merely technological challenges.

DISCUSSION

In this article, 14 video interviews preserved in the collections of The Finnish Museum of Games have been scrutinised. The intent has been to analyse the views on digital games, game development and game cultures that are expressed in them. Some developers talk about reasons for making games and others cover why the games turned out the way they did, how circumstances affected the shaping and execution of design ideas, or how they were able to visualise and realise new game designs. The analysis provides diverse accounts on game development and the contexts surrounding both the development and playing of games. The following investigates how game developer interviews are suited for preservation work in museums.

As the interviews attest, games turn out the way they do because of various, often counter-intuitive reasons. Game cultures are impossible to preserve only by concentrating on preserving playable games and gameplay. If museums preserve only game boxes or playable games, they are going to miss this dimension entirely.[51] If we want to remember what "is no longer possible" or that "we had very strict limits to work with", or that "keeping the machine alive was the most important feedback", we need to listen to game developers and preserve their accounts.[52]

We need to keep in mind that game developer interviews do not preserve the skills, know-how and work processes *per se*, but rather the interviewees' opinions and reminiscences on those. Even if we listen, read, and talk about skills we do not really acquire them. Acquiring and executing skills is difficult, and it cannot satisfyingly be captured into an interview. Still, as skills, ideas and work processes are vocalised in interviews and preserved in museum collections, game cultures become more aware of their existence. The heightened awareness makes them part of the game heritage process.

Games are made by and for people, and for many game developers "feedback from the community [is] the largest motivator" or "a large and pleasant part of this entire story".[53] Similarly, understanding the links between game developers and players is difficult without preservation methods that reveal the complex interplay between communities and game cultures. When saving game cultures, we need a broader preservation agenda than one just interested in the playing of digital games. This kind of phenomena centred preservation work is something that various contemporary collecting methods (ethnographic observation, audio and video to interviews) have been aspiring to deal with since the 70s.[54]

The preservation of memories has long been part of the work done in museums. A similar trend concerning museums *as a media* is an increasing

movement away from (tangible) object centred displays towards interactive experiences. This trend has been labelled a "crisis of the object", and is one that is, by some accounts, threatening the monumental "aura" of objects in museums.[55] On a similar note, museums can be thought of as places where, over time, objects gain new meanings in an ongoing trialogue between a) the museum object, b) the way it is displayed and preserved and c) the reception of the audience in reaction to it.[56]

Thus, museum exhibitions and collections can change over time. Like all museum objects, video interviews are constantly re-contextualized and re-evaluated, and they acquire new meanings in the trialogue between objects, exhibition style and audience reception. The trialogue leads to constant re-contextualization, which shapes our understanding of game heritage.[57] The values and themes expressed in the analysed interviews expand the exhibition content, but also our understanding of game cultures and heritage. Game developers' memories of their work, their reminiscence on the creative processes and skills and know-how diversify our understanding of game cultures. In the end, game heritage is the end result of what we value in game cultures. The interviews provide a more nuanced historical account of game development in Finland.

Moreover, the making of video interviews can be seen as part of the trend away from tangible museum objects towards interactive experiences in museums. Video interviews might at first be shown in exhibitions, but changes in exhibitions can make way for including them in collections, as well. In this way, video interviews become far more than context information, and can instead be thought of as museum objects. In the case of The Finnish Museum of Games, video interviews should be understood less as context information that provides a deeper understanding of (tangible) museum objects, and more as (intangible) museum objects in their own right.

A broad understanding of game cultures demands listening to how game developers talk about skills, knowledge and the meanings important for their games.[58] The game developer interviews include information which is impossible to discern from the playable games; thereby, game developer interviews seem to support Guins' notion that games are best preserved by looking at the contexts where they have existed – the websites, forums and screenshots of them, or in the voices of their players and developers.[59]

As demonstrated in the introduction, digital games may be preserved in numerous ways. The views expressed in the analysed interviews give rise to a need to re-define museum objects and to include intangible ideas, skills and thoughts as museum objects. Video interviews with game developers are included in the museum collection because they preserve game making history

and the intangible experience-based part of cultural history and heritage. As ”the feeling of community is a large and pleasant part” of game cultures, we need to see game preservation from a wider angle.[60] When game development can become a life-long passion (instead of a career), preserving these kinds of views requires an understanding of the values and ideas expressed in various game cultures.

To conclude, video interviews with game developers can be understood as intangible museum objects in museum collections. Not all 100 Finnish games on display at the Finnish Museum of Games have tangible museum objects associated with them. In some cases, the only thing left of a game is the development team. In these cases, a video interview with the game developer(s) might be the only preservation option available. Video interviews with game developers become a means to collect and preserve self-reflections on skills needed in game development and the know-how associated with them. The interviews are duly dealt with as museum objects, and awarded their own museum numbers and metadata.

NOTES

1 The term *digital game* is used instead of terms with a more narrow (or vague) definition, like *video game* and *computer game*. Digital games include all games played on digital devices, eg. mobile games, computer games, console games and online games.

2 The term “museum object” is used when dealing with the tangible and intangible cultural artefacts museums preserve.

3 cf. Guins 2014; Newman 2012.

4 Newman 2012, p. 123.

5 Nylund 2015.

6 Korkeamäki, Nylund, Ojanen & Wiik 2017. The author is currently employed by the museum and collected the investigated interviews together with two other museum researchers.

7 eg. Delve, Pinchbeck & Bergmeyer 2014.

8 Newman 2012, Guins 2014.

9 Sjöblom 2011, Hale 2013.

10 cf. Badenoch 2014.

11 Mäyrä, Karvinen & Ermi 2016.

12 Mäyrä 2014.

13 Ibid.

14 Shaw 2010, p. 405.

15 ICOMOS, 2002.

16 Franchi 2015, cf. Desvallées & Mairesse 2009, pp. 39–42.

17 Siefkes 2012, p. 3

18 UNESCO 2003.

19 Desvallées & Mairesse 2009, p. 62.

20 Carman 2010.

21 Axelsson 2014; Nyström & Cedrenius 1981.

22 cf. Desvallées & Mairesse 2009.

23 cf. Vowell 2009.

24 Suominen 2017; Saarikoski 2017.

25 The translations are made by authorised Finnish to English translator Mikko Heinonen.

26 Armanto 2016, 1:52.

27 Ibid., 2:43.

28 Ibid., 2:25.

29 *Pokémon GO!* is a location-based augmented reality game developed by Nianti c for iOS and Android devices and released in July 2016. The game utilises the player›s mobile device›s GPS ability to locate, capture, battle, and train virtual creatures, called Pokémon.

30 Hämäläinen 2016; 0:15.

31 Koskiranta 2016, 2:36.

32 A reaction tester is a type of game used to test the player's reaction time with very simplified gameplay, eg. pushing buttons in the order they light up.

33 Mononen 2016, 2:04.

34 Paavola 2016, 0:25.

35 Ibid.; 0:14.

36 Suonio 2016, 1:10.

37 Pärssinen 2016, 0:21.

38 Ibid., 2:42.

39 Torstila 2016, 1:26.

40 Ibid., 1:49.

41 Hallikainen 2016, 1:06.

42 Pulli 2016, 1:28.

43 Karjalainen 2016, 1:06 & 2:00.

44 Ibid., 2:23.

45 GWR Gamer's Edition 2017, p. 139.

46 Maaranen 2016, 0:29.

47 Ibid., 0:37.

48 Ibid., 3:09.

49 Happo 2016, 2:07.

50 Ibid., 0:04.

51 cf. Guins 2014.

52 Quotations: Koskiranta 2016, 2:23; Armanto 2016, 2:25; Pärssinen 2016, 2:42.

53 Quotations: Pulli 2016, 1:28; Maaranen 2016, 3:09.

54 cf. Axelsson 2014.

55 Smith 2006, pp. 546–547; Henning 2006, p. 71.

56 Akker & Legêne 2016, p. 7.

57 cf. Badenoch 2014; Vahtikari 2013.

58 cf. UNESCO 2003.

59 Guins 2014, p. 88.

60 Quotation: Maaranen 2016, 3:09.

SOURCES

Akker Chiel Van Den & Legêne Susan 2016. Introduction. *Museums in a Digital Culture: How Art and Heritage Become Meaningful*. Eds. Akker, C. & Legêne, S. Amsterdam University Press, Amsterdam.

Axelsson Bodil 2014. The Poetics and Politics of the Swedish Model for Contemporary Collecting. *Museum and Society*, 12(1). University of Leicester, Leicester. Pp. 14–28.

Badenoch Alexander 2014. Translating objects, transnationalizing collections: Inventing Europe between museums and researchers. *Migrating Heritage: Experiences of Cultural Networks and Cultural Dialogue in Europe*. Ed. Innocenti, P. Ashgate, Farnham. Pp. 39–52.

Carman John 2010. Promotion to Heritage: How Museum Objects are Made. *Encouraging Collections Mobility – A Way Forward for Museums in Europe*. Eds. Pettersson, S. , Hagedorn-Saupe, M. , Jyrkkiö, T. & Weij, A. Finnish National Gallery, Helsinki.

Desvallées André & Mairesse François 2010. *Key Concepts of Museology*. Armand Colin, Paris.

Delve Janet, Pinchbeck Dan & Bergmeyer Winfried. 2014. Preserving Games Environments via TOTEM, KEEP and Bletchley Park. *The Preservation of Complex Objects Volume 3: Gaming Environments and Virtual Worlds*. JISC, London.

Franchi Elena 2015. What is cultural heritage?. *Smarthistory*, August 8, 2015. https://smarthistory.org/what-is-cultural-heritage/, accessed April 29, 2017.

Guinness World Records 2017. *Guinness World Records: Gamer's Edition!* Guinness World Records, London.

Guins Raiford 2014. *Game After – A Cultural Study of Video Game Afterlife*. MIT Press, Cambridge.

Hale Thomas 2013. *From Jackasses to Superstars: A Case for the Study of "Let's Play"*. Unpublished Master's Thesis. University of Roehampton, London.

Henning Michelle 2006. *Museums, Media and Cultural Theory*. McGraw-Hill Education, Maidenhead.

ICOMOS 2002. *International Cultural Tourism Charter. Principles And Guidelines For Managing Tourism At Places Of Cultural And Heritage Significance*. ICOMOS International Cultural Tourism Committee, Paris

Korkeamäki Silja, Nylund Niklas, Ojanen Riina & Wiik Elisa 2017. Suomen pelimuseo -joukkorahoituskampanjasta museonäyttelyksi. *Ennen ja nyt*, 1/2017. Ennen ja nyt -verkkolehti, Turku.

Mäyrä Frans, Karvinen Juho & Ermi Laura 2016. *Pelaajabarometri 2015 – Lajityyppien suosio*. TRIM Research Reports 21. University of Tampere, Tampere.

Mäyrä Frans 2014. Culture. *The Routledge companion to video game studies*. Eds. Wolf, M. & Perron, B. Routledge, Oxon. Pp. 293–300.

Newman James 2012. *Best Before: Videogames, Supersession and Obsolescence*. Routledge, London.

Nylund Niklas 2015. Walkthrough and Let's Play: Evaluating preservation methods for digital games. *Proceedings of the 19th International Academic Mindtrek Conference*. Mindtrek Conference, Tampere.

Nyström Bengt & Cedrenius Gunilla 1981. *Fördela museernas dokumentationsansvar: ett program för samtidsdokumentation vid kulturhistoriska museer*. Nordiska museet, Stockholm.

Saarikoski Petri 2017. Suomen ensimmäinen pelimuseon on kansainvälisestikin ainutlaatuinen. *Tekniikan Waiheita* 1/2017. Tekniikan Historian Seura, Helsinki. Pp. 43–45.

Shaw Adrienne 2010. What is video game culture? Cultural studies and game studies. *Games and Culture*, 5. Pp. 403–424.

Siefkes Martin 2012. The semantics of artefacts: How we give meaning to the things we produce and use. *Themenheft zu Image 16: Semiotik. Part 1 ("Principles of semantization", section 1–3)*. Herbert von Halem Verlag, Köln.

Sjöblom Björn 2011. *Gaming interaction: Conversations and competencies in Internet cafés*. Dissertation. University of Linköping, Linköping.

Smith Laurajane 2006. *Uses of Heritage*. Routledge, London.

Suominen Jaakko 2017. Pelisilmää museossa – Suomen pelimuseo on kansainvälisen tason museo. *Museo-lehti* 1/2017. Museoliitto, Helsinki. Pp. 40–41.

UNESCO 2003. *Convention for the Safeguarding of the Intangible Cultural Heritage*. UNESCO United Nations Educational, Scientific and Cultural Organization, Paris.

Vahtikari Tanja 2013. *World Heritage Cities Between Permanence and Change: International Construction of "Outstanding Universal Value" and Local Perceptions at*

Old Rauma from the 1970s to the 2000s. PhD Dissertation. University of Tampere, Tampere.

Vowell Zach 2009. What Constitutes History? *Before It's Too Late: A Digital Game Preservation White Paper*. Ed. Lowood, H. University of Illinois, Champaign. Pp. 151–155.

Interviews (all in the collections of The Finnish Museum of Games)

Armanto Taneli 2016. Interviewed by Niklas Nylund on 28.6.2016.

Hallikainen Mariina 2016. Interviewed by Outi Penninkangas on 8.6.2016.

Happo Mikko 2016. Interviewed by Niklas Nylund on 5.7.2016.

Hämäläinen Mikko 2016. Interviewed by Riina Ojanen on 31.8.2016.

Karjalainen Sampo 2016. Interviewed by Sampo Karjalainen on 10.9.2016.

Koskiranta Jussi-Pekka 2016. Interviewed by Outi Penninkangas on 30.8.2016.

Maaranen Sami (& Lehmus Erkka) 2016. Interviewed by Niklas Nylund on 24.5.2016.

Mononen Harri 2016. Interviewed by Niklas Nylund on 7.6.2016.

Paavola Olli 2016. Interviewed by Outi Penninkangas on 5.7.2016.

Pulli Antero 2016. Interviewed by Niklas Nylund on 9.6.2016.

Pärssinen Manu 2016. Interviewed by Outi Penninkangas on 4.5.2016.

Suonio Raimo 2016. Interviewed by Outi Penninkangas on 22.6.2016.

Torstila Kai 2016. Interviewed by Riina Ojanen on 12.6.2016.

Vuorinen Johannes 2016. Interviewed by Riina Ojanen on 15.6.2016.

PUBLICATION II

Constructing Digital Game Exhibitions: Objects, Experiences, and Context

Niklas Nylund

Arts, 7(4), 103–117.

arts

MDPI

Article

Constructing Digital Game Exhibitions: Objects, Experiences, and Context

Niklas Nylund

School of Information Science, University of Tampere, Tampere FI-33014, Finland; niklas.nylund@iki.fi

Received: 30 October 2018; Accepted: 11 December 2018; Published: 18 December 2018

Abstract: A large number of exhibitions worldwide deal with digital games, but curators lack a coherent understanding of the different aspects of games that can be exhibited or a clear vocabulary for talking about them. Based on a literature review on game preservation and visitor behavior in exhibitions, the paper makes an argument for understanding digital games on display as made up of *object*, *experience*, and *context* aspects. The study further presents a matrix model for understanding and working with games in exhibitions. The model makes for a more nuanced understanding of the different ways digital games can be exhibited. Additionally, it clarifies the position of games in exhibitions as socioculturally constructed through inherently ideological curatorial choices.

Keywords: exhibition planning; museum work practices; game preservation; cultural heritage; digital game; original experience; context; construct

1. Introduction

Several museums dedicated to exhibiting digital games[1] have opened around the world lately. Although their exhibitions have many things in common, it is striking how different they are in the strategies they employ toward exhibiting and preserving games. The Game On 2.0 exhibition, produced by Barbican International Enterprises, focuses on playable games in the form of "original experiences" on original hardware (Prax et al. 2016), the Nexon Computer Museum (2014) in Korea exhibits international game history, the Finnish Museum of Games tells the story of game development in Finland (Heinonen 2017) and the Play Beyond Play exhibition at the Swedish National Museum of Science and Technology deals also with the problematic aspects of games (Du Rietz 2018). Why are game museums and exhibitions working towards so different goals?

In an attempt to answer the question, this article deals with digital games on display in museums, galleries, trade fairs, and similar public places. Based on a literature review of studies dealing with games as interactive exhibits and on case examples from the Finnish Museum of Games, the paper aims to build a theoretical argument about understanding games on display and to provide a comprehensive model and vocabulary for understanding them. The hypothesis is whether games on display should be understood as being constructed out of three different aspects: *object*, *experience*, and *context*. The three aspects have been proposed in earlier research (e.g., Newman and Simons 2018; Sköld 2018), but this study is a first effort to understand them as a whole. In addition, the study provides a matrix for using them to theoretically inform the exhibiting of games.

This paper deals with games on display. Game preservation research has to a large extent been dealing with preserving playability and with the long-term game preservation issues it entails (Newman and Simons 2018). Although recently criticism has been raised at the technical approach to

[1] The term digital game is used throughout. It is understood as a concept covering all games played on digital devices, e.g., mobile games, computer games, console games, and online games.

game preservation (e.g., Newman 2012a, Guins 2014), not that many concrete options to it have been presented. This article looks into the theoretical issues of displaying games in public environments, and at the different aspects by which this can be achieved. The study draws from different traditions and approaches while it aims at building bridges between game studies and museology, museum pedagogy, heritage studies, and the study of exhibitions. It contributes to building a critical vocabulary for talking about and understanding games on display, which can be used in analyzing, planning, and criticizing game exhibitions. It contributes to game preservation research by dealing explicitly with exhibitions and providing connections to existing museum and heritage research.

For this paper, all 70 digital games on display at the Finnish Museum of Games went through a preliminary evaluation. Based on the preliminary evaluation, four games were selected for the study, based on their exhibitable affordances (Gibson 2011) and the resulting exhibiting techniques. As online games with servers are dependent on the companies or communities that run them, entire game genres (e.g., MMORPGs) cannot be experienced in an exhibition visit timeframe, and other games might be difficult to experience alone or without prior knowledge of the genre, exhibiting playable games is dependent on the game and its properties. Similarly, exhibiting games is also dependent on the hardware used. Games with specialized hardware requirements or unique controllers might not be exhibitable. These issues inform the selection and curation process in exhibitions, as well as the selection criteria for the games selected for analysis in this paper.

Four games were selected for closer analysis. The games were chosen from a set of 70 digital games on display at the Finnish Museum of Games. The selection criteria was to show many varied approaches to exhibiting games in order to highlight the existence of the three different aspects of *object*, *experience*, and *context*. The framework of museum practices research informs the analysis, as the author has worked at the Finnish Museum of Games, and has inside knowledge to the workings of the museum. Other exhibitions were chosen to provide context to the discussion and provide examples of divergent approaches to the matter of displaying games in public.

In the literature review, research dealing with interactivity and learning complements the game preservation research and allows for a more nuanced understanding of what constitutes the game exhibition experience. The article does not present an exhaustive literature review of game preservation related research (for such a presentation, see Sköld 2018). Instead, it includes the central themes of game preservation research relevant for dealing with the research question.

The systematic thematic analysis identifies artifact categories relevant for the analyzed games. It looks at the four games on display at the Finnish Museum of Games and arranges the various artifacts on display into five overarching categories. The findings, informed by the author's knowledge of museum work practices and artifact categories are presented in a table. The analysis and resultant table help in building the preservation model presented in the article, and provide insight into how the various parts of games on display interact with each other.

The paper starts by covering multiple theoretical issues. First, the role of games as artifacts is discussed. Then, interactive experiences and the interplay between visitor and exhibition content is highlighted. Finally, the paper goes on to discuss the context of games. After the literature review, a synthesis of the literature and a model for understanding games on display is presented. The application of the model is demonstrated using case examples from the Finnish Museum of Games. The discussion touches on the way different kinds of exhibitions and stakeholders might benefit from the presented model it uses in long-term preservation, as well as the ideological issues of exhibiting and preserving games.

2. Results

2.1. Game Artifacts in Exhibitions

Digital heritage, and digital games in particular, challenge the ways heritage institutions have been working in the past (Guins 2014, p. 79). Museums have traditionally been interested in physical

objects, relying on them to communicate information about cultural heritage to museum visitors. Digital games pose many questions and difficulties for the traditional museum approach, ranging from what game exhibitions should display and on to how the "museum object" should be understood. The ambiguities include the position of digital games as both physical *objects* and interactive *experiences*.

Game research deals with similar ontological issues. "Videogames are a mess" (Bogost 2009) in the ontological sense, since the term videogame or digital game can mean anything from source code, retail boxes, circuit boards, game design, intellectual properties, collector items, and on to playable games. All of these things are part of digital games, and exhibitions have found different ways to deal with them, not just the physical objects. Similarly, research on playable games as texts is increasingly "de-centered" by research focusing on the paratexts surrounding them, like walkthroughs, game guides, and Let's Play videos (Consalvo 2017).

Because of these ambiguities, there is a need for a more nuanced understanding of what games in exhibitions are. Following Sotamaa (2014, p. 3), this article assumes that digital games in exhibitions take the form of either *material* or *software artifacts*, i.e., they express either the physicality of games (consoles, controllers, and storage media) or the interactivity of them (playable games). Games are also *cultural artifacts* in that they "carry embedded meanings and ideas and are socially shaped in production and use" (ibid.).

Software artifacts are meant to be played. They are enjoyed in certain situations and by certain people, as fleeting interactive experiences that do not come to life before the act of playing (Stenros and Waern 2011). Players play and experience games in their own various ways (Sicart 2014), and their "distinct playing performances problematize discussions of games as static texts", which has consequences for game preservation and the art of exhibiting them (Newman 2012b, p. 136). If game preservation and game exhibitions are interested in providing visitors opportunities for play or in displaying footage of others playing, the heterogeneous nature of play must in some way be taken into account. Displaying examples of play contains an inherently ideological choice of what to present.

Moreover, including games in collections and exhibitions shapes them as cultural artifacts, which creates "meanings different from those of other uses and contexts" (Siefkes 2012, p. 89). When *Max Payne* (2001) is playable in the Finnish Museum of Games on a modern LCD monitor, alongside a retail box and an interview with screenwriter Sami Järvi, it is a different experience from playing the game at home with a CRT (Cathode Ray Tube) monitor when it came out. The exhibiting process also changes the game, giving it new meanings as a cultural heritage artifact.

This study understands games in exhibitions as *objects* or *experiences*, that is, as either material artifacts (i.e., physical things) or as interactive software artifacts (i.e., games playable on screens). In addition, many hobbyists and collectors propagate a way of understanding games as *both* objects and experiences at the same time. Following Swalwell (2013) critical reading[2], this study calls these particular interactive experiences "original experiences", which can for the purposes of this paper be defined as game experiences played on original game hardware and controllers (Figure 1).

---

[2] Swalwell (2013, p. 11) presents a critical reading of the disparate problems the "original experiences" approach advances and juxtaposes "original experiences" with a "critical historical and scholarly understanding". According to Swalwell (ibid., 4), the "original experiences" approach is "popular writing about games history, in journalistic pieces or enthusiasts' forums, rather than in the writing of scholars or critical game historians".

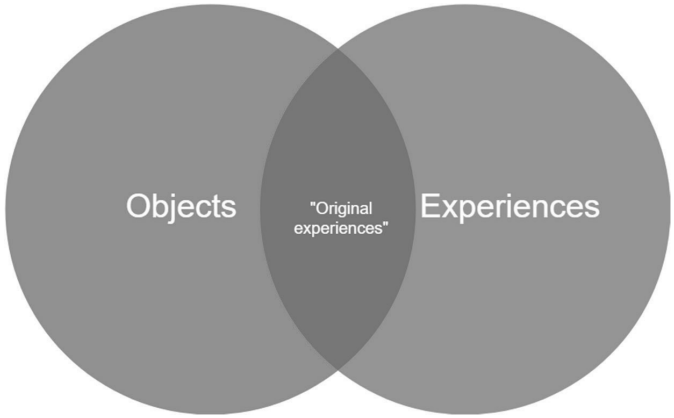

Figure 1. Games as both objects and experiences.

By way of conclusion, games in exhibitions have traditionally been understood as either objects or experiences. Another way to approach exhibited games is to think of them as "original experiences", combining the qualities of both the object and experience aspect of them. Regardless of how playable games are presented, they possess many similarities with what museums have traditionally called interactive experiences, which have a long history in the philosophy of pedagogy and in museum and science center exhibitions. These different ways of conceptualizing games on display are not just theoretical. In the context of exhibition planning, the process of displaying games can lead to considerably different outcomes, which also has consequences for game heritage formation (cf. Smith 2006, p. 54).

2.2. Exhibited Games as Interactive Experiences

The notion of interactive experiences[3] can be traced back to at least to progressive pedagogist John Dewey, and his ideas of learning-by-doing, which have been influential in both education and social reform (Haggbloom et al. 2002). Dewey propagated the usefulness of interactivity in learning, stating that knowledge ultimately rises from "impressions made upon us by natural objects", and how it is "impossible to procure knowledge without the use of objects which impress the mind" (Dewey 1916, pp. 217–18).

Since then, interactivity has acquired many advocates, not least in museums and other places of learning, where interactive "hands-on" experiences have become one tool in the toolset available for exhibition designers. Exhibition hands-on was first propagated in science centers, with the Exploratorium of Frank Oppenheimer being among the first to embrace the concept. Oppenheimer, a particle physicist, insisted that hands-on experiences had great potential for teaching and that visitors gain "understanding [of science and technology] by controlling and watching the behavior of laboratory apparatus and machinery" (Oppenheimer 1968, p. 207).

Hands-on and interactive experiences have gained widespread support in exhibitions, with many studies able to show the positive results of interactivity. Hands-on promotes engagement and recall of exhibits and their content (Schneider and Cheslock 2003, p. 71) and "[v]isitors greatly prefer interactive elements" in exhibitions (Hein and Alexander 1998, p. 16). Interactive exhibits also have the advantage

---

[3] There are many different degrees of interactive experiences. A TV set can be switched on or off and the content can be changed with a remote controller, but it is only when the TV is connected to a game console or similar piece of interactive technology that the user can interact with the content. In addition, digital interactivity and physical hands-on have differences that this study will not deal with in more detail (Fornäs 1998).

of being memorable and many visitors able to describe the thoughts and feelings they had at the exhibits over six months after a visit (Stevenson 1991).

The reliance on interactivity has also seen critics. In the museum tradition, playable games can be understood as interactive experiences. Although game exhibitions have been praised for their interactivity and the amount of playable games they have on display, the playing of games does not equal understanding them and their cultural, historical, and social dimensions. Instead, the focus on experiences has informed a development where game museums and exhibitions are increasingly seen as a type of "theme park" or amusement center, where the main aim is to *entertain* visitors. In this context, playable games can be seen as "promotional gimmicks" for museums (Naskali et al. 2013, p. 233).

In the theme park approach, often propagated by non-professional museums and other privately-owned exhibitions and arcades, playable games are presented as the only content visitors are interested in. If playable games become an end instead of a means to some sort of contextualizing understanding, it might be difficult to defend their role as museum objects. The theme park approach does not take into account the notion of museal understanding and communication with visitors. Excitement and amusement as such are not a part of how the International Council of Museums (ICOM) defines museums:

> A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment. (International Committee of Museums ICOM)

To conclude, interactive experiences have a long history with museum exhibitions, and they have been shown to have positive effects in helping museums engage with visitors. Critics of hands-on, on the other hand, are worried about how interactive experiences do not incite any deeper understanding of the subjects they are dealing with, and how they do not support the core values of museums. The "original experiences" of playing with original hardware do not automatically translate into a deeper understanding of what games and game heritage are about.

2.3. Beyond Original Experiences

Instead of relying on the nostalgic proposition of "original experiences" as a guideline for building game museums, it might be beneficial to look in other directions to help understand the museum experience. There is a definitive need to move on from the "cult of the original" when exhibiting games. This need includes problematizing the notion of original experiences and understanding the exhibition–visitor interface in a more nuanced way. One of the models used for visitor experience understanding is called the "contextual model of learning", propagated by Falk and Dierking (2013), which defines learning in museums as happening in three different contexts: the *personal*, the *sociocultural*, and the *physical*.

The personal context "includes differences in individual interests, attitudes, and motivations for visiting" (Falk and Dierking 2013, p. 27). How visitors perceive and experience museums is tied to the sociocultural context, to "one's cultural background (race-ethnicity, socioeconomic status, country of origin)", and depends "on whether one walks through a museum with an eight-year-old or with an eighty-year-old in tow, whether one is a parent with two small children, or whether or not one's companion is knowledgeable about the exhibits" (ibid., pp. 27–28). Games, whether they are played at home or in an exhibition framework, always happen in a sociocultural context, and are not understandable without it. Visitors are not passive vessels that take in the museum exhibition in the way the curator intended. Instead, visitors have an active role in meaning-making:

> Visitors come to museums with their own agendas and construct their own meanings within museums. Regardless of what the museum staff intend, visitors' different expectations,

> previous museum experiences, and levels of perceptual skills mean that museum experiences is often personal and individual rather than standard and generic. (Chang 2006, p. 170)

The physical exhibition space is understood as the third factor in the learning process. According to Falk and Dierking (2013, p. 29) learning is "constructed over time as the individual moves through his sociocultural and physical world". In the contextual model of learning, the interplay between visitor and exhibition is always "filtered through the personal context, mediated by the sociocultural context, and embedded within the physical context" (ibid., p. 30).

Schmitt (2007, p. 587) writes about how the "explanatory power of (the Barbican produced Game On exhibition) seemed to be at its strongest in those sections that were not interactive". Neither objects or interactive experiences can communicate the full meaning of what playing games in various time periods has meant. Material artifacts in their physical context in vitrines do not automatically convey their meaning to exhibition goers. Instead, visitors approach them from their own personal and sociocultural contexts. The same is true for interactive game experiences, which are not automatically understandable for visitors with no prior experience of the games exhibited.

The authenticity of "original experiences" is always constructed, since it entails choosing whose experiences are defined as "authentic" and deciding if developers, players or other sources are the foremost authority on it. "Original experiences" are an ideal impossible to reach because visitors do not re-experience "original experiences", but rather approach re-constructions of the sociocultural values of an exhibited game in a physical exhibition context, shaped by their own prior personal (game) experiences. The question of "which differences matter" (Lowood 2014) is in the center of "original experiences", but also game preservation in general. Playing *Super Mario Bros.* on a Nintendo Entertainment System in 2018 does not take one back to 1985 or 1987, even if the game is presented in an "interactive interior room" from the period[4] or a virtual reality (VR) experience like EmuVR[5], although it might raise pleasant and nostalgic memories of playing the game thirty years earlier.

Prax et al. (2016, p. 14) challenge the notion of "original experiences" by stating that "games by themselves (might not) always be able to allow for reflection but might need added information, guiding, or narration to make good on the requirements of a museum exhibition". The original experience does not equal understanding or reflection, and it might be outright incoherent for players without prior knowledge of said system, controller or games. As game cultures mature and new gaming generations experience historical games for the first time in museums, the need to explain and communicate grows:

> (W)hile it is desirable to present playable original games in an exhibition it cannot be expected that visitors will have the same experience as players had with the game in its historical context and it is questionable whether providing playable games on original hardware is enough to achieve the objects of game preservation and exhibition. (Prax et al. 2016, p. 6)

As we have seen, while original hardware helps formulate the sociocultural context of play, playing a game on a particular console can never reach an "original experience". According to the contextual model of learning, exhibition visitors approach re-constructions of the sociocultural values of exhibited games in physical exhibition contexts, shaped by their prior personal experiences. Rather than understand "original experiences" as enabling visitors to re-experience play experiences from their past, they actually experience constructions of gameplay that do not sit "easily alongside more critical and scholarly perspectives" (Swalwell 2013, p. 11). To be clear, "original experiences" do not enable visitors to "relive past experiences", as "the player is not the same player who confronted this game in decades gone by" (ibid., 6).

---

[4] As seen in e.g., Computerspielemuseum, the Finnish Museum of Games or the National Videogame Museum.

[5] EmuVR is a "VR simulation of those good old nostalgic days just playing video games in your room" which features authentic models of period rooms and game emulation embedded into a VR experience (EmuVR 2018).

2.4. Context in Game Exhibitions

As games and their interfaces have changed over the years, especially older game genres[6] might be difficult to understand by just playing them. Preserving just playable games without the larger scope of how they should be played, makes for a one-sided or even inadequate preservation. When Game on 2.0 displays playable original hardware, with limited or no context information, it "runs the risk of presenting a limited view of digital games" (Prax et al. 2016, p. 4), instead of helping visitors understand the "wider contexts that gaming occurs in" (ibid., 13).

Experiences have their limits, and they do not help to understand past ways of production and play. Playing without context, in other words, can be confusing and lead to misunderstandings, even if it is done on original hardware.

Moving beyond experiences requires various forms of context. Visitors from non-gamer sociocultural backgrounds cannot understand the idiosyncrasies of games without the context of game culture, and how game users, developers, and reviewers have understood and talked about them. Guins (2014, p. 88) writes about how games are best preserved by looking at the contexts where they have existed: the websites, forums, and screenshots of them, or in the voices of their players and developers. The aspect of context can consist of both material and digital artifacts. All games rely on cultural know-how and silent knowledge, both in the form of the context of development and the context of use.

Context can take many forms, which in this study are called (a) the context of play, (b) the context of game development or (c) the context of public reception. The context of play can be exhibited by e.g., photos and videos showing how people play, interviews, and reminiscences like oral histories (Newman and Simons 2018, p. 31), Let's Play videos and other forms rising from game communities are just some examples of how the context of play can be presented. The context of development can be exhibited by, e.g., game developer interviews (Nylund 2017) or design and development documentation (Newman and Simons 2018, p. 20). The context of public reception of games can be exhibited by, e.g., newspaper articles and reviews in different media (cf. Kirkpatrick 2012).

Context information can be useful when exhibitions for various reasons want to deal with games that cannot be dealt with via objects or experiences. Concept art for the *Supernauts* (2013) game on display at the Finnish Museum of Games makes parts of the development process of games visible, while a fan made crochet figure of the character Captain Fabulous that is displayed next to it displays the aspect of reception and play. Exhibitions and the institutions behind them might also for various opt to not make the games they exhibit playable. This is the case of a freeware "bullying game" called *Inva-Taxi* (1994), which makes fun of people with disabilities. The game is not playable in the Finnish Museum of Games for fear it would continue the circle of abuse started when it was first published. Still, the museum has decided to exhibit the game as a sign of its times and as commentary on 1990s indie game development. Exhibiting a documentary showing disability rights activist Amu Urhonen and game educator Mikko Meriläinen talking about their reactions to the game makes the game present, but not in playable form.

Both *Supernauts* and *Inva-Taxi* are present only through their context. In the case of *Inva-Taxi*, the context did not exist before the exhibition was realized but was produced by curators as a response to the game's problematic nature. The aim was to have the documentary deal with the problematic aspects of the game, and to help visitors understand ableist culture, both in the 1990s and in the present. Museums and their exhibitions might opt to not make games playable, but instead produce external context material framing them. The way *Inva-Taxi* is exhibited, is a useful example of what museums

---

[6] *Raharuhtinas* (1984), one of the oldest published digital games from Finland, is a maze exploration game that assumes the player is drawing a map of her progress (Nylund 2015, p. 61). *Where in Time is Carmen Sandiego?* (1989) requires the use of a printed encyclopedia "as a source of historical, geographical, and cultural information for players seeking to solve the game's virtual scavenger hunt puzzles" (Newman and Simons 2018, p. 16). Without the map or the encyclopedia, the games are nigh impossible to complete.

can do when they discard the focus on the originality of play and instead use games to explore the human condition and help us understand the present through the past.

As seen in the discussion and examples, games on display should be understood as more than objects or experiences. Exhibited games should instead be approached as constructed of three different aspects: objects, experiences, and context. The dual model of games in exhibitions as objects or experiences needs to be complemented with a third aspect, which is that of context (Figure 2).

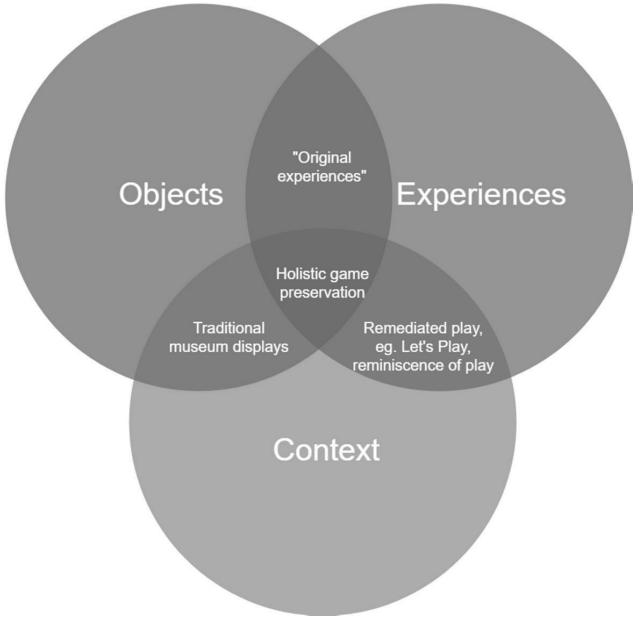

Figure 2. Games as objects, experiences, and context.

To sum up, games in exhibitions are made up of objects (i.e., retail boxes, storage media, consoles), experiences (i.e., playing games with original hardware or in emulated form), and context (i.e., how games have been made, played, and received). The ways games are exhibited depends on the games, but also on the institutions or stakeholders exhibiting them. Some want to exhibit games through objects, while others might focus on the play experience or different ways to understand games and their context. Exhibited games usually stand somewhere in between, combining different ways to deal with games.

2.5. Understanding Games on Display

There is no single way for exhibitions to deal with digital games, no "single approach to game preservation that can take precedence" (Newman and Simons 2018, p. 27). As Bettivia (2016, p. 29) observes, games are "composed of a number of complex boundary objects in the sense that different participants define [...] games in different ways" and different stakeholders are interested in preserving different things. For some, game retail boxes might be the most interesting, while others are more interested in executable code. Thus, the needs of the institutions and stakeholders defines what the preserved and exhibited objects are, but those approaches are not mutually exclusive (Reino 2017, p. 28). This means that different museums should be able come up with ways of displaying games on a case-by-case basis, allowing the history of games to "be built up from a range of sources" (Swalwell 2013, p. 12).

Because games are part of sociocultural realities of production, maintenance, reception, and play, not all of them can be exhibited in the same way. Digitally distributed games have no retail boxes

and virtual worlds with closed servers have no gameplay to display. Thus, exhibitions need to take a case-sensitive approach when displaying games. While it is impossible to make *Supernauts* playable for visitors because the servers have been decommissioned, the game can be dealt with by exhibiting various forms of context information. Similarly, while the Finnish Museum of Games does not want to make *Inva-Taxi* playable to visitors, it can still talk about it and its problematic aspects by showing gameplay videos and talking about the ways the game was perceived when it came out.

While other games at the Finnish Museum of Games are playable, context information can broaden the ways visitors interact with them. An interview with *Max Payne's* writer Sami Järvi can shed light on the production climate in the early 2000s and his views on why the game was successful help understand the game in a sociocultural framework. Similarly, the game's retail box help frame the ways games used to be distributed. While ice fishing game *Propilkki* (1999) has no retail box to display, as it was never commercially published, it is in other regards a game that is exhibited in a relatively comprehensive manner. The game's developers Mikko Happo and Janne Olkkonen decided to donate numerous artifacts from their personal collection for the Finnish Museum of Games, making it possible to address object, experience, and context aspects. This "holistic" display is by no means perfect, but it provides visitors multiple perspectives to it.

This article has worked on the hypothesis that digital games in exhibitions should be understood through their object, experience and context aspects. Games on display can rely on varied methods to display them, but none of those methods is necessary to exhibit them. Physical objects, context, and playable experience thus become "part of an object–information package" in which all parts are "but one element in a molecule of interconnecting equally important pieces of information" (Dudley 2010, p. 6). Just showing a retail box conveys some kind of understanding of a game, but taking into account the object, experience, and context aspects makes for a more comprehensive account. This way, games in exhibitions can be understood to be constructed from the various exhibiting and preservation methods available (Table 1).

Table 1. Aspects of digital games in exhibitions.

Game/Aspect	Experience	Object	Context of Play	Context of Development	Context of Public Reception
Inva-Taxi (1994)	No/Content deemed unethical by exhibition curators	No	Gameplay footage shown in documentary	No/Game developers refused to speak publicly	Conversation between game educator Mikko Meriläinen and disability rights activist Amu Urhonen
Propilkki (1999)	Playable game/Propilkki 2 1.1.5 on original hardware with a unique map made for the exhibition	PC used for making the graphics of the first version	Cardware cards from around the world	Developer interview with graphic and level designer Mikko Happo	No
Max Payne (2001)	Playable game/Original hardware	Retail boxes of *Max Payne* (2001) and *Max Payne 2* (2003)	No	Developer interview with writer Sami Järvi	No
Supernauts (2013)	No/Closed servers	Yes/Fan made crochet character	No	Yes/Concept art	No
Example of content	Playable game (original hardware, emulation)	Retail box, original console	Let's Play video, video or photograph of play	Developer interview, design document	Review, forum discussion

Different games have disparate "needs" for contextualization, but also diverse opportunities for experiencing the game. Some games might not be playable anymore, due to abandoned servers,

hardware obsolescence, ethical perspectives or similar issues. Others might not have any physical component to them, due to them being made available by digital distribution. In these cases, different forms of context might be the only possibilities of exhibiting the games, either by talking about how the games were made, how they were played or what their public reception was like. As the forms games take in exhibitions depends on both the games themselves and the ideological choices curators have made for exhibiting them, this study attests that the most productive way to approach games on display is to understand them as being constructed by the exhibiting process itself.

The hypothesis of this study has been whether games on display should be understood as being constructed out of three different aspects: *object*, *experience*, and *context*. Based on the theoretical discussion and the individual game examples, it is clear that the hypothesis opens up a more nuanced understanding of what games in exhibitions are. At the same time, it has its shortcomings.

The role of exhibition curators in making additional artifacts for exhibitions is absent. Exhibiting artifacts (i.e., games in their various guises) can in some cases produce additional artifacts, like interview videos, replicas, game versions custom made for the exhibition, etc. Museums and exhibitions do not only display existing artifacts but are instead active participants in the transition of artifacts into museum objects and in making cultural heritage (cf. Desvallées and Mairesse 2010).

The model also fails to deal with issues related to tangible versus intangible components, especially in the understanding of context. Intangible artifacts indicate "the practices, representations, expressions, knowledge, skills" that communities recognize as part of their cultural heritage (United Nations Educational, Scientific and Cultural Organization , 2003). Objects and archive material are examples of tangible context while intangible context includes, e.g., oral histories and "silent knowledge" related to play cultures (Nylund 2015, p. 62). Both the tangible and intangible elements of context could be better dealt with in the model.

Additionally, different kinds of experiences and objects need closer scrutiny and possibly a division into various subcategories. The model generates questions about overlap of the various aspects and there is need for a clearer definition of them. The contextual model of learning would suggest taking a closer look into visitor behavior and the societal context when dealing with interactive experiences in exhibitions.

Even with its shortcomings, the aspect model is a valid starting point to a more nuanced understanding of games on display. It has immediate value as a toolset for people planning, building or critiquing game exhibitions. Additionally, it makes their ideological and constructed nature clearer to hobbyists, curators, and museum professionals alike. As such, the hypothesis is a legitimate starting point for more in-depth research on the subject.

3. Discussion

Digital games, as we have seen, are complex things, and their ontological position in museum collections and exhibitions is riddled with questions and ambiguities. They require new ways of thinking and speaking about museum exhibitions and the various forms of "exhibition technologies" that are at their disposal. We need to understand game exhibitions in more intricate terms, not just view them in the light of authenticity or "original experiences". The matrix model for understanding game exhibitions presented in this paper hopefully clears some issues related to game preservation, notably related to the displaying of digital games in exhibitions.

The main argument of this article has been that games in exhibitions can take many different forms, of which the playable "original experience" is not always the most fruitful or desirable. There is a need to provide possibilities for learning by doing, but also learning by understanding. Context information is a central part of the "object-information package" (Dudley 2010, p. 6) of museums. Old games have a hard time conveying their historical, sociocultural or ideological dimensions, but providing various types of contextual information can shed light on topics like that.

The proposed preservation model allows a more nuanced understanding of the value of different preservation techniques and their role in exhibitions. It can be used when dealing with individual

games, as a sort of checklist to make sure that different aspects of the game are dealt with in a satisfying manner. Because exhibitions usually include many different games in close proximity to each other, one game does not need to include all aspects, if the games around it make other aspects visible. It might thus be fruitful to also use the matrix as a checklist for exhibitions as a whole, in order to make sure that the different aspects are included in one way or another in the exhibition as an entity. The model also helps with the day-to-day work of planning and building game exhibitions, helping increase awareness of what aspects exhibitions are dealing with.

The issues related to exhibiting games to some extent apply to issues of long-term game preservation, but additional research is needed to fully understand the implications. If exhibitions (and by extension collections) only contain retail boxes or playable games, it influences and ultimately constructs an understanding of those games for posterity. By using the model, museums can get a better picture of what kinds of game-related artifacts they have been including in their collections, and make needed changes in their collection policy. Long-term preservation might be even more dependent on various forms of context than game exhibitions dealing with recent game history, since older games get increasingly difficult to understand with the loss of cultural know-how needed for playing them. This needs to be verified by research, however.

The model can also help different preservation stakeholders, both hobbyists and institutions, in realizing that not all aspects, not even the ones keeping games playable, are required in order to preserve game heritage. This can help de-emphasize views on how there is a need for keeping games playable, which has dominated game preservation discourse until recently. Swalwell (2013) and Lowood (2014) provide accounts of the importance ascribed to playable games in hobbyist and collector circles. Academic research has approached games from this angle, as well (e.g., Guttenbrunner et al. 2010). Additionally, understanding the width of game preservation and exhibiting efforts as optional building blocks, helps initiate a discussion on what kind of game heritage collectors, hobbyists, and institutions are constructing. Because games can be exhibited in many different ways, exhibitions are riddled with ideological decisions made by their curators.

Not all museums want to use exhibition elements related to all aspects of the matrix model. They might instead want to focus on one or more aspects of game exhibiting or preservation. An art museum might want to show games in a "reverential setting", trying to achieve an unobstructed dialogue between game experience and visitor, where the playable game as an art work takes center stage and where other elements such as developer interviews, original controllers and hardware and similar contextual information are seen as unwanted distractions. Cultural history museums, on the other hand, might want to focus on context of different sorts, in order to help also visitors without firsthand knowledge of games understand games, by for example providing information on different contexts for the game. Historical arcades might not want to provide anything else than the original hardware, not even labels describing the games.

Exhibitions might also want to produce context information of their own. The case of *Inva-Taxi* shows how curators did not want to exhibit a playable game due to its problematic nature. Instead, they opted to present new context material in order for the exhibit to better comply to the ideological values of the museum as a whole. As Smith (2006) reminds us, game museums and their exhibitions are active meaning makers, constructing a view of historical games through their decisions on what to exhibit. Museums and other stakeholders exhibiting games can construct artifacts, and by extension cultural heritage, in a dialogue with the original artifact.

Museums and their exhibitions face many challenges related to their accessibility. Even visitors who do not have any special needs pose challenges for game exhibitions. An exhibition environment cannot exhaustively take into account the different body types and ergonomic requirements of visitors, and displayed playable games are by necessity tailored for the average visitor. As games have not traditionally been designed to be inclusive to special needs of players with various disabilities, the way game exhibitions are designed in most cases (e.g., reliance on "original hardware") simply does not make them accessible to visitors with special needs. In the Finnish Museum of Games, games

were installed into special exhibition structures that can to some extent help visitors with physical impairments, but no effort was made to deal with hearing or visual impairments. Accessibility issues in game exhibitions is a field where further research would be welcome.

Like Naskali et al. (2013) prophesied, game exhibitions are becoming more and more specialized. Generalizing and international exhibitions like the one on display in Computerspielemuseum, Nexon Computer Museum, or in the Game On 2.0 traveling exhibition give way to, e.g., national stories like the one on display at the Finnish Museum of Games, or player stories and context like in Play Beyond Play. The context of the design of Magnavox Odyssey with Ralph Bauer's original notes and objects in the eGameRevolution exhibition at the Strong National Museum of Play is very different from the context of play presented by the "themed rooms [...] recreating a specific historical era" at the Computerspielemuseum (Newman and Simons 2018). Game exhibitions are varied because of the varied motives of the institution or stakeholder organizing them. Exhibitions further might be built out of different sections, some with minimal context (e.g., historical arcades at many museums) and others providing much more context.

To conclude, exhibitions are active meaning makers. Cultural heritage is not a "mechanical and neutral transmission of information from one generation to another", but rather always constructed through active agency by the people managing collections and setting up exhibitions (Smith 2006, p. 54). Game exhibitions and their curators are active participants in the construction of cultural artifacts and game-related cultural heritage. Deciding on the types of games, but also on what kinds of aspects to include from those games, is one of the ways that curators exert the inherently ideological influence they possess. This paper hopefully helps game exhibitions and their curators be more aware of the choices they are making when displaying games and constructing game-related heritage.

Funding: This research was funded by Hedmanska stiftelsen/Hedmanin säätiö grant number 2.

Acknowledgments: I am grateful to Patrick Prax, Olli Sotamaa and Jaakko Suominen for insightful comments, as well as the Department of Game Design at Uppsala University/Campus Gotland for providing a stimulating work environment.

Conflicts of Interest: The author declares no conflict of interest.

References

Ludography

Inva-Taxi (1994), Åkesoft.
Max Payne (2001), Remedy Entertainment.
Propilkki (1999), Procyon Productions.
Raharuhtinas (1984), Amersoft.
Super Mario Bros. (1985), Nintendo.
Supernauts (2013), Grand Cru.
Where in Time is Carmen Sandiego? (1989), Broderbund.

Exhibitions Mentioned

Applied Design/The Museum of Modern Art (MoMa). New York, NY. 2013–14
Computerspielemuseum. Berlin, Germany. 2011–
eGameRevolution/Strong National Museum of Play. Rochester, NY, 2010–
Game On/Travelling exhibition produced by Barbican International Enterprises, 2002–
Game On 2.0/Travelling exhibition produced by Barbican International Enterprises, 2010–
National Videogame Museum. Frisco, TX. 2016–
Nexon Computer Museum. Jeju Island, South Korea. 2013–
Play Beyond Play/Tekniska Museet. Stockholm, Sweden. 2018–
The Finnish Museum of Games. Tampere, Finland. 2017–

Bibliography

Bettivia, Rhiannon. 2016. Enrolling Heterogeneous Partners in Video Game Preservation. *International Journal of Digital Curation* 11: 17–32. [CrossRef]

Bogost, Ian. 2009. Videogames Are a Mess. Keynote at the 2009. Paper presented at the Digital Games Research Association (DiGRA) Conference, Uxbridge, UK, 1–4 September. Available online: http://bogost.com/writing/videogames_are_a_mess/ (accessed on 30 October 2018).

Chang, EunJung. 2006. Interactive Experiences and Contextual Learning in Museums. *Studies in Art Education* 47: 170–86. [CrossRef]

Consalvo, Mia. 2017. When Paratexts Become Texts: De-Centering the Game-as-Text. *Critical Studies in Media Communication* 34: 177–83. [CrossRef]

Desvallées, André, and François Mairesse. 2010. *Key Concepts of Museology*. Paris: Armand Colin.

Dewey, John. 1916. *Democracy and Education: An Introduction to the Philosophy of Education*. London: Macmillan Publishers.

Dudley, Sandra H., ed. 2010. Museum Materialities: Objects, Sense and Feeling. In *Museum Materialities: Objects, Engagements, Interpretations*. London: Routledge, pp. 1–18.

EmuVR. 2018. About | EmuVR—Virtual Emulation. n.d. Available online: http://www.emuvr.net/about/ (accessed on 27 October 2018).

Falk, John H, and Lynn Dierking. 2013. *The Museum Experience Revisited*. Walnut Creek: Left Coast Press, Inc.

Fornäs, Johan. 1998. Digital Borderlands: Identity and Interactivity in Culture, Media and Communications. *Nordicom Review* 19: 27–38.

Gibson, James J. 2011. *The Ecological Approach to Visual Perception*, 17th pr ed. New York: Psychology Press.

Guins, Raiford. 2014. *Game After—A Cultural Study of Video Game Afterlife*. Cambridge: MIT Press, vol. 2014.

Guttenbrunner, Mark, Christoph Becker, and Andreas Rauber. 2010. Keeping the Game Alive: Evaluating Strategies for the Preservation of Console Video Games. *International Journal of Digital Curation* 5: 64–90. [CrossRef]

Haggbloom, Steven J., Renee Warnick, Jason E. Warnick, Vinessa K. Jones, Gary L. Yarbrough, Tenea M. Russell, Chris M. Borecky, Reagan Mcgahhey, John L Powell III, Jamie Beavers, and et al. 2002. The 100 Most Eminent Psychologists of the 20th Century. *Review of General Psychology* 6: 139–52. [CrossRef]

Hein, George E., and Mary Alexander. 1998. *Museums: Places of Learning*. Professional Practice Series; Washington: American Association of Museums.

Heinonen, Mikko. 2017. From Our Garage to the Finnish Museum of Games-History in the Making. *Skrolli International Edition* 1E: 82–83.

International Committee of Museums (ICOM). 2007. *Article 3—Definition of Terms/Section 1 (ICOM Statutes Art.3 Para.1)*. Paris: ICOM.

Kirkpatrick, Graeme. 2012. Constitutive Tensions of Gaming's Field: UK Gaming Magazines and the Formation of Gaming Culture 1981–1995. *Game Studies* 12. Available online: http://gamestudies.org/1201/articles/kirkpatrick (accessed on 30 October 2018).

Lowood, Henry. 2014. It Is What It Is, Not What It Was. Keynote address at Born Digital and Cultural Heritage Conference, Melbourne, Australia, 19 June. Available online: http://refractory.unimelb.edu.au/2016/08/30/henry-lowood/ (accessed on 30 October 2018).

Naskali, Tiia, Jaakko Suominen, and Petri Saarikoski. 2013. The Introduction of Computer and Video Games in Museums—Experiences and Possibilities. In *Making the History of Computing Relevant*. Edited by Arthur Tatnall, Tilly Blyth and Roger Johnson. IFIP Advances in Information and Communication Technology. Berlin and Heidelberg: Springer, pp. 226–45.

Newman, James. 2012a. *Best before: Videogames, Supersession and Obsolescence*. Milton Park and New York: Routledge.

Newman, James. 2012b. Ports and patches: Digital games as unstable objects. *Convergence: The International Journal of Research into New Media Technologies* 18: 135–42. [CrossRef]

Newman, James, and Iain Simons. 2018. Game Over? Curating, Preserving and Exhibiting Videogames: A White Paper. Available online: https://drive.google.com/file/d/11vWx_5LMK6qxW-3rqqvB-MemW6Sk-Ep3/view (accessed on 30 October 2018).

Nexon Computer Museum. 2014. *컴퓨터, 세상을 바꾼 아이디어 = (The) computer, an idea that changed the world*. vols. 0–1. Jeju-do: Nexon Computer Museum.

Nylund, Niklas. 2015. *Walkthrough and Let's Play: Evaluating Preservation Methods for Digital Games*. New York: ACM Press, pp. 55–62. [CrossRef]

Nylund, Niklas. 2017. Preserving Game Heritage with Video Interviews: A Case Study of the Finnish Museum of Games. In *Finskt Museum*. Helsinki: Suomen muinaismuistoyhdistys, pp. 8–27.

Oppenheimer, Frank. 1968. A Rationale for a Science Museum. *Curator: The Museum Journal* 11: 206–9. [CrossRef]

Du Rietz, Peter, ed. 2018. *Dataspelens Världar: Digitala Spel Som Kultur Och Kulturarv*. Stockholm: Tekniska museet.

Prax, Patrick, Björn Sjöblom, and Lina Eklund. 2016. GameOff: Moving Beyond the 'Original Experience'in the Exhibition of Games. *SIRG Research Reports* 2016: 1–17.

Reino, Juan. 2017. Pac-Man and Tetris alongside Picasso and Van Gogh. A Comparative Approach to Preservation of Video Games in Museums. Available online: https://www.academia.edu/36171603/Pac-Man_and_Tetris_alongside_Picasso_and_Van_Gogh._A_comparative_approach_to_preservation_of_Video_Games_in_Museums (accessed on 26 October 2018).

Schmitt, Stefan. 2007. Half a Century of Digital Gaming: 'Game On', at the Science Museum, London, 21 October 2006–25 February 2007. *Technology and Culture* 48: 582–88. [CrossRef]

Schneider, Barbara, and Nicole Cheslock. 2003. *Measuring Results: Gaining Insight on Behavior Change Strategies and Evaluation Methods from Environmental Education, Museum, Health, and Social Marketing Programs*. San Francisco: Coevolution Institute.

Sicart, Miguel. 2014. *Play Matters. Playful Thinking*. Cambridge and London: MIT Press.

Siefkes, Martin. 2012. The Semantics of Artefacts: How We Give Meaning to the Things We Produce and Use. In *Themenheft Zu Image 16: Semiotik*. Vol. Part 1 ("Principles of semantization," section 1–3). Köln: Herbert von Halem Verlag.

Sköld, Olle. 2018. Understanding the 'Expanded Notion' of Videogames as Archival Objects: A Review of Priorities, Methods, and Conceptions. *Journal of the Association for Information Science and Technology* 69: 134–45. [CrossRef]

Smith, Laurajane. 2006. *Uses of Heritage*. London and New York: Routledge, Taylor & Francis Group.

Sotamaa, Olli. 2014. Artifact. In *The Routledge Companion to Video Game Studies*. London: Routledge. [CrossRef]

Stenros, Jaakko, and Annika Waern. 2011. Games as Activity: Correcting the Digital Fallacy. In *Videogame Studies: Concepts, Cultures and Communication*. Oxford: Inter-Disciplinary Press.

Stevenson, John. 1991. The Long-term Impact of Interactive Exhibits. *International Journal of Science Education* 13: 521–31. [CrossRef]

Swalwell, Melanie Lorraine. 2013. Moving on from the Original Experience: Games History, Preservation and Presentation. Available online: https://dspace.flinders.edu.au/xmlui/handle/2328/35513 (accessed on 30 October 2018).

United Nations Educational, Scientific and Cultural Organization (UNESCO). 2003. *Convention for the Safeguarding of the Intangible Cultural Heritage*. Paris: UNESCO.

PUBLICATION III

Drawing Things Together: Understanding the Challenges and Opportunities of a Cross-LAM Approach to Digital Game Preservation and Exhibition

Patrick Prax, Björn Sjöblom, Lina Eklund, Niklas Nylund, & Olle Sköld

Nordisk Kulturpolitisk Tidsskrift, 22(02), 332–354.

Nordisk Kulturpolitisk Tidsskrift,
ISSN Online: 2000-8325
vol. 22, Nr. 2-2019 s. 332–354

DOI: https://doi.org/10.18261/issn.2000-8325/-2019-02-08

RESEARCH PUBLICATION

Drawing Things Together: Understanding the Challenges and Opportunities of a Cross-LAM Approach to Digital Game Preservation and Exhibition

Patrick Prax
Dr. Patrick Prax is assistant professor at the Department of Game Design at Uppsala University. Patrick has a PhD in Media Studies from the Informatics and Media Department at Uppsala University. Patrick´s work centers around digital games as participatory culture. He has written his dissertation about co-creative game design and has given a Uppsala University TEDx talk about the topic. He has been working in a research project at the Swedish National Museum of Science and Technology and writes about participation in preservation and exhibition of games as cultural heritage. He is also serving as board member for the Cultural Heritage Incubator of the Swedish National Heritage Board.
patrick.prax@speldesign.uu.se

Björn Sjöblom
Björn Sjöblom, PhD, is an assistant professor at the Department of Child and Youth Studies at Stockholm University. He works in a variety of areas related to discourse and interaction, both by and about children and youth. For the most part, his studies focus on interaction in various forms of digital media, especially in games. His research includes studies of teenagers in internet cafés, interaction in videomediated gaming,(such as on Youtube), and representations of children in digital games. Of special interest are also questions of digital media as cultural heritage, and of young people's relationship to esport.
bjorn.sjoblom@buv.su.se

Lina Eklund
Dr. Lina Eklund has a PhD in Sociology and is a lecturer in Human Computer Interaction at the Department of Informatics and Media, Uppsala University. Eklund's research is focused on the impact and meaning of digital technology for our social and everyday lives. Previous work includes studies of video games as cultural heritage and practices in the museum sector, as well as a focus on gaming as a social past-time. Eklund is currently working on social interaction in museums with digital experiences. She is part of the EU-funded GIFT project. www.sirg.se, http://gifting.digital.
lina.eklund@im.uu.se

Niklas Nylund
Niklas Nylund is a museum researcher and curator working for the Finnish Museum of Games in Tampere, Finland. He is working on a PhD on videogame heritage issues at the Centre of Excellence in Game Culture Studies at the University of Tampere. His research interests include game preservation, game history, exhibition design and questions of cultural heritage and inclusivity.
Email: niklas.nylund@tuni.fi

Olle Sköld
Dr. Olle Sköld is a senior lecturer in information studies at the Department of ALM, Uppsala University, and the director the department's Master's Programme in Digital Humanities. Sköld's research is characterized by a broad interest in the ALM field, digital cultures, and videogame research. Previous work includes studies of information practices, documentation, knowledge production, memory-making, videogame preservation, and the practices and information systems of archivists. Sköld's upcoming work will focus on paradata and research data (re)use practices within the auspices of the ERC-financed CAPTURE project.
olle.skold@abm.uu.se

ABSTRACT

Digital games have become a central part of contemporary culture and society. At the same time digital games provide numerous challenges for collections, preservation efforts, documentation, and exhibitions. This article investigates the challenges and opportunities implicit in LAM convergence and collaboration with actors outside of the LAM-sector itself. These actors are stakeholders of various kinds within game culture: game makers and industry, players, and rogue archives. More specifically, we turn to the collaboration in two Nordic museums in their work with digital games: *The Finnish Museum of Games* and the *National Swedish Museum of Science and Technology*. We draw on their actual efforts at collaboration between LAM-institutions and outside stakeholders and analyze them through the lens of political participation and agonistic pluralism. These concepts come from an interpretation of the participatory agenda in cultural policy that aims to resolve inconsistencies in the participatory agenda specifically around neoliberal logics of participation. The paper asks: How can the preservation of digital games be supported through participation of stakeholders inside *and* outside the LAM sector, and what policy changes would such collaborations require?

This paper concludes that political participation and agonistic pluralism are useful concepts for the modeling and understanding of game preservation and provide a possible solution for the paradoxes of the participatory agenda in Nordic cultural policy. Our comparison of the work in two museums shows that approaches that empower participants can lead to successful and surprising exhibitions not possible without the sharing of curatorial power. Policy regulating LAM-institutions should change in order to accommodate players, makers, and rogue archives as participants in game preservation efforts. For the future the participatory agenda in cultural policy should be interpreted through the lens of political participation and agonistic pluralism as calling for truly empowering participants in order to elevate participation in game preservation from lucky accidents to a political participation policy.

Keywords

Political participation | digital games | preservation | exhibition | player-created content | agonistic pluralism | power | collaboration | LAM sector | cultural policy

INTRODUCTION

Digital games are a central part of contemporary culture and society that pose specific problems for preservation. Their popularity and impact put into relief the numerous challenges of digital game preservation regarding for example collection, curation, documentation, and exhibition practices (MacDonough, Fraimow, Erdman, Gronsbell, & Titkemeyer, 2016; Olgado, 2019). In the Nordic region, digital games are played by a majority of the population (see for example Findahl, 2014; Kinnunen, Lilja, & Mäyrä, 2018) and are important cultural and economic commodities. The Nordic countries also continuously host gaming events with a global reach, such as the digital festival *Dreamhack*. Digital games are also increasingly being recognized as part of a digital cultural heritage, with LAM institutions and private actors of various kinds engaging in efforts to preserve games and game culture for the future.

Previous studies of game preservation[1] argue that if digital games and documentation of game-related activities and settings are to remain accessible in a meaningful sense beyond our current times, research-led cross-LAM collaborations need to be conducted (Lowood, 2004; Sköld et al., 2018;McDonough et al., 2010). Research into efforts of game preservation by LAM institutions has also called for more developed collaboration between different stakeholders within game culture as a whole--including players, fan archives, and the games industry. Newman and Simons (2018) state in their white paper that it is essential that the videogame industry (trade bodies, publishers, developers) and player communities work together. This need for collaboration is mirrored by Sköld (2018:129) when he points out, here from the perspective of archiving games, that *"[c]ollaboration between institutions and videogame communities appears to be a potent approach to collecting videogame-community social media"* and that *"videogame communities possess a considerable capacity and expertise regarding the production and annotation of many aspects of community social life"*.

The merits of previous research notwithstanding, there is a lack of studies that explore participatory and collaborative approaches to game preservation from the viewpoint of policy. Policies are powerful tools of promotion and prohibition that determine the space of possible actions, modes of work, and prioritizations in preservational ventures. This paper aims to address the research gap by exploring how participation and multi-stakeholder collaborative efforts in the realm of game preservation can be rendered in such practical and theoretical terms that facilitate progressive political policy-making and help to resolve some of the paradoxes that early research work has pointed towards. The paper asks: how can the preservation of digital games be supported through collaboration with stakeholders inside and outside the LAM sector, and what policy changes would such collaborations require? Case studies of game-centered preservational and exhibitional work at the Finnish Museum of Games and the

1. This paper discusses digital games exclusively, and use "games" and "digital games" interchangeably.

National Swedish Museum of Science and Technology make up the empirical foundation of the paper. The case data is analyzed and interpreted using a framework centered on the notions of political participation and agonistic pluralism. Due to policy (and policy work) being a common baseline component of preservational work in the LAM sector, the paper is well-situated to deliver actionable contributions to how the relationship between policy and game preservation and exhibition in a cross-ALM setting can be understood, and how game-focused policy work can be furthered.

PARTICIPATION IN CULTURAL POLICY AND GAME PRESERVATION

This paper takes a particular interest in *participatory aspects of* preservational processes. The discourse about participation in the discipline of cultural policy highlights that especially in the Nordic countries legislators and institutions like the UNESCO expect museums and LAM institutions to focus on participation of some kind. In this paper we use Mulcahy's (2006: 320, 329) outline of cultural policy as the "intentionality" of a structured set of goal-oriented activities geared towards "creating public spheres that are not dependent on profit motives nor validated by commercial values". Our understanding of cultural policy is also informed by the set of expectations called the "participatory agenda" in previous work (for example Brandrup Kortbek et.al. 2016). The aims of the participatory agenda are typically centered around democratization, education, and upward social mobility of visitors. However, previous research has found that these expectations are frequently formulated in neoliberal logics of access to cultural services and limit participation to alternative ways of reading art and culture:

> Taking a closer look at the argumentation in these policy papers, it is however also obvious that the democratic vision is mixed up with a corporatist vision of social inclusion, as well as a corporate vision of private enterprise. (Sørensen, 2016:5)

Previous research has pointed out that these policy texts can be paradoxical, not offering a lot of practical guidance, and even purposefully de-politicizing participation. Sørensen (2016: 6) describes the aims of the participatory agenda as: "A shift from 'Bildung' to employability" and Brandrup Kortbek et.al. (2016: 20) echo this sentiment and point out the need to challenge "the participatory agenda to take a more – 'radical' – democratic direction", grounded in ideas of a radical democracy (Laclau & Mouffe, 2014; Mouffe, 2013). In other words: "Participation is not simply about joining the game, it is also about having the possibility to question the rules of the game." (Sternfeld, 2012:4) The participatory agenda is not only part of the cultural policy of the Nordic countries. The same conceptual inconsistencies and paradoxes can be seen in for example UNESCO's very definition of a museum:

Museums can play a leading role in bolstering the creative economy locally and regionally. Museums are also increasingly present in the social sphere, acting as platforms for debate and discussion, tackling complex societal issues and encouraging public participation.

*UNESCO supports developing countries using museums' potential to foster social cohesion, notably among local communities and disadvantaged groups. (*https://en.unesco.org/themes/museums; accessed 2019/03/22)

This can be read as a recognition of power imbalances and could point towards a focus on agonistic struggle. On the other hand, it contradicts this concept of struggle, and instead formulates social cohesion as an aim which can be read as a call for the adaption of minorities to mainstream culture, downplaying the role of historical and current conflicts. There seems to be no concept of exploitation and discrimination, no understanding of the fact that disadvantaged groups have their own valuable heritage, and no concept of resistance. As a consequence of these conceptual contradictions several authors point towards the limited practical success of participatory exhibitions and "A gap between good intentions on the policy level of convergence and the various paradoxes of everyday reality." (Sørensen, 2016: 6)

> In this study we argue that the participatory agenda constitutes a basic ambiguity as well as a set of more specific paradoxes that emerge when the agenda is made into practice. (Brandrup Kortbek et.al., 2016: 20)

> However, my own research into participatory projects across cultural institutions has shown that in practice the historical and embedded nature of those imbalances can render even the best conceived and facilitated projects problematic when assessed in terms of democracy and ownership (see Kidd, 2009, 2011a). (Kidd, 2011b)

This means that a kind of participation that explicitly empowers participants could be a viable alternative and theoretical tool. The discussion of empirical examples in this article aims at providing practical examples for how such participation of third parties in LAM-sector preservation efforts can practically work, as explorations of the various form such efforts can take (see Sköld, 2018).

In order to stay focused on the power relationships between the museums and other relevant collaboration partners we turn now to the concept of *agonistic pluralism* and the possibility of participants to defend their interests and perspectives (Mouffe, 2013). Agonistic pluralism is an alternative to consensus as an aim for a democratic society. A democratic society that aims for agonistic pluralism will attempt to create an arena for fair and respectful, violence-free, *struggle* instead of consensus. Agonism requires a struggle between equals. The overpowering of a party who has no standing or power to enforce their interest in a given process is not agonistic. Similar frameworks have been used

in studies of power positions in political participation (Arnstein, 1969; Carpentier, 2011, 2016). Participants in this perspective are only those who have the possibility to defend their interests, to struggle against other stakeholders, and to change the real distribution of power. This understanding of participation explicitly excludes equal access or mere interaction of otherwise disempowered audiences and has been used for discussing co-creation and participation in the area of game design (Prax, 2016a). As a somewhat simplified theoretical tool for the evaluation of the power positions of different participants Arnstein's ladder of citizen participation (1969) (figure 1) can be used to indicate the power position of a participant in a given process.

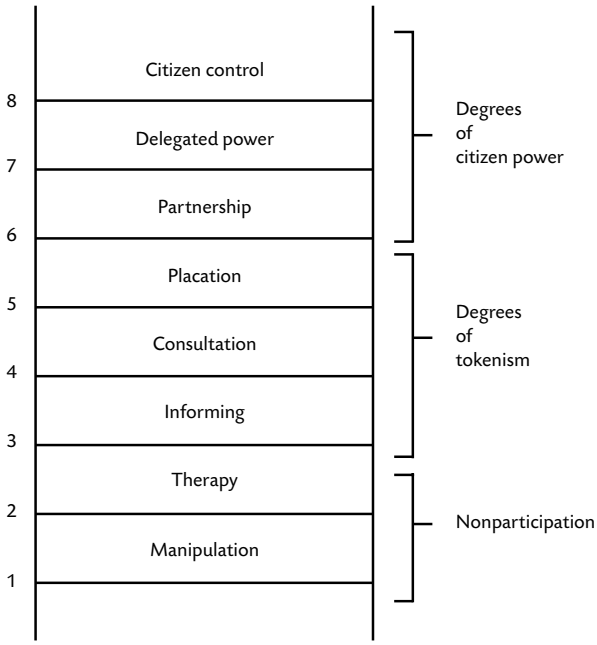

Figure 1 Arnstein's ladder of citizen participation (1969)

As the metaphor of the ladder indicates, the higher the number of steps on the ladder are for a given process the more participatory the process is. The ladder has eight steps grouped into three sections, ranging from nonparticipation over tokenism to citizen power, the latter indicating that the participants are the sovereign of the process.That said, the point of the ladder in this context is not that each participatory process should aim to reach the top of the ladder. Not every element of game preservation needs to be run by participants and this paper does not aim to displace LAM professionals. Agonistic pluralism does however require that participants have some standing which excludes the level of nonparticipation. While an aim for full participation in preservation could be the level of partnership (6), also placation (5) and consultation (4) could be relevant here. Consultation (4) "can be a legitimate step towards their full participation" but "offers no assurance that citizens concerns and ideas will be taken

into account." (Arnstein, 1969:219). Instead consultation is designed by power holders to show that they have gone through the motions of participation. Arnstein understands placation (5) as a stage or participation where participants have some degree of influence like a number of seats on a board but can be "easily outvoted and outfoxed" (1969:220). Another example she gives are planning committees that allow participants "to advise and plan ad infinitum but retain for power holders the right to judge the legitimacy or feasibility of the advice."(Arnstein, 1969:220). Finally, partnership (6) is characterized by real negotiation where participants "have some genuine bargaining influence over the outcome of the plan" (Arnstein, 1969:221-222).

The concepts of collaboration and participation are interrelated. In this text, we use *collaboration* as an overarching category to denote various ways of working together with others. *Participation,* on the other hand, places critical focus on the power relations between different actors and is thus in line with the conceptualization of political participation used by both Mouffe and Carpentier. The relationship between collaboration and different sorts of participation have been discussed elsewhere (e.g. Brandrup Kortbek et.al.,2016; Jenkins & Carpentier, 2013), but our focus on power relations places the emphasis on challenging "the representative, identity-borne and consensus-typified democracy/community in favour of a lived, diverse and also paradoxical and agonistic or dis-sensual togetherness" (Sørensen, 2016: 9).

DIGITAL GAMES AND TROUBLES OF PRESERVATION

Working with digital games preservation, three main challenges have been identified in previous research. These are key to understanding the necessity of collaboration and participation both within and outside the LAM sector.

Challenge 1: games as born-digital objects

Digital games are increasingly published and distributed digitally. This is not only the case for nearly every game developed for mobile devices, but also valid for computer and console games that are currently distributed via download services to an almost universal degree. As a consequence, there are fewer physical objects emanating from the production of new games, like retail boxes and cartridges, that can be collected and preserved. The interactions between players in games, as well as communication within communities are similarly becoming more dependent on digital media. Digital games thus epitomize the challenges and opportunities brought to the LAM sector by social media, intangible cultural heritage, and hegemonic modes of increasingly digitised interactions and processes in the broader scene of present-day social and cultural life. One central challenge here is that of choosing what to preserve out of a vast abundance of born-digital player-created content. With the explosion of digital texts related to games it is becoming an increasingly complex task to choose what to preserve, something that can only be managed with the help of experts from

inside gaming communities. In addition, the practical aspects of preservation for born-digital culture are fraught with issues surrounding how to preserve, since EU-level laws prohibit transfer and copying of digital material even for preservation purposes. Additionally, laws around preservation often overlook born-digital content leaving LAM actors powerless in these situations. Therefore, collaboration with producers becomes increasingly necessary.

Challenge 2: games as interactive

Another core attribute of digital games is their interactive nature which in turn constitutes a complex preservational challenge. Games are a "text" that requires player input in order to be traversed (Aarseth, 1997). This means that games are emergent; they manifest themselves differently to different players depending on how they interact with the game. This interactivity and participation of the player in actualizing the game goes beyond active reading and meaning-making (Barthes, 2001). The interactive and emergent qualities digital games highlight the need to include playable games in game exhibitions in the LAM sphere (Guins, 2014; Lowood et al., 2009; Newman, 2012). As it is difficult to provide clear-cut representations of what a game is outside of it being played it makes sense to take this into account when preserving games, thus allowing future generations to explore games and potentially recreate them in their own way. However, the suggestion has never been to solely rely on this mode of exhibition, and recent literature is increasingly pointing out the limitations of this approach (Eklund, Prax & Sjöblom, 2019; Newman & Simons, 2018; Nylund, 2015, 2018; Sköld, 2015, 2018). The three main criticisms of letting the notion of "original experience" inform LAM-work in the digital-game arena are: (i) playable games exclude players who do not have the necessary skills or time, (ii) playing a game in a museum setting without other layers of contextualization is not enough to communicate the socio-cultural relevance of it or to show the various player practices that have developed around it (Prax, Sjöblom, & Eklund, 2016), and (iii) the difficulties facing digital-game preservation are so great that they question the feasibility of keeping digital games in LAM-collections playable, necessitating a preservational strategy focused on the collection and curation of game-related materials other than the actual game itself (see e.g., Newman, 2011).

Digital games are also open to contradictory and subversive kinds of play which embody a variety of player values and approaches to the game. Competitive play is difficult to even compare to casual play, even if they are happening within the confines of the same game. These modes of play have vastly diverging practices of meaning-making that emerge in the interaction between player activities and the characteristics of the digital game being played. This centrality of the player for the definition of what this game and its play are makes it impossible to exhibit a game and expect it to stand for all the varying practices of play.[2] This is a strong

2. This is of course not just a characteristic and a challenge of game-focused museum efforts but of museum efforts generally (Greenhill, 1992).

argument for including players in the process of defining and creating games as cultural heritage. This argument is also supported by the intervention of the concept of intangible heritage in other areas (see e.g., Cook, 2012). However, in the area of digital games the involvement of the player in the creation of games as heritage does not stop at play alone, as shown below.

Challenge 3: games as co-created/participatory culture

Another preservational challenge is that digital games are open to being modified and changed by players and that the participatory culture around games can even change what the game is (Pearce, 2009). Players *mod*, redesign, reinterpret, and in many other ways change how games are played; both for themselves and for others. Some of the world's most popular games like *DoTA* and *Counter Strike* were originally designed by players. This co-creation of the design of games can even be understood as a struggle against the design vision and authority of the game publishers (Prax, 2016b), a struggle that potentially includes the use of digital rights management (DRM) systems and other means of technological control in an attempt to limit the impact of player creativity (Kow & Nardi, 2010). For the cultural policy that guides preservation and exhibition of games, this means that there is yet another blurring of authorship, and challenges arise regarding the determination of what materials are supposed to be preserved and which version of a game that is supposed to be the focus of preservation efforts. Player participation therefore goes further than just interactivity in play, and player-creators need to be considered co-creators of the games they are modifying, hacking, subverting, and re-making (McDonough, 2011, 2012; McDonough et al., 2010). These issues further complicate participation in preservation processes.

APPROACH

The empirical basis of the paper are the investigation and participation by the authors in museum work practices at the *Finnish Museum of Games* (*Suomen Pelimuseo*; http://vapriikki.fi/pelimuseo) and the *National Swedish Museum of Science and Technology* (*Tekniska Museet*; https://www.tekniskamuseet.se). During the last few years both museums have developed their own exhibitions of digital games in Finland and Sweden respectively. The authors of this paper have, in various ways, been involved in the museums' work with digital games both with underlying research as well as more hands-on creation of game exhibitions. The empirical material used in this paper has been collected for previous research projects concerning the exhibition of digital games at both museums (Eklund et.al., 2019; Prax et.al., forthcoming; Nylund, 2018) while the connecting frame of political participation has emerged through our analyses of this data for the study at hand. As researchers, we have critically examined practices at the museums and well as our own perspectives and have come across a number of cases in the empirical data that are illustrative and together point towards a possible solution for the paradox of participatory preservation

of games. We consider our reflexively-framed 'emic' (Harris, 1976) empirical approach to be of great usefulness in the pursuit of gleaning further insights into cross-LAM approaches to game preservation and their relationship to and implications for cultural policy and cultural policy-making.

In the article we draw on specific instances, or cases, chosen from our collected empirical data that highlight some of the challenges and opportunities in LAM-institutions' collaboration with outside stakeholders in this field. These examples are neither meant to be representative of the respective exhibition nor game-related museum practices generally but instead have been chosen as particularly relevant examples for showcasing the possibilities of participation in the process of curating game exhibitions and working with preservation of games in a museum context, and by extension also provide insights into third party participation in the LAM-sector more generally. They are also not meant to show that the respective institutions are especially advanced in their approach to third-party participation. In order to show both the limitations of this approach to participation and failures of the respective museums we also include a case of what we consider to have failed in the participatory process. This means that they are extreme cases which have been chosen to illustrate a point and not for generalizability (Flyvbjerg & Bryant, 2003) and that the focus of the comparison between these cases is the way in which the museums worked with third parties such as other LAM actors, game creators, players, rogue archives, and researchers. As such extreme cases we have selected them to serve as pointers towards what a practice of participatory preservation with a focus on agonistic plurality might look like and not as definite cases to emulate or conclusive evidence of the viability of such practices. The analysis of the data gathered from the Finnish Museum of Games and the National Swedish Museum of Science and Technology will be informed by the notions of political participation and agonistic pluralism as outlined above.

Suomen Pelimuseo

Suomen Pelimuseo was initially supported by a crowdfunding campaign arranged in 2015, which collected 85,860€ from 1120 backers. With the help of the campaign, funding for a permanent museum in Vapriikki Museum Centre, with special emphasis on Finnish game heritage, was acquired. Suomen Pelimuseo was built by involving game developers and the gaming community in the museum's curatorial processes. Since 2017, Suomen Pelimuseo has been dedicated to exhibiting and preservation of Finnish games. One of the exhibited elements at the Suomen Pelimuseo is a selection of 100 Finnish games. The games, displayed throughout the 400 square metres of exhibition space, were chosen by a team of experts, including university researchers, hobbyist collectors, game journalists, and museum curators, but also game developers and designers. The 100 games include a wide variety of digital and analog games, with digital games making up 70 % of the selection. Of the 70 digital games on display, all but thirteen are playable. In addition to playable games,

interviews, documentaries, objects, design material, and other contextualizing material are also on display. (Heinonen, 2017.)

One of the authors of this paper has been involved in the Suomen Pelimuseo project since 2015, first in coordinating the crowdfunding campaign, and later as a researcher, producer, and curator. The author has had experience with working in museums since 2011. Work tasks at the Suomen Pelimuseo have included creating the theme and scope for the exhibition together with a team from Vapriikki Museum Centre, contacting dozens of Finnish game developers and curating various studio exhibitions.

Tekniska Museet

The study of digital game preservation at the Suomen Pelimuseo will be compared to museum work practices at Tekniska Museet, located in Stockholm and established in 1923. Tekniska Museet is a well-established institution with a long history and high status as a national museum. Since 1936 it occupied a specially constructed, multi-floor building in Stockholm with 10.000 square metres of exhibition space. It receives more than 300.000 visitors per year and has around 65 employees working with event planning, curation, exhibition, research, staff issues, *etcetera*. The museum is one of several non-profit, national museums in Sweden. It is mandated to take responsibility for compiling and presenting the technical and industrial heritage of Sweden and tasked by the government to develop and convey knowledge and experiences of this cultural heritage and provide perspectives on social development.

Tekniska Museet has been working with digital games for a few years and is at present taking steps to include more outside stakeholders in its current and future game-related exhibitions, for example in their permanent exhibition, *Play Beyond Play*.

Three of the authors spent part of their working weeks during a four-year period (2014-2018) working in a research project dedicated to bridging academic research and museum practical work. Several of the authors were involved in the production of the exhibition *Play Beyond Play* as researchers. The project was funded by The Swedish Arts Council and the researchers took part in writing and submitting the application. During the project the authors conducted research on digital games and on how to work with and exhibit digital games. They also, together with the museum staff, organized a series of symposia with the explicit goal of increasing collaboration between a wide variety of stakeholders such as The Swedish National Library, other museums dedicated to games both Swedish and International, the Swedish game industry, players and community representatives, researchers, the civic sector, and more. As researchers, our work has frequently been critical of the museum's work, as exemplified in previously published articles (Eklund, Prax & Sjöblom, 2019). The data for this project consisted of a set of twelve interviews at two different game museums, observations of several exhibitions as well as the

continuous involvement with the museum's work at game preservation and exhibition.

ANALYSIS

Players, fans, and co-creators

The first potential participants in game preservation and exhibition are players, fans, and co-creators. This category includes productive players who shape both gaming culture as well as the games themselves. Examples for including players as participants into the making of a game exhibition come from Play beyond Play at Tekniska Museet. The curators contracted players that had been identified as interesting and asked them to submit videos of themselves where they explained how games were relevant to them specifically. For example, one video told the story of a self-declared game addict in recovery. Another one explained how a player co-creator had been working for free for a games company who profited from his labour. These videos highlighted issues of games as culture that would have been difficult to communicate without this collaboration. While the contact with these players was initiated by the researchers who worked for Tekniska Museet the players had full freedom to decide what they wanted to say in their videos. On the other hand, Tekniska Museet kept full curatorial control over how and if the videos were shown in the exhibition. This means that in terms of the power relationship, players were free to propose content but that the museum had final say. In Arnstein´s ladder this process would reach the level of placation (5). We can see this inclusion of players as them making donations to the museum, which the museum then chooses to use or not use in the exhibition. That said, the player recordings in the end made up a considerable part of the fairly small initial exhibit and their videos were included in the way in which they had been submitted, in a prominent space close to the entrance of the exhibition. It can be argued that their discussion of issues around games that stretch beyond play are central to the exhibition and while they had little influence on the outcome of the curatorial process (and no insight into it) their perspectives and input was valued and respected by the museum.

Another attempt at Tekniska Museet to include the voices of players in preservation was a solicitation of player stories around games. The museum advertised online and in a game-related exhibition for visitors to submit their own stories and memories from digital gaming. However, the call resulted in few submissions. This approach cannot be understood as full political participation but can instead be classified as consultation (4). It is more in the line of traditional donations from the public to a museum. Players likely did not know what the museum would do with the stories or how important they could be for preservation as their contribution to the process stopped as soon as they sent in their written text.

The games industry

The games industry and game makers in general are relevant stakeholders in games preservation (see e.g. Bachell & Barr, 2014; Kraus & Donahue, 2012). It can be an invaluable source of information about how and why a given game was made and they can share objects like artwork or earlier versions. On the other hand, the industry might have specific aims with their engagement and a more powerful negotiating position in relation to the LAM sector to start with (potentially even because the LAM sector is relying on funding from the industry for specific exhibitions).

Suomen Pelimuseo staff strived to reach the developers of the 70 digital game they exhibit, but five of them declined to work with the museum or were deceased. The rest were invited to contribute on the exhibition as co-curators to for example help decide what exact titles (and versions) should be made playable and what kinds of objects and context information should be displayed. When game developers were contacted, museum staff coached them on to selecting suitable ("exhibitable") game development materials from their personal or company archives. All in all, over 300 mostly game design related objects were donated or borrowed in this way. The co-curators picked out a wide selection of material, ranging from game retail boxes to more personal objects related to their work and the game development process. Below we analyse the collaborative process around three games that are good examples of the process.

UnReal World

UnReal World, originally released as a shareware PC game in 1992, is a *Kalevala* themed survival *roguelike*, continually developed by Sami Maaranen and Erkka Lehmus since 1992. The game's detailed hunting simulation is based on experience, since the developers have studied the techniques used by ancient hunters. *UnReal World* was included as the game with the "Longest update support" in the Guinness World Records Gamer's Edition 2017.

Of the case-examples for game developer participation *UnReal World* is the most successful. The enthusiastic developers of the game were thrilled by the museum's outreach and went out of their way to collaborate. Co-curation resulted in a transgressive out of the box presentation, including development materials and fan letters, but also self-made trekking and historical reenactment equipment on loan from Sami Maaranen. These include a self-made shaman's drum that was also used in making the game's music, self-made arrows that were used to test the game's archery mechanics and other objects that are playing with the idea of what kinds of objects can be used to talk about digital games. At the same time, the artifacts show how real life trekking and hunting experiences have influenced the design of the *UnReal World*.

The active role played by the game producer not only in providing material but also in planning the exhibit means that this process can be seen as partnership (6) and full participation on Arnstein´s ladder (1971). However, a full appreci-

ation of the real power distribution could be hampered here because the interests of the museum and the game makers seem to align in such a way that it is difficult to say what their power relationship would be in a potential conflict. That said, without the participation of the game makers it would not have been possible to produce this exhibit or the insights it provides into the personal nature of game creation.

Supernauts

Supernauts (2013), although a modest success in its own right, is a different kind of example from the games industry. Developed by the game studio Grand Cru, it relied on the creativity of the gaming communities and wanted to revolutionize the interaction between players. The free-to-play game was in development for three years and gameplay focused on building innovative space stations. Ultimately, however, the game did not reach the desired number of players and it was closed in 2015, losing all player generated content in the process.

In the case of *Supernauts*, co-curation made it possible to show some aspects of a discontinued game. Game developers made concept art available and, more importantly, put museum staff in contact with the fan community. As servers did not exist anymore, it was not possible to show all the participatory content players had created during the game's three-year online life-span. However, getting in contact with the player community made it possible to talk about what the fans thought was interesting from an exhibition point-of-view. As a result of the extended co-curation process, a fan made crochet figure of a game character was put on display in the exhibition.

During the project, museum staff relinquished part of their role as experts and gave over authority to game developers. Following Iversen and Smith (2012, pp. 107-108), Suomen Pelimuseo's design process was "a form of dialogic curation; a holistic, inclusive and experience-centered approach to the design of heritage matters, from project inception to final exhibition". In the end, the selection of exhibited materials turned out more varied than what museum staff had been able to estimate when reaching out to developers. This is also a case of partnership (6) and full participation on Arnstein´s ladder (1969). The recognition of the expert status of the game developers is a central step here and the success of being able to produce a high-quality exhibit for a discontinued free-to-play game, something that otherwise could well be seen as an impossibility, indicates that this process could be a step towards participatory game preservation. The inclusion of the fan community here was possible due to collaboration with the developer, a step that potentially could be included into preservation processes in the future.

Clash of Clans

International mobile hit game *Clash of Clans* (2012) by Supercell is one of the most well known Finnish games, as well as one of the most profitable. This makes Supercell an example of a particularly powerful outside stakeholder for a museum to work with. Despite initial interest and SP being willing to share

curatorial power, collaboration did not pick up in ernest. While managers seemed to like the idea of working with the museum there was no clear responsibility nor designated resources for the participation process established on the side of the company, nor an understanding of company work processes and potential IP constraints on the museum side. In the end it meant that the company shared some of their concept art for the display, but nothing else. The process did not result in a true dialogue, despite the fact that the participant company would have been in a relative power position as an established and profitable game studio.

This failure shows that political participation is a time-consuming process, with no guaranteed gains. Developer and museum affordances put a limit to the usefulness of co-curation, as time, money and exhibition space are all finite resources. Co-curating does not work if the contacted developers lack time to come up with interesting exhibits, lack the understanding of what might be interesting to visitors, do not have anything in their personal or company archives worth exhibiting, or do not allocate company resources to the participation. Co-curating also requires an atmosphere of trust, which takes time and effort to develop. Participation in curation and preservation of games is a dialogue which not everybody is interested in joining or has the resources to join. From a critical perspective it is also important to point out that participation in preservation requires the donation of unpaid labour with all the limitations to privileged participants and their perspectives that this entails. When working with game studios it is also not always clear where the problems lie that limit the collaboration. It could easily be invisible to the LAM institution if a game studio has internal debates over if and how they want to give access to their intellectual property (IP). This issue of the limiting factor of IP law also impacts the next actor we discuss here.

Rogue archives

A third relevant actor in game preservation are rogue archives. The practices of rogue archives range from preservation practices of independently developed games within the frame of a research project (Stuckey, Richardson, Swalwell, & de Vries, 2015; Stuckey, Swalwell, & Ndalianis, 2013; Stuckey & Swalwell, 2014; Swalwell, Ndalianis, & Stuckey, 2017) over the collection of broken games or fail games (Mora-Cantallops & Bergillos, 2018; Navarro-Remesal, 2017) to archives of playable games on emulators and even the Internet Archive which for example hosts the Wayback machine[3]. Rouge archives currently have some of the best and most thorough collections of digital games, which makes them a potential central partner for collaboration. That said, the "how" of such a collaboration is not obvious (De Kosnik, 2016).

Jason Scott from the Internet Archive gave a talk at a symposium at Tekniska Museet where he highlights the possibilities of rogue archives for the preser-

3. A publicly available archive of old websites.

vation of games to simply use what is out there regardless of intellectual property laws, something LAM institutions lack. (Jason Scott, The internet archive; Save Game symposium at Tekniska Museet 2015/04/28; https://www.youtube.com/watch?v=w2Z0PO-kzYM&list=PLZVkEICvA5-EpKIAtMEpA-KZPsxAEohyi1&index=3, accessed 20190402)

> And the reason that it happened [finding a working version of an old game] was that in 2000 someone took a really old version of 9-track tape, didn't ask questions, didn't ask for funding, did not ask what its meaning is, didn't try to justify it to academics, business, or the general public, and just kinda ripped it into a bunch of things. (Jason Scott, 2015)

The possibility of preserving games without the need for justification can well be the reason why rogue archives have the most complete collections (Newman, 2012a, p.13). Rogue archives, however, often do not extend their work beyond playable games for entertainment and there is a bias towards the preservation of popular games. "*The whole thing is really about love."* (Jason Scott, 2015) As uplifting as this message of the human and emotional side of culture is, it also means that the culture that nobody loves might not be preserved. Especially memories of problematic and even traumatic aspects of the past, memories that could be said to be especially important to learn from in the future, do not necessarily motivate preservation in this manner. The collection of games without regard for justification or meaning that Scott mentions highlights the important role that traditional LAM actors need to play in collaboration with rouge archives. In contrast to the LAM sector, rogue archives do not necessarily understand how to preserve or exhibit cultural heritage. LAM institutions are important here, as they are skilled in evaluating what kind of information and additional references are needed to contextualize culture.

Another central point is that rogue archives, as the name indicates, are operating in a legal grey-zone at best. Questions of intellectual property and the right to show particular games, or even make them playable to the public, are the subject of an ongoing debate around legislation and public policy. This legal uncertainty extends to 'abandonware',[4] unpublished games, hacks and modifications, and even large parts of non-western games. Many of these issues are connected to the emulation[5] of games, an issue that has been debated in games preservation research and is not possible today due to legal obstacles, even though it is frequently seen as one of the most promising methods of long-term game preservation. (Newman, 2012a; Newman & Simons, 2018; also Sköld, 2018a). This means that rogue archives depend on staying under the radar of industry lawyers and can frequently be threatened with legal action and shut

4. Abandonware is computer software that is no longer distributed or supported by the developer or copyright holder.
5. Emulation is the reproduction of the function or action of a computer or software system. In the context of game preservation, it refers to creating artificial versions of obsolete gaming hardware to be able to run old games on new computers.

down. Scott, in his talk, questions the immediacy of these kinds of legal threats to rogue archives.

> It all boils down to: Are you going to be sued into oblivion? [...] I can crawl into a hole. I can take the dirt around it, scoop it over me, and die. Or… I can continue and see who screams. (Jason Scott, 2015)

Scott´s argument is twofold: he points out that it is possible to resolve legal issues by just giving in whenever there is a real request to take something down and that bravery in the face of legal threats is needed in order to be able to preserve games. Not all institutions can break the law with the same *laissez faire* attitude as the Internet Archive. The point that it is easier to apologize than to ask for permission is certainly pragmatic yet poses problems for state funded LAM that has to stay on the right side of the law. However, the logic of the Internet Archive that *"Access drives preservation"* (Jason Scott, 2015) could help the LAM sector. All this said, it has to be pointed out that even Scott doubts that the Internet Archive is safe and has set up a backup of all their data to allow other actors to continue its work should they be taken down.

> Is this a long-term solution? No! Somebody else maybe more seasoned or perhaps working under a different setup will mirror us. I am working very hard to make sure that the day this thing dies from untoward means, 48 hours later somebody else can do everything in there. (Jason Scott, 2015)

The outlook on possibly being subsumed into the LAM sector in the future is already pointing towards an expected convergence, albeit one that might be born of necessity. A full partnership (6) would be the more constructive path for the transition of knowledge and skills in a convergence of LAM institutions and rogue archives than the LAM sector picking up the pieces after the Internet Archive will have been discontinued. The legal protection and skills around exhibition and education from the LAM sector could be augmented with both the technical skills, the practical outlook, and the orientation towards access that defines rogue archives.

DISCUSSION

Practical lessons from participatory game preservation and exhibition

The examples from game exhibition and preservation discussed above show that participation of game makers and players in this space is possible and happening. Especially the cases from Suomen Pelimuseo show the potential of political participation to produce transgressive out-of-the-box type exhibits, like *UnReal World's* traditional hunting equipment or *Supernauts'* crochet figure. These exhibits could not have been made without participation of game makers or players. Museum researchers tried to lead co-curators towards material they thought would be suitable for the exhibition, but many times commit-

ted co-curators came up with interesting ideas on their own, and many game developers had nothing they could provide for the exhibition. This means that full participation, even on the level of curatorial decisions, should be understood as a dialogue or process. In some cases, the exchange went on for many months, narrowing down co-curator's ideas to what museum staff thought would be most interesting and plausible exhibits. Here the specialized knowledge of the LAM institutions is required, and the benefit lies exactly in the partnership between the game makers or players who understand what is important in this space and the institution who knows how to exhibit, educate, or preserve it. That said, as space was limited, museum staff in many cases had to choose from a bigger selection of donations, so they in effect had the final say on what to include. Co-curation was the ideal, but that kind of genuine dialogue between game makers and museum staff was reached in only in a few cases.

It is also important to point out that while the game developer and the community were recognized as experts and gained an authority position in this process, Suomen Pelimuseo museum was still a central actor with the specialist knowledge about preserving cultural heritage, creating exhibitions, and educating the public. It can also be said when comparing the success of the participatory processes in the examples that the cases that reached higher levels of participation also functioned better. The cases from Suomen Pelimuseo that reached the level of partnership produces exciting exhibitions that the museum saw as highly successful. That said, partnership in curation is no silver bullet. Suitable informants with personal archives were not reached in all cases, which diminished the effectiveness of co-curation. Political participation and co-curation need to be a dialogue, which not everybody is interested in joining.

Tekniska Museet also had some success with light participation in *Play beyond Play.* To a considerable extent this is built on player created material but did not get as far as Suomen Pelimuseo in sharing curatorial decisions or even giving insight into their curatorial process. This indicates that full participation with empowered participants and agonistic pluralism might work best in a situation in which the LAM institution in question has a more equal powerful position from the start as the other participants. Being crowdfunded and on a limited budget might here have been an advantage of Suomen Pelimuseo as it required them to share curatorial power which led to some successful cases.

The methods of sharing curatorial power based on an understanding of political participation that is shown in its infancy stages in the examples here is transferable to archives and libraries who are working to incorporate the histories, artifacts, and knowledge from different communities. Civic participation, not as mere consultation but as sharing power over defining a space, culture, or heritage does not come with a to-do-list or checkboxes but is an ongoing conversation with constant reflection on the power position of the stakeholders involved. Examples could be projects where libraries or archives

offer their space for projects and outside stakeholders to shape and define their own culture.[6]

Policy implications

Policy regulating LAM-institutions should change in order to accommodate players, makers, and rogue archives as participants in game preservation efforts. As mentioned above, there is already a participatory agenda in cultural policy, especially in the Nordic countries. The notion of political participation used in this paper is useful for highlighting the power position of participants and is compatible and even partly based on agonistic pluralism, a framework also used in previous research in this space to address this problem. This means that the political participation is a valid interpretation of existing cultural policy that is already directing LAM institutions to focus on participation and would only require a re-interpretation or slight change to be practically applicable. Implementing these requirements of participation and collaboration as political participation takes steps towards resolving the practical paradoxes of the participatory agenda (Brandrup Kortbek et.al., 2016: 20; Sørensen 2016: 6).

A more practical formulation of the participatory agenda should stress that participation requires power. A participant is only a participant if they can defend their perspective, if they have standing in a discussion, if there is agonistic pluralism. Stakeholders like players, game makers, the games industry, but also rogue archives and fan preservation projects should be considered partners with their own power and perspectives that need to be included in considerations and plans for such a project. This means realizing that the LAM sector will have to relinquish some of their power over heritage defining activities while still being relied on for the knowledge, experiences, and special training this sector possesses. Our examples show that the collaboration worked better when it was based on partnership and full participation that drew on the various skills and resources possessed by both LAM and outside actors. It can however be argued that in the instances where LAM institutions relinquished power they did so because they had to. Tekniska Museet needed material for their exhibition and Suomen Pelimuseo was even more reliant on the participants' contributions both in terms of time and know-how. For the future it should be an element of the participatory agenda in cultural policy to call for truly empowering participants in order to elevate participation in game preservation from lucky accidents to full collaborative policy.

Collaboration with game makers is the most straightforward here from the perspective of IP issues. The examples from Suomen Pelimuseo show that work with game makers and the industry can be fruitful and practically viable. However, IP legislation is a foundational problem that needs to be solved. Even work with the industry can be more complex as soon as the ownership of the

6. An example for a project where libraries open spaces for games and gaming culture could be https://www.bibliogames.no/.

IP becomes more involved. Making LAM actors exempt from some IP limitations for preservation purposes needs to be an aim of cultural policy, both domestically and internationally LAM actors could then collaborate with actors such as rouge archives that already have technical skills and infrastructure necessary for this kind of preservation. Allowing them to fully participate in the preservation of games as culture is an important next step for the convergence of the LAM sector. Another issue that has only tangentially been touched upon is player productivity on the level of modding, streaming, and esports. These are central elements of game culture that need to be considered for the future of cultural policy in regard to digital games (Lowood et al., 2009; Pinchbeck et al., 2009; Van der Hoeven, Lohman, & Verdegem, 2008). The ownership as intellectual property of, for example, an esports tournament is a complex question to the point that the preservation and exhibition of it as culture should not be dependent on how or if it will eventually be answered. Modding and player modification of games leads, at least for the time being, into a similar no-man's-land. The practices of rogue archives then, including making games freely available online as emulation, are limited by the same issues as the preservation of any player participation in game preservation. This means that IP limits not only emulation of games in rogue archives but in the end threatens the very elements that make games special, player interaction and creativity in both playing and making games. Here we need to take steps to empower these actors to be part of our preservation efforts by accommodating them as partners in cultural policy frameworks.

CONCLUSION

This paper has investigated how the preservation of digital games can be supported through collaboration with stakeholders inside and outside the LAM sector, and what policy changes such collaborations would require and inform. We conclude that participation in the preservation and exhibition of digital games should not stop at established LAM institutions but include players, game makers, and rogue archives. Digital-born games with their focus on interaction-in-play and co-creation-in-production stress the necessity and many benefits of involving players in defining what digital games and digital-game cultures are and how they should be collected, described, and disseminated in the LAM sector. This requires an open dialogue with participants and an ongoing process as well as the sharing of curatorial power. While player communities, game makers, and rogue archives have necessary skills and infra-structures for the meaningful preservation of game heritage, LAM institutions do have competences in long-term preservation and exhibition that are crucial for an informed practice around the preservation of digital games. This means that collaboration between LAM institutions and rogue archives (or at least their practices and communities) in which these third-party actors have the stance of full participants would be a relevant solution to key issues of game preservation. Policy regulating LAM-institutions should change in order to enable the participation of players, makers, and rogue archives. This paper

argues that political participation and agonistic pluralism are useful concepts for the modeling and understanding of game preservation and provide a possible solution for the paradoxes of the participatory agenda in Nordic cultural policy.

BIBLIOGRAPHY

Aarseth, E. J. (1997). Cybertext: perspectives on ergodic literature.

Arnstein, S. R. (1969). "A ladder of citizen participation." Journal of the American Institute of Planners, 35(4), 216–224.

Bachell, A., & Barr, M. (2014). "Video game preservation in the UK: A survey of records management practices." International Journal of Digital Curation, 9(2), 139–170.

Barthes, R. (2001). "The death of the author." Contributions in Philosophy, 83, 3–8.

Brandrup Kortbek, H., Schwartz, C. P., Sørensen, A. S., & Thobo-Carlsen, M. (2016). "The participatory agenda – A post-critical, anticipatory intervention." Nordisk kulturpolitisk tidsskrift, 19(01), 19–35.

Carpentier, N. (2011). "The concept of participation: If they have access and interact, do they really participate?" CM-Časopis Za Upravljanje Komuniciranjem, 6(21), 13–36.

Carpentier, N. (2016). Media and participation: A site of ideological-democratic struggle.

Cook, Terry. (2012). "Evidence, Memory, Identity, and Community: Four Shifting Archival Paradigms." Archival Science, 1–26. http://doi.org/10.1007/s10502-012-9180-7

De Kosnik, A. (2016). Rogue archives: Digital cultural memory and media fandom. MIT Press.

Eklund, L., Sjöblom, B., & Prax, P. (2019). "Lost in Translation: Video Games Becoming Cultural Heritage?" Cultural Sociology. https://doi.org/10.1177/1749975519852501

Findahl, O. (2014). Swedes and the Internet.

Flyvbjerg, B., & Bryant, C. G. (2003). "Making social science matter: Why social science fails and how it can succeed again." Canadian Journal of Sociology, 28(1), 109.

Greenhill, E. H. (1992). Museums and the Shaping of Knowledge. Routledge.

Guins, R. (2014). Game after: A cultural study of video game afterlife.

Heinonen, M. (2017). "From Our Garage to the Finnish Museum of Games-History in the Making." Skrolli International Edition E, 1, 82–83.

Jenkins, H., & Carpentier, N. (2013). "Theorizing participatory intensities: A conversation about participation and politics." Convergence, 19(3), 265–286.

Kidd, J. (2009). "Digital storytelling and the performance of memory." In Save as… digital memories (pp. 167–183). Springer.

Kidd, J. (2011a). "Enacting engagement online: framing social media use for the museum." Information Technology & People, 24(1), 64–77.

Kidd, J. (2011b). "The costume of openness: heritage performance as a participatory cultural practice." Performing Heritage: Research, Practice and Innovation in Museums and Live Interpretation. Manchester University Press. Manchester, 204–220.

Kinnunen, J., Lilja, P., & Mäyrä, F. (2018). Pelaajabarometri 2018: Monimuotoistuva mobiilipelaaminen.

Kow, Y. M., & Nardi, B. (2010). "Who owns the mods?" First Monday, 15(5).

Kraus, K., & Donahue, R. (2012). "Do you want to save your progress?': The role of professional and player communities in preserving virtual worlds". Digital Humanities Quarterly, 6(2).

Laclau, E., & Mouffe, C. (2014). Hegemony and socialist strategy: Towards a radical democratic politics. Verso Trade.

Lowood, H. (2004). "Playing History with Games steps towards historical archives of computer gaming." Electronic Media Group Annual Meeting of the American Institute for Conservation of Historic and Artistic Works Portland, Oregon June, 14.

Lowood, H., Armstrong, A., Monnens, D., Vowell, Z., Ruggill, J., McAllister, K., … Pinchbeck, D. (2009). "Before it's too late: Preserving games across the industry/ academia divide." 4th Digital Games Research Association International Conference: Breaking New Ground: Innovation in Games, Play, Practice and Theory, DiGRA 2009.

MacDonough, K., Fraimow, R., Erdman, D., Gronsbell, K., & Titkemeyer, E. (2016). "On the EVE of Preservation: Conserving a Complex Universe." M. Carter, K. Bergstrom and D. Woodford, Eds, 210–220.

McDonough, J. P. (2011). "Packaging videogames for long-term preservation: Integrating FRBR and the OAIS reference model." Journal of the American Society for Information Science and Technology, 62(1), 171–184.

McDonough, J. P. (2012). "Knee-Deep in the Data: Practical Problems in Applying the OAIS Reference Model to the Preservation of Computer Games." 2012 45th Hawaii International Conference on System Sciences, 1625–1634. IEEE.

McDonough, J. P., Olendorf, R., Kirschenbaum, M., Kraus, K., Reside, D., Donahue, R., … Rojo, S. (2010). Preserving virtual worlds final report.

Mora-Cantallops, M., & Bergillos, I. (2018). "Fan preservation of 'flopped'games and systems: The case of the Virtual Boy in Spain." Catalan Journal of Communication & Cultural Studies, 10(2), 213–229.

Mouffe, C. (2013). Agonistics: Thinking the world politically. Verso Books.

Mulcahy, K. V. (2006). "Cultural policy: Definitions and theoretical approaches." The Journal of Arts Management, Law, and Society, 35(4), 319–330.

Navarro-Remesal, V. (2017). "Museums of Failure: Fans as Curators of "Bad", Unreleased, and "Flopped" Videogames 1." In Fans and Videogames (pp. 128–145). Routledge.

Newman, J. (2011). "(Not) Playing Games: Player-Produced Walkthroughs as Archival Documents of Digital Gameplay." The International Journal of Digital Curation, 6(2), 109–127.

Newman, J. (2012). Best before: Videogames, supersession and obsolescence. Routledge.

Newman, J., & Simons, I. (2018, April 23). 'Game Over?' Curating, Preserving and Exhibitng Videogames: A White Paper. Retrieved April 15, 2019, from BGI website: https://thebgi.uk/gameoverwhitepaper/

Nylund, N. (2015)." Walkthrough and let's play: evaluating preservation methods for digital games." Proceedings of the 19th International Academic Mindtrek Conference, 55–62. ACM.

Nylund, N. (2018). "Constructing Digital Game Exhibitions: Objects, Experiences, and Context. Arts, 7, 103." Multidisciplinary Digital Publishing Institute.

Olgado, B. S. (2019). "Save Point/s: Competing Values and Practices in the Field of Video Game Preservation." In N. G. Taylor, C. Christian-Lamb, M. H. Martin, & B. Nardi (Eds.), Information in Contemporary Society (pp. 411–418). Springer International Publishing.

Pearce, C. (2009). Communities of Play: Emergent Cultures in Multiplayer Games and Virtual Worlds. Cambridge, Mass.: MIT Press.

Pinchbeck, D., Anderson, D., Delve, J., Alemu, G., Ciuffreda, A., & Lange, A. (2009). "Emulation as a strategy for the preservation of games: the KEEP project." DiGRA 2009-Breaking New Ground: Innovation in Games, Play, Practice and Theory.

Prax, P. (2016a). Co-creative Game Design as Participatory Alternative Media (Informatics and Media, Uppsala University).

Prax, P. (2016b). "Co-Creativity in Online Games as Alternative Media." Questions de Communication.

Prax, P. (2018). "Between Global Competition, Marketing, Deviant Play, and Cheating: High-End Raiding in World of Warcraft." Comunicazione Sociali, (1), 80–90.

Prax, P., Sjöblom, B., & Eklund, L. (2016). "GameOff: Moving Beyond the 'Original Experience'in the Exhibition of Games." SIRG Research Reports, 2016, 1–17.

Prax, P., Sjöblom, B., & Eklund, L. (forthcoming). “More like an arcade – The limitations of playable games in museum exhibitions.” Museum and Society.

Sköld, O. (2015). “Documenting virtual world cultures: Memory-making and documentary practices in the City of Heroes community.” Journal of Documentation, 71(2), 294–316.

Sköld, O. (2018). “Understanding the “expanded notion” of videogames as archival objects: A review of priorities, methods, and conceptions.” Journal of the Association for Information Science and Technology, 69(1), 134–145. https://doi.org/10.1002/asi.23875

Sköld, O., Huvila, I., Talja, S., Kjellberg, S., Latham, K., Uppsala universitet, & Humanistisk-samhällsvetenskapliga vetenskapsområdet. (2018). Documenting Videogame Communities A Study of Community Production of Information in Social-Media Environments and its Implications for Videogame Preservation. Uppsala: Department of ALM.

Sørensen, A. S. (2016). “Participation” – The new cultural policy and communication agenda. Nordisk kulturpolitisk tidsskrift, 19(01), 4–18.

Sternfeld, N. (2012). “Playing by the Rules of the Game: Participation in the Post-Representative Museum.” Trans. Erika Doucette and Sam Osborne. CuMMA Papers, (1).

Stuckey, H., Richardson, N., Swalwell, M., & de Vries, D. (2015). “What retrogamers can teach the museum.” MWA 2015: Museums and the Web Asia 2015.

Stuckey, H., & Swalwell, M. (2014). “Retro-Computing Community Sites and the Museum.” Handbook of Digital Games, 523–547.

Stuckey, H., Swalwell, M., & Ndalianis, A. (2013). “The popular memory archive: Collecting and exhibiting player culture from the 1980s.” In Making the history of computing relevant (pp. 215–225). Springer.

Swalwell, M., Ndalianis, A., & Stuckey, H. (2017). “Fans and videogames: histories, fandom, archives. Routledge.

Van der Hoeven, J., Lohman, B., & Verdegem, R. (2008). “Emulation for digital preservation in practice: The results.” International Journal of Digital Curation, 2(2).

PUBLICATION IV

Rethinking game heritage–towards reflexivity in game preservation

Niklas Nylund, Patrick Prax,, & Olli Sotamaa

International Journal of Heritage Studies, 1–13.