Co-creative events for engagement with digital cultural heritage collections

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Abstract

More and more cultural heritage institutions digitise their collections aiming to unlock potentials of accessibility, usefulness, and meaning to a new variety of users. However, there is a lack of robust knowledge about what exactly enables successful engagement with digital collections. This thesis aims to narrow this gap by investigating the relationships of three stakeholder groups participating in co-creative use of collections: museum practitioners, active users, and Open GLAM community members. It focuses on three main research questions:

- What are the challenges and benefits of co-creative events for these stakeholders?
- How do these stakeholders collaborate and what are the factors impacting their collaboration?
- What is the role of digital reuse and creative practice in engaging users with cultural heritage collections?

These questions are examined in three co-creative events: a hackathon about discomforting objects on display at The Hunterian, University of Glasgow, Scotland; a Coding da Vinci hackathon with openly licensed digital cultural collections in Dortmund, Germany; and a workshop for remixing museum objects with digital tools at the Museum Europäischer Kulturen, Berlin, Germany. The methodology focuses on participants' collaborative and creative processes and combines ethnographic methods with practice research, using participant observation, creative workshops, interviews, and surveys.

The research provides multi-faceted insights into reusing digital collections and highlights the crucial role of social motivations, media practices, and institutional contexts for engagement. The findings suggest that, in order to unfold the social potential of collections, digitisation needs to be complemented with socio-affective spaces in which diverse participants can develop relationships, negotiate meanings, and explore uses of cultural heritage. The thesis thus outlines practice-oriented approaches for effectively supporting these processes. It forms part of the POEM European Training Network on participatory memory practices funded by the EU Horizon 2020 Marie Skłodowska-Curie programme.

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Acknowledgements

In the final months of writing this thesis, I used a number of metaphors to make my invisible work more tangible for myself and others. One with which I engaged a great deal was gardening, and I am pretty sure that others have made this comparison before. For me, though, gardening mirrored my relationship with research: neither gardening nor research had been of great interest to me before I embarked on this thesis.

To stick with the gardening metaphor, the early seeds for this project did not come from an academic background but were probably sown while working with a wonderful team at the Historical Museum Frankfurt – work that inspired me because of my participatory experience there. The next crucial step for me was the generous support of the EU Horizon 2020 Marie Curie programme, which, in the form of the POEM project, offered me an allotment from which to try and grow the participatory seeds I carried with me. As it was publicly funded, my garden was supposed to be a community garden, but a community of only twelve other fellow gardeners within the POEM project supported this feeling in the beginning, when there was not much to do or see. This group represented the social soil where ideas grew and I gained a great deal from looking over the garden fence, thank you Cassy, Inge, Susanne, Anne, Asnath, Elina, Jennifer, Angeliki, Tan, Lorenz, Myrto, and Dydimus. Practical advice and experience, however, was also needed, and my team of supervisors at the Information Studies department in the University of Glasgow, Katherine Lloyd, Paul Gooding, and Maria Economou, helped me enormously!

When I had roughly decided what I wanted to grow in the garden I was lucky enough to collaborate with great people, organisations, and museums to set up experimental patches: thank you to The Hunterian, MEK, and Coding da Vinci, and thanks to all the research participants – your practice, knowledge, and openness made this garden come to fruition. Through your participation the garden started to become more communal and suddenly everything grew like crazy and I lost a bit of overview.

Although they were always there, I felt the support of my friends, family and partner the most in this phase – thank you, Mama, Papa, Ste, Martin, and Jörg for giving me the confidence that I could do it. And, when I needed a break from all the gardening, it was also great to have other activities I knew I enjoyed: thanks to the Lindy Hop community and my Hildi friends!

In the end a lot of weeding, structuring, and perseverance was needed to make this garden accessible and I am thankful that I did not go through the last part alone but together with the great PhD basement group and my flatmates in Glasgow. I am overwhelmed and thankful for all of you who helped me to learn gardening and create this community garden, which is full of so many ideas and feelings, and I hope that it will go on growing and bearing fruit for researchers and practitioners.

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Author's declaration

I declare that, except where explicit reference is made to the contribution of others, this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Abbreviations

API	application programming interface
CC	Creative Commons
CdV	Coding da Vinci
CdV West	Coding da Vinci Westphalia-Ruhr
DDB	Deutsche Digitale Bibliothek (German Digital Library)
GDPR	General Data Protection Regulation
GLAM	galleries libraries archives museum
HuH	Hunterian Hackathon
KH	Knowledge Hub
KSB	Kulturstiftung des Bundes (German Federal Cultural Foundation)
LWL	Landschaftverband Westfalen-Lippe (Westphalia-Lippe Regional Council)
MEK	Museum Europäischer Kulturen (Museum of European Cultures)
OKF	Open Knowledge Foundation
POEM	participatory memory practices
ReW	Remix Workshop
SMB	Staatliche Museen zu Berlin (Berlin State Museums)
UoG	University of Glasgow

Chapter 1 Introduction

One morning a friend showed me an Instagram profile with memes about chronic illness,[1] a genre that was new to me. The Instagram user had combined historical photographs and paintings with captions that referred to common social situations of exclusion people encounter when living with chronic illness. Reinterpreting historical scenes in this way and sharing the remix on social media appeared to offer my friend a moment of comic relief and a sense of shared humour. It also mediated insights into a specific type of exclusion, which I had not experienced myself before, offering a new point of view. Someone's personal connection with digital cultural heritage, their perspective on and relationship with an image that became tangible in the remix they created had turned a collection object into a meaningful part of everyday life. This is the primary focus of this thesis: understanding creative and social processes of relating to, remediating, and sense-making with cultural heritage collections in the digital condition (Stalder 2017). The heart and motivation of this thesis is exploring the social value of cultural heritage collections – a claim that the recently published Museums Association manifesto sets out in these clear statements:

> Collections belong to communities and without people museums are just storage warehouses. Collections are for public use.
>
> Collections matter to many people, and for them to be a source of understanding and empowerment, people need access to them.
>
> Museums should work with their communities to ensure that collections are empowering, relevant and dynamic (Anderson et al. 2020, 4).

As the example above illustrates, digitised[2] collections can be a particularly useful resource for connecting people with cultural heritage in a meaningful

[1] See the Instagram profile @chronicallycandidmemes at https://www.instagram.com/chronicallycandidmemes/, accessed 23 July 2021.

[2] 'Digitised' is used throughout the text because the research mainly focused on digitised content and digital reuse of museum objects on display instead of born digital collections.

way. There is still, though, a big gap between those who have access and know-how to reuse digital objects and those not benefitting from such public resources. In a time of multiple crises relating to healthcare, climate, and racial justice, museums more than ever need to embrace their social mission, foregrounded in a long tradition of museum research (Sandell 2002a; Rivière 1985; Vergo 1989; Moutinho and Judite 2018; Dodd et al. August 2002; O'Neill 2002; Sandell and Nightingale 2012; Anderson 2012). Fostering creative engagement with digitised collections is one way to fulfil this mission. With this motivation in mind, this project embarked on a journey to examine the collaboration between cultural heritage practitioners and participants in co-creative events focused on the uses and meanings of collections. Based on practice research and ethnographic methods, it explored the institutional framing of museums, the community approach of Open GLAM (Galleries, Libraries, Archives, Museums), and individual practices and motivations of active users. The project was conducted as PhD research in Information Studies at the University of Glasgow and is part of the EU-funded Horizon 2020 Marie Skłodowska-Curie European Training Network POEM (Participatory Memory Practices). The overall aim of POEM is to bring together GLAMs, researchers, civil society and the IT sector to rethink the relationships between social inclusion, digital creativity, and memory practices.[3] Within this context the project focuses on GLAM institutions, and, more specifically, museum practitioners and how they can facilitate engagement with collections in co-creative events.

Rooted in the belief that cultural heritage collections are for public use, the main purpose of this study was to understand better the practical implications of creative reuse of digitised collections for different stakeholders. How and why do people relate, remediate, and create meaning with collections and what is the role of GLAM institutions and the Open GLAM community in supporting this social practice?

Before outlining the aims of this thesis, the position from which I approached this research should be made clear. I drew on my background as a Curator of

[3] See POEM project website: https://www.poem-horizon.eu/, accessed 29 September 2021.

Digital Museum Practice in a middle-sized city museum in Germany and from the theoretical perspectives of 'postdigital' researchers such as Parry (2013), Geismar (2018), and Stalder (2017) to approach 'the digital'. From this point of view, the digitisation of collections is an ongoing professional practice that ties in and overlaps with many other mediation and communication practices in the museum, spanning departments and teams and requiring learning of digital literacies and adoption of new infrastructures and professional roles. Embracing a postdigital perspective allows us to overcome the new-versus-old media binary and instead study the interesting questions that emerge in the messy negotiations on the ground. In the words of Parry (2013, 37), who coined the term postdigital museum: 'With digital media normative (naturalized, ambient, and augmented) in the museum, we are now ready to reset our relationship with it.' One way of resetting our relationship (as cultural heritage practitioners and researchers) is to scrutinise the social, cultural, and pragmatic values surrounding digitised collections.

1.1 Research aims

Huge quantities of data and metadata are produced in resource-intensive digitisation processes of cultural heritage around the world and one consistent argument in the ongoing discussion is the democratic potential of this activity (Terras 2015a; Wiedemann et al. 2019; Koch 2021). Digitised collections are treated as a valuable resource because they increase access to cultural heritage for online audiences thus supporting new avenues for research, collaboration, and education (Sanderhoff 2014; Owens 2013; Hogsden and Poulter 2012; Hughes 2012). However, their 'value' in creative contexts has yet to be fully grasped (Terras et al. 2021) and, what is more, many researchers have pointed to the need to first understand and measure reuse of digitised collections before claiming it to be a mainstream activity with democratic effects (Schmidt 2020; Valeonti et al. 2019; Clough et al. 2017; Koch 2021; Warwick et al. 2007; Kelly et al. 2018; Huggett 2018). Indeed, recent studies stress the many barriers that problematise the reuse of digitised collections. One branch of research, which focuses on Open GLAM collections, suggests that users struggle with issues of understanding licensing, interface design, and data quality (Valeonti et al. 2019; Terras 2015b). In the context of museums, institutional knowledge authority and

power inequalities have been found to hinder or at least dominate engagement with digital collections (Axelsson 2019; Fouseki and Vacharopoulou 2013). Studies of both online and offline audience segments of museum collections (Villaespesa 2019; Keene 2008) agree that the majority of users are motivated by research interests, indicating a structural difference between academic and professional users on the one hand and the wider public on the other. Thus, there is a difference between professional practice in GLAM institutions and that of other users outside such institutions pertaining to their relationships to collections, digital culture, and memory-making (Aljas and Pruulmann-Vengerfeldt 2014, 179–180; Koch 2021).

In all, previous research clearly indicates a gap between the participatory GLAM aspiration of opening up and the reality of creative engagement with digitised cultural heritage collections. The combination of 'old' access inequalities in cultural heritage and 'new' issues with digital characteristics of collections arguably challenges the social potential and public use of digitised collections. A need therefore exists to examine more closely the in-between spaces of engagement in which GLAM practitioners and users negotiate inequalities, access, and digital characteristics of collections. In studying and probing co-creative events the research addressed this gap and aimed to: 1) gain a better understanding of GLAM practitioners' and users' motivations for engaging in creative reuse; 2) study the impact of co-creative events involving engagement with digitised collections; and 3) explore users' creative practices involving reusing cultural heritage collections.

As I have a background in digital museum practice and most of this research took place in museums, the thesis has a strong tendency towards this type of cultural institution. However, the objective of this study was to create practical outcomes, such as new co-creative event formats and recommendations for facilitating engagement, able to be applied in all GLAM institutions with collections. Finally, the project aims to contribute a practice-oriented perspective on reuse of collections that understands digital media as one element amongst other ongoing social, technical, and cultural developments that impact the relationship between GLAM institutions and the public.

1.2 Methods and questions

One reason why reuse of digitised collections is an understudied research field relates to difficulties in studying meaning, use, and impact (Terras 2015a, 743). In order to understand the social interactions around digitised collections, which can be summarised as engagement, this project employed a qualitative practice-centred methodology. The research was informed by practice theory (Schatzki et al. 2001; Reckwitz 2002; Bourdieu 1990), emphasising the relational, situational, and contextual nature of user behaviour and sense-making (Dervin, 1998). Based on these theoretical framings, I drew on mixed ethnographic and practice research methods to engage with different stakeholders and gain insights into their collaborative and creative processes.

The inquiry was guided by the main research question: How do co-creative events frame engagement with museum objects and digitised collections?

From this main research question, several sub-questions arose, which this thesis will address:

1. What are the challenges and benefits of these co-creative events for different stakeholders – museum practitioners, Open GLAM community members, and active users?
2. How do museum practitioners, Open GLAM community members, and active users collaborate and what are the factors impacting such collaboration?
3. What is the role of digital reuse and creative practice in engaging active users with cultural heritage collections?

Based on the assumption that the use of digital objects is dependent on situational context and the development of social practices, face-to-face events where people came together to negotiate these contexts and practices were observed and, in some cases, also organised. As practice researcher, I collaborated with museum partners in Berlin and Glasgow to set up a workshop about remixing objects with the former and a hackathon to discuss discomforting objects with participants with the latter. As a participant observer, I joined a

bigger hackathon event in Dortmund focused on the openness of digital collections. These events are understood in this research as engagement zones (Onciul 2015, 72), leveraging digital–analogue interfaces between collections and creativity, personal contexts and objects' affordances, and the social field of museums and various ways of living. Ethnographic fieldwork, co-created outputs, in-depth interviews, and online feedback surveys were employed to elicit the collaborative character of these engagement zones and the creative practices of participants.

1.3 Research areas and structure

This work is concerned with two different but interrelated research areas: reuse of digitised collections and participation in museums. It builds on theories and research from many different fields, such as media studies, design studies, museum studies, heritage studies, information studies, creativity research, participatory research, cultural anthropology, science and technology studies, and human–computer interaction. As a result of this interdisciplinary nature, the literature review is organised around two concepts that are central to this research – digital collections and participatory co-creation – and discusses and synthesises relevant literature.

Chapter 2 reviews literature on digitisation, digitised collections, and reuse in the broader GLAM sector. After introducing basic terms, the specific discussion around digital objects in the museum sector is scrutinised to critically examine the still prevalent tendency to stress either the physical, material, 'aura' aspects of the original or the editable, open, interactive, distributed (Kallinikos et al. 2010), flexible, mobile, and extensional (Srinivasan et al. 2010, 758) characteristics of the digital. Representing an area of middle ground, a position occupied by Geismar and other researchers is introduced that conceptualises presumed digital and analogue collection qualities as affordances in the sense that they are relational and situational, indicating the requirement for practical know-how, knowledge about the topic, and access to technologies or space/collection for reuse (Geismar 2013; Geismar and Mohns 2011; Geismar 2018; Hogsden and Poulter 2012). Turning to the other stakeholder groups central to this research, the chapter further examines openness, access, and the

Open GLAM community as well as the conceptualisation of users and research into use of collections. As examples of digitally enabled participation with collections, the concepts of crowdsourcing and hackathons are introduced to outline how they frame engagement. While cultural heritage crowdsourcing offers a structured form of co-creating knowledge with and around collections online (Schmidt 2020; Dunn and Hedges 2012; Wazny 2017; Dafis et al. 2014; Surowiecki 2005; Ridge 2014) cultural hackathons address open creative challenges with collections in social events (Taylor et al. 2017; Schmidt 2020; Rey 2017; Moura de Araújo 2018; Clark et al. October 2019). Following the idea that hackathons function as a 'collective imagination of how future users could themselves participate' (Lodato and DiSalvo 2016, 554) and are deemed effective tools to bring people together, emphasising hands-on practice and peer-learning (Taylor et al. 2017), I focused on hackathons and workshops to learn more about reuse of collections.

Chapter 3 then draws on participatory museum literature to review common concepts defining participation (Arnstein 1969; Bonney et al. July 2009; Simon 2010) and their implications for discourse. Following Carpentier (2011), the term participation needs to be understood as a fluid arena of political–ideological struggles. The chapter therefore further examines strategies that open new avenues in thinking about participation, represented in, for example, the work of Morse (2021; 2018; 2012) and Onciul (2015; 2013). More specifically, the chapter then engages with the participatory concept of co-creation based on its defining practices: collaboration and creativity. A participatory design studies and research perspective is crucial for this approach as it combines the participatory aspiration of co-creation with more nuanced insights into the creative process and ways of knowing through design practice (Smith and Iversen 2018; Sanders and Stappers 2008). An overview of participatory discussion in media studies complements the perspectives of design and museum studies, scrutinising the specific relationship between digital media and participatory discourses (Jenkins 2006a; Carpentier 2016; Huvila 2015). Drawing on the different disciplinary traditions of this wide range of literature offers a more comprehensive approach, redefining co-creative events for this research it foregrounds salient aspects of co-creation such as negotiations of power

structures between involved stakeholders, methods and tools for collaborative and creative practices, and the relationship between process and outcome, aiming to make them productive for the next research phases – methodology and analysis.

Chapter 4, focused on methodology, introduces the three collaborative research cases which make up this project: the Hunterian Hackathon (HuH), Coding da Vinci Westphalia-Ruhr (CdV West), and the Remix Workshop (ReW). Using a mixed-methods facet methodology, each research case was designed to reveal 'flashes of insights' into the research questions (Mason 2018, 45). This concept was used to explore multiple aspects of the phenomenon in the form of independent facets that, referring to a gemstone metaphor, refracted light on each other and on the central research question. Thus, the co-creative events examined took place in different countries and different museums, and explored three different themes, deduced from the literature review and/or introduced by the collaboration partners, pertaining to the reuse of digitised collections: discomfort, openness, and remix.

The pilot study is set in Glasgow and involves collaboration with the university museum The Hunterian, which led to the participatory intervention, the HuH. Inspired by the subversive character of hacking, museum practitioners, university students, and lecturers came together to critically discuss discomforting objects on display. However, the group work revealed the potentially uncomfortable role that the institutional frame can play for engaging with museum objects, leading to valuable reflections on the museum professional's role in this engagement zone and showing the importance of affective practices for engaging with museum objects.

CdV West – a cultural hackathon that took place in Dortmund, Germany – was a co-creative event focused on the relationship between creative reuse and openness across different digitised GLAM collections. Participant observation of the CdV event series was used to study the Open GLAM community's approach. This research case developed insights into the social 'carsharing' mode of the event and the enabling and disabling factors of knowledge exchange between culture and technology, also providing an in-depth analysis of motivations and

creative practices of digitally and culturally skilled users and the qualities that digital collections afforded to them.

The ReW was designed as a form of collaborative practice research at the Museum Europäischer Kulturen (Museum of European Cultures, MEK) in Berlin, focusing on the notion of remixing as cultural practice, relating daily life to cultural heritage. It explored the need for building remix literacies in the form of concrete techniques such as collage-making and stop-motion animation to support self-expression. The workshop illustrated the practical and motivational barriers to reuse at individual level and provided an exclusive space for participants. It did not involve any museum practitioners and instead foregrounded participants' learning of remix skills. Through engaging with each other, the creative materials, and the objects, the process also triggered a collaborative articulation of issues.

Three analysis chapters (Chapters 5 to 7) present the findings, starting off with separate analyses of each event's organisational and participatory framing and continuing with overlapping analyses that focus on collaborative (HuH and CdV West) and creative (CdV West and ReW) practices. The discussion chapter (Chapter 8) expands on the overall topics highlighted in the analyses when synthesised together: socio-affective spaces for engagement, forms of knowledges and expert roles, and sense-making and remediation practices, thus leading to final recommendations for GLAM practitioners on how to create conditions that support creative reuse and the social purpose of digitised collections. Chapter 9 summarises the main findings and reflects the limitations of the study. Based on these concluding remarks the chapter gives directions for further research and practice in the emerging field of co-creation with digitised collections.

1.4 Novel contribution

This research project examined the co-creative process of using collections from different perspectives that have been missing in previous research and practice. In the past ten years, the GLAM sector has seen pioneering examples of co-creative formats, such as crowdsourcing and hackathons. As the experiences of

heritage practitioners are constantly evolving, a scattered landscape of practical know-how is emerging. However, this growing body of literature mostly concentrates on the institutional perspective, while the benefits and motivations of participants in engaging in these co-creative events have attracted less attention. In turn, this project emphasises the role of active users in complementing the institutional perspective with insights from a range of different participants such as digital and creative professionals, Open GLAM supporters, hacking hobbyists, and culturally interested users, carefully approaching engagement zones and foregrounding participants' benefits in co-creative processes (Morse 2021; Onciul 2015).

Based on this approach, the research contributes to understanding both emotional connection and disconnection with cultural heritage collections, investigating the positively connotated aspect of openness and the discomfort inherent as well. Critical heritage perspectives are therefore combined with digital museum practice, enabling a fresh look at 'areas of curiosity' rooted in the daily lives of people (Lindström and Ståhl 2016). This also inspired a research methodology that was experimental, practice-based, and highly influenced by my background as a museum practitioner, leading to the creation of new formats of user engagement with collections, such as the critical hackathon in the Hunterian Museum and the workshop on remix practices at the MEK – methods that can be adapted and advanced in various cultural heritage contexts.

Taken together, these aspects and the range of different research cases offered a postdigital approach for studying the reuse of digitised collections that withstands the temptation to highlight arbitrary and artificial dichotomies between analogue and digital features. These are not useful for in-depth understanding of the complexity of the phenomena examined. The continuous struggles underlying any form of collaboration between museums and the public, including digital, analogue, and mixed approaches, become visible, and a more realistic and multi-faceted image of the potential of digital media emerges through applying a practice theory approach that relates the affordances of digital objects to social and affective situations of use and the practical knowledge required for reuse. While most research into reuse of digitised

collections focuses on infrastructure and licences, this project suggests that the missing link between users and collections is social practice. In keeping with Marttila and Botero's (2017; 2021) ideas, this research centres upon the premise that 'infrastructuring' is as important as infrastructure for reusing cultural heritage collections.

1.5 Research scope

While recent research aims to measure the social impact and outcome of digitised collections with a range of quantitative, qualitative, and mixed methods approaches, this study focuses on the process of engagement, therefore applying qualitative methods and experimental practice research involving in-depth analyses of the relationships between cultural objects, user practices, and co-creative formats. The research thus examines practices and affordances with a context-sensitive and relational approach, adding a new perspective to the discussion of Open GLAM and cultural commons, as well as contributing to the participatory concept of co-creation. As in any qualitative case study, the scope of the research and the number of participants had to be limited to allow the generation and analysis of rich and diverse ethnographic materials.

The research enabled insights into the interwoven aspects of media literacies, creative skills, socio-affective spaces, and different forms of knowing, together impacting the creative reuse of digitised collections. Examining reuse from this multi-faceted perspective revealed connections with other media and social practices that future research and practice might further explore. The participants' creative reuse of digitised collections reveals their affordances for constructivist learning – a quality that could gain stronger influence in object-based learning and museum learning and engagement in the future.

While the scope of this study only included co-creative face-to-face events, the Covid-19 pandemic has shifted attention to digitally enabled forms of engagement and online collaboration. Although these forms of collaboration differ and this research focused primarily on the socio-affective qualities of face-to-face events to foster engagement, the pandemic created more awareness of digitised collections as a resource that can be used by outreach

and engagement departments. More such combined approaches are needed to make digitised collections useful and meaningful for GLAM institutions and the public. A second crucial aspect, which the research confirmed, is that the digital is not a separate discourse but ties in with and overlaps other debates such as that surrounding the growing discomfort around colonial legacies of collections. During the research period institutional awareness and public demand for taking action to decolonise collections and the knowledge around them increased and was further propelled by the Black Lives Matter movement. While decolonising digitised collections goes beyond the scope of this research, the findings might contribute to recognition of discomfort as an important aspect of engagement with cultural heritage collections across all media.

Chapter 2 Cultural heritage collections: Digitisation, use, and engagement

2.1 Introduction

This chapter reviews literature on digitisation of GLAM collections to define key terms for this research and give an overview of the status of public use and engagement with digitised collections. After introducing digitisation, it scrutinises three central aspects around using digitised collections to locate this project within the scattered landscape of a growing body of knowledge: the museum-specific discussion of digital versus physical 'authentic' objects, the mission of the Open GLAM community to make digital collections accessible, and user perspectives on use and reuse of collections. The chapter thereby also introduces the three stakeholder perspectives crucial for this research. The final part focuses on emerging formats of engagement with digital collections and reviews experiences of the cultural sector with crowdsourcing and hackathons as digitally enabled participation. The following literature review is inspired by the idea of 'digitisation as a cultural process of interpretation and meaning-making' (Geismar 2018, 27) and thus aims to combine the required basics about this process with discussions that show its socially constructed and culturally framed aspects.

2.2 Digitisation of cultural heritage collections

In his influential work *The Language of New Media*, Manovich (2001, 28) sets out a basic definition of digitisation as 'converting continuous data into a numerical representation' following two steps:

> First, data is sampled, most often at regular intervals, such as the grid of pixels used to represent a digital image. The frequency of sampling is referred to as resolution. Sampling turns continuous data into discrete data, that is, data occurring in distinct units: people, the pages of a book, pixels. Second, each sample is quantified, that is, it is assigned a numerical value drawn from a defined range (such as 0–255 in the case of an 8-bit greyscale image).

Based on the technical processes of sampling and quantisation, a large amount of cultural continuous data is translated into discrete data with, following

Manovich, five distinct characteristics: numerical representation, modularity, automation, variability, and transcoding. First, these units and frequencies correspond to numbers and represent independent parts, or modules, which can be recombined into bigger structures while maintaining their internal structure. This is what Manovich calls modularity and together with numerical representation they form the material quality of new media objects, affording programming, automation, and variation. Manovich considers automation and variation as characteristics of computerised processes that structure and restructure human activities such as searching, accessing, creating, navigating, and consuming new media. In a last step he outlines transcoding as 'the most substantial consequence of the computerization of media' (Manovich 2001, 45). This is justified in the definition of two layers – a cultural and computer layer – which come together in an unknown composite computer culture. Although the hybrid nature of contemporary life with its digital technologies appears to tie in with his point, I would caution against coining this as a completely new development that is inherent to new digital media.

In the world of libraries, the digitisation of collections is explained with an emphasis on information rather than data, pragmatically defined as 'the act of making a digital copy or digital recording of analogue information, where that information can reside in a document, artefact, sound, performance, geographical feature, or natural phenomena' (National Library of New Zealand n.d.a). The workflow described, involving turning analogue into digital information and managing it in centralised collection management systems, has become a common routine in most GLAMs.

However, as easy as this translation from analogue to digital information sounds, the process incorporates many challenges of which technological ones, such as affording 2D or 3D scanners and having enough storage to save the created data, might be easier to solve than the social, legal, and cultural issues. The persistence of individual knowledge management routines in cultural heritage institutions becomes clear when reviewing Keene's (1998, 23) argument for digital collection databases more than twenty years ago:

> In the past, all the information associated with the object has lain hidden in files, if the museum is particularly well organized, or people's heads, or their desk drawers, until the time arrives when it needs to be exhibited or lent.

Although in the meantime the wide distribution of software, hardware, and internet access has changed the ways in which knowledge is documented, in my experience this description still holds true for many GLAM collections today.

This also ties in with accounts evaluating the status of the digitisation of Europe's cultural heritage. Overall, the percentage of digitised collections is difficult to determine and differs widely within the sector and across countries. Based on surveys in relevant areas for this research – the EU, Germany, and the UK – a scattered landscape has emerged of part-catalogued information, partly digitised objects, and online collections that feature mostly highlights.

In 2017 the EU-funded ENUMERATE survey report was published (Nauta et al. 2017). Within the sample of around 1,000 different memory institutions from twenty-eight European countries, 82% of the institutions indicated that they have an online collection and publish about half of their digital descriptive metadata. When comparing different types of GLAM institutions, libraries are at the high end for all numbers relating to content quantity and access, while museums are at the low end. One reason for this diverging development is rooted in the type of collections: 2D objects are easier to scan and digitise than 3D objects (Hudson 2012, 35). Another reason relates to different established ways of using collections: while libraries collect for the public to borrow and use items, museums usually collect for research and exhibitions, where direct access and use of objects is limited. The survey also found that the majority of GLAMs use their own websites to make digital content accessible, but there is a growing interest in publishing data on external platforms, such as Wikipedia, Europeana, and social media. Most survey participants, in giving their primary reasons for publishing online collections, stated their aims to support academic research and educational use. Notably, the ENUMERATE project has been criticised for a very positive perspective on digitisation of cultural heritage, which the report's authors relate to a possible bias in the sample of cultural heritage practitioners

who responded – however, as participation in the survey was anonymous, the researchers do not know which institutions participated.

In Germany, the statistical survey of the Institut für Museumsforschung (2021) stated that in 2019 less than 60% of museum collections were catalogued, meaning that almost half of museum collections were not even documented in drawers or files – if anything, they were documented in someone's head or, more likely, not at all. This is a huge gap, pre-dating digitisation and heavily impacting its progress. However, the same study points out that 25% of museums in Germany publish collections online, with bigger collections more likely to publish online and smaller collections not so likely to do so. In the UK, the numbers are higher, and the 'Culture is Digital' report noted in 2018 that:

> Creating digitised versions of collection items is already the core work of many museums; 61% of our cultural institutions have digitised up to half of their collection. Half of those with a digitised collection have made some of it available online, whether these are being added to collections databases, for the creation of online exhibitions, or for sharing on social media (Department for Digital, Culture, Media & Sport March 2018, 45).

Despite these sobering statistics on the slow progress of digitisation of cultural heritage collections, cultural institutions have started to make a growing amount of cultural data available online. While, over twenty years ago, Keene (1998) was excited to count more than 1,200 museums as part of the Virtual Library, to date, the majority of museums, galleries, libraries, and archives publish parts of their digitised collections online. Numerous institutional and shared repository websites allow everyone with an internet connection to look at a vast range of cultural data. Although digital access implies more than just technological possibility and the issue of the digital divide (Helsper 2017; Abungu 2002; Haddon 2000) also needs to be considered, publishing digitised collections online and using licences that allow some forms of reuse are the basic conditions for public engagement with this resource. Observing with interest this development and the growing repositories of data, leading scholars in the digital humanities and cultural heritage have called for more research into their accessibility, openness and (re-)use (Hughes 2012; Terras 2015a).

2.3 Using digitised collections

Several aspects together make collections usable, including the institutional process of digitising collections, the websites, and licences making up the infrastructural foundation for open access to these collections, users' motivations, and practices of reuse. In this way, digital collections can be understood as processes rather than finished products requiring GLAM practitioners to invest in ongoing access and engagement efforts. This resonates with the idea that the digital condition enables shifting of relationships (Stalder 2017), or, in the words of Geismar and Mohns (2011, S134): 'Digitization is a powerful tool in the reordering of our idea of relationships – affecting the types of relations that can be drawn between ideas, information, and their instantiation.'

The aspect of digitisation involving facilitation of new relationships between GLAM institutions and the public has been celebrated in overly positive tones. For instance, some practitioners have equated digitisation with a promise of democratisation, providing more access to heritage, opening up new methods of engagement and connection with the past (Owens 2013; Proctor 2010). Such euphoric voices are understandable in their agenda of pushing for the opening up of institutions and deconstruction of institutional authorship, ownership, and authority on the back of digital change processes. However, as Kidd (2018, 204) reminds us:

> There is a tendency to see the digital as a way of opening up access, democratizing heritage and broadening its scope, but these things are never inevitable, and need to be subject to honest and repeated appraisal.

More than technology is therefore needed to change the relationships between GLAMs and the public – a change is also required in professional practices that foster social inclusion, diversity, and participation.

This issue of ongoing work in GLAMs to create access and combine participatory missions with digital tools has attracted much more attention in recent years. POEM, the EU-funded network to which this project belongs, is one example of

emerging research that addresses the complex issues around making digitised collections a public resource. The project outline states:

> The ETN [European Training Network] addresses the urgent need of experts in the heritage sector who are qualified for working with the mediatized memory ecology, the changing socio-technical, organisational, legal, economic, and ethical frameworks for the use of cultural materials (POEM 2018).

Via thirteen different PhD projects, POEM critically examines the relations between digital infrastructures, participatory practices, and social inclusion in Europe and beyond (see figure 1).

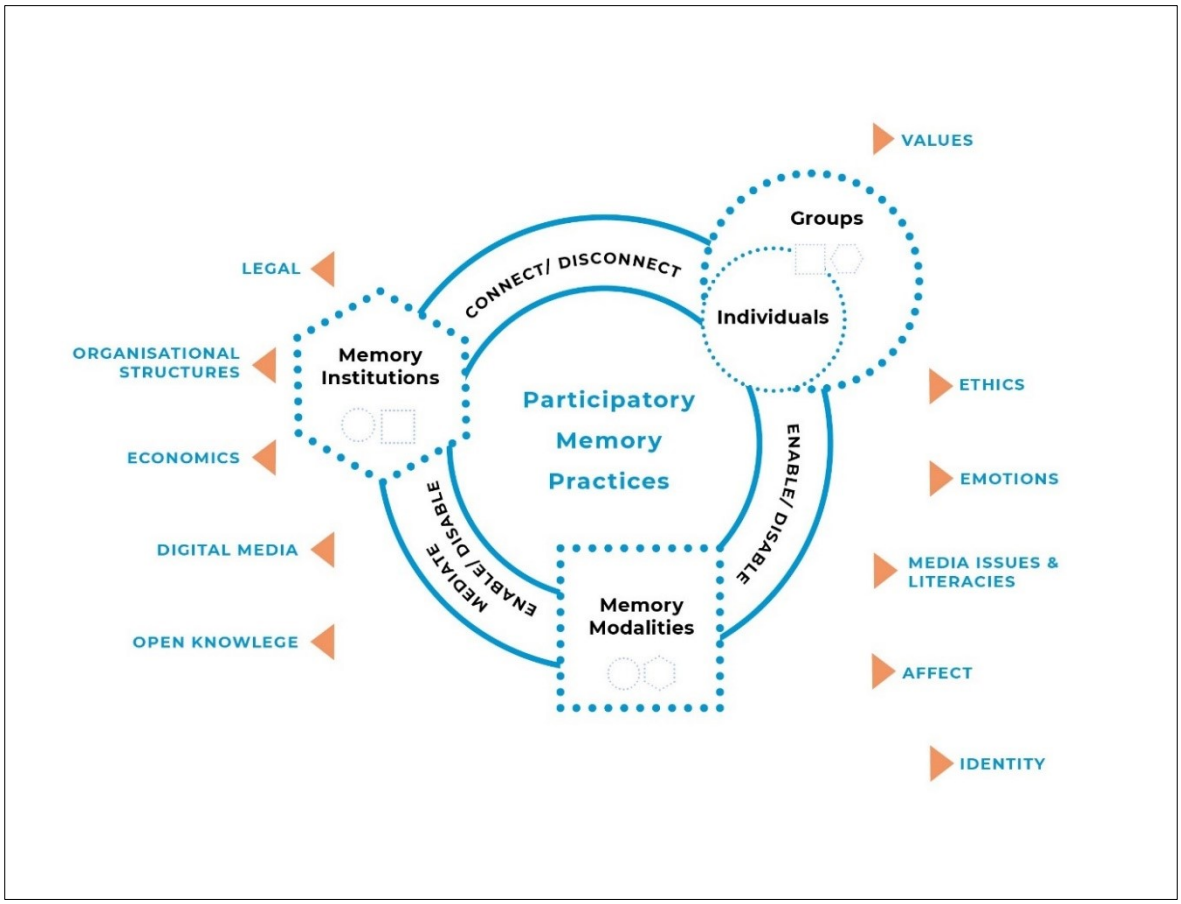


Figure 1: POEM model refined. POEM European Training Network, 2021.

While the research is still ongoing at the moment of writing, preliminary findings indicate the complex combination of elements needed to facilitate participation

or, in the words of Koch (2021, 244), one of the supervisors and initiators of the POEM project:

> It is thus not the nature of the technology but an outcome of available technologies, regulations, norms, practices (usage) and design decisions if and how digital media infrastructures facilitate participatory memory practices.

Based on these accounts, the question is not whether digitised collections are democratising – rather, we need to look at the processes that might make them a useful tool for participatory practices. In the following section, I outline the three interwoven aspects and stakeholder perspectives that are crucial for using digitised collections: the museum context of digital objects, the Open GLAM paradigms of access and openness, and the perspective of users and their reuse practices.

2.3.1 Museums and the digital object

Collections, objects, and collecting practices are the defining aspects of the modern museum (Macdonald 2011) and a substantial body of literature explores their changing role in relation to time periods, knowledge regimes, and types of museums (Hooper-Greenhill 1992; Korff 2002a; Korff 2002b; Pomian 1988; Dudley 2012). Museum collections comprise objects which, through the act of collecting, have been recontextualised and related to other objects. Together they form a collection. Macdonald (2011, 209–210) describes this as follows:

> In a collection, objects take on additional significance specifically by dint of being part of the collection; and, in most cases, the life of objects once in a collection is notably different from their pre-collection existence. In particular, objects in collections are less likely to be available for use or purchase than they were previously.

While use of collection objects is limited for most people, museums and the practitioners working in these institutions have taken over the responsibility for conserving, researching, communicating, and exhibiting objects 'for the purposes of education, study and enjoyment' as the recently debated 2007 ICOM definition states (International Council of Museums 2007). In order to facilitate learning, study, and enjoyment, museum practitioners draw on the potential of

authentic museum objects to leverage meaningful experiences for museum visitors (Korff 2002b, 142). In comparison with items held in other memory institutions such as libraries and archives, the authentic, original, and 'auratic' object holds a special place in the museum and fulfils a variety of functions: objects are used as traces, relics, trophies, treasures, documents, catalysts, symbols, attractions, evidence of systems, signs of craftmanship, and symptoms (Muttenthaler 2016, 36). Although a wide range of uses is evident in these more or less loaded terms, two aspects were taken for granted over several years of museological practice until recently: museum practitioners are the primary users, and the authentic object is crucial for the experience. Both assumptions are now under review.

In the last twenty-five years, different strands of thinking, social movements, and technological developments have challenged institutional authority on objects and their uses. One main critique is rooted in the legacy of colonialism that penetrates many museum collections and dates back to their origins in the eighteenth and nineteenth centuries. The modern museum practice of collecting material culture was deeply entangled with colonial and imperial aggression and in many cases 'acquiring objects' meant not only taking objects out of their context but violating or ignoring ownership, relationships, knowledge, and people. In combination with postcolonial studies, museum practitioners have been reminded that 'the social life of things in the post-colonial world looks set to be equally problematic, equally contentious, and equally ripe for analysis' (Barringer and Flynn 1998a, 8). This relates to a call for stronger emphasis on the social role of museums and the need to reflect institutional mechanisms of exclusion and inequality, as stated by museum researcher and co-founder of the Activist Museum Award[4] Sandell (2002b, xvii) twenty years ago:

> Many museums continue to view the processes of collection, preservation and display, not as functions through which the organisation creates social value, but as outcomes in their own right. Whilst there is a growing consensus of the importance of broadening access to museums and diversifying their appeal and visitor profiles, relatively few museums have purposefully explored their wider social

[4] See Museum Studies Leicester website for more information on the Activist Museum Award: https://le.ac.uk/rcmg/research-archive/activist-museum-award, accessed 15 October 2021.

> role to engage with and impact upon social issues facing their communities.

As collections are the core of the majority of museums, increasing access to this resource, diversification of their interpretation, and programmes that make them more useful for society have subsequently been developed. Around the same time of Sandell's influential publication, the internet and Web 2.0 technologies started to become a social reality and the rise of digital media fuelled demands and hopes for more access to museum collections and participation in meaning-making around objects (Simon 2010).

However, digitisation of museums and collections did not automatically change the power relations or museum practices determining the access, meaning, and use of objects. As Turner (2020) has shown, digital collection management systems are just the latest version of media technologies and standardised documentation practices that occlude indigenous narratives and knowledge in museum collections. Classifying, naming, digitising, including, and excluding objects are everyday working routines in documentation and record keeping, building the knowledge base of institutions and reinforcing their claims of expertise and authority. Turner's (2020, 26) inspiring work directs attention from people to practice and shows 'how tools, technologies, materials […] were actually used, and how these practices inflicted harm from afar and through time'. It is therefore necessary to critically examine not only practices of collecting, of which the object is a witness, but also documentation practices, which today lead to data and metadata. These studies have shown that the information digital objects convey (like all cultural practices, including documentation, in analogue or digital form) is inherently biased and cannot be neutral. The institutional context of digitised collections therefore forms a crucial background, impacting the information, data, and digital object as a whole.

There is a tendency to overlook the institutional framing of digitised collections and focus purely on the potential of digital objects. In this vein, Kallinikos et al. (2010, no page) define digital objects as 'digital technologies and devices and digital cultural artifacts such as music, video or image' with specific functional

qualities such as ‘editability, interactivity, openness and distributedness’. While it is important to recognise the potential flexibility and mobility of digital objects that can travel outside the museum into other cultural contexts – for example, connecting source communities with their cultural objects – Srinivasan et al. (2010) also see internal barriers that hinder this opening up. They question the possibility for the museum to become a contact zone (Clifford 1997) when, a) objects are still treated as objective knowledge, b) collection database structures foster managerial instead of narrative and practical knowledge, c) multivocality is not supported in documentation, and d) visitors in museums are used to one expert voice, objects as facts, and authoritative tone. Hogsden and Poulter (2012) build on this critique and argue that the qualities of digital objects can be best harnessed in digital contact networks that exceed the constraints of the physical museum space:

> In the contact network, digital objects can be engaged with in new ways according to localized protocols rather than in a process dictated entirely by the museum. The contact network thereby activates the potential of digital objects to become entities in their own right (ibid., 282–283).

These accounts show that understandings of digital objects and access to digital collections cannot be separated from the institutional framing and practices of mediation in museums. In inspiring work that combines decolonial perspectives and the digital, Geismar (2018, 11) suggests that while ‘we need to pay attention to the specific contexts, as well as materialities, of digital objects’ they are not a complete new phenomenon but part of a ‘long-standing continuum or process of mediation, technological mimesis and objectification’ in museums.

Digital objects are more than simple copies of analogue objects: they are products of an ongoing process of remediation that conveys the knowledge and knowledge gaps of museum professionals with the help of media technologies that create and capture data and metadata. Arguably, digital objects have different qualities to physical ones in stores and museum exhibitions: they are numerical representations, modular, can be used for automation, and allow variability and transcoding (Manovich 2001). Based on these digital media

principles, digital objects lend themselves to cultural practices such as remixing, merging, mashing up, and copying and pasting, which would not be possible with analogue objects without destroying them. While Geismar advises against essentialising these possibilities, she also proposes a middle way to build on Manovich's ideas in the context of museums. She suggests focusing on the ongoing process of translation, the role of metadata, and interlinking of digital and analogue, which would 'blur conventional distinctions that identify collections, that make them discrete, ownable, and inalienable in the context of museums' (Geismar 2013, 257–258). Rooted in the 'flattening of media' (ibid.) through numerical representation and the merging of metadata and object in the digital catalogue, she understands this blurring as a chance to challenge the object–information hierarchy in museums and extends this to a broader suggestion about the digital return:

> The idea of metadata as an epistemology for collections management, as a system for linking information about data to data, should enable the linking of different kinds of power relations to objects. Only by positioning the digital as a continuum in a much longer history of power relations, technological affect and effect, and classification can we truly understand the capacities and contradictions of digital return (ibid., 259).

Following Geismar and other researchers, I understand the presumed digital and analogue qualities as affordances. This term was coined by Gibson (1986), to highlight that an object is defined by the possibilities of use or action capacities it allows for a specific user (Norman 1988; Reckwitz 2003). In this sense qualities of objects and collections are relational and situational – they cannot be essentialised and depend on practical know-how, knowledge about the topic, and access to technologies or space/collection. Objects are important to activate or initiate practices and sometimes new objects can lead to a whole new range of related social practices. The use of digital media is an example of this, which some researchers have studied following the notion of affordances-in-practice, combining the philosophical positions of practice theory with the concept of affordances (Bareither 2019; Costa 2018). This approach offers a helpful lens because it considers media practices as relational to objects' affordances and the framing contexts of use (such as institutional logic). In this vein, the concept can contribute to understanding the complex issue of making

digitised collections more useful for society. This is further discussed in the methodology and analysis chapters.

2.3.2 Openness and access to collections

Digital objects have salient qualities supporting sharing and communication but this potential needs to be actively harnessed by GLAMs to support broader and easier access to collections. Putting this into perspective, Geismar (2018, 50) reminds us that:

> In a similar vein to the ways in which we talk about websites and online collections databases as opening access to museum collections, plaster casts and other reproductions were understood in the nineteenth and early twentieth centuries as means to provide access to world heritage that would otherwise be fixed in place.

Thus, digitised collections need to be understood as tools that tie in with previous professional practices providing access to cultural heritage. Drawing on studies of access and use of analogue collections already gives a rough idea of what to expect. Keene's study 'Collections for People' (2008) provided an overview of the situation in England and Wales. In the report, approximately 200 million items were recorded as residing in collections, but the number of visitors and users of the resource was low overall. This sits in stark contrast to the demand and potential for use:

> 52 per cent of museums reported increasing public demand. Only seven museums noted a decrease in recent years. 74 per cent of museum respondents thought that collections were insufficiently used (ibid., 7).

The study found that the main reported use of collections was research, 'but education, social benefit, social identity, creative uses and sheer enjoyment' were also mentioned (ibid.). Forms of practical engagement activity with collections ranged from public tours to special programmes with social benefits for the participants. These findings mirror the need for widening access – to meet this demand digitised collections have potential to be a useful tool if applied with care.

Instead of assuming that technology will solve access problems, recent research, including the premise on which the POEM research network was conceived, has recognised the need to design for access (Marttila and Botero 2021; Koch 2021). This perspective suggests a need to reframe access as a physical, cognitive, social, and emotional concept largely dependent on the framing practices around it. These practices shape the idea and reality of access and bring together different stakeholders. They include the documentation and digitisation practices of museum professionals within institutions, missionary activism of advocators for open access in non-profit organisations, and professional and hobbyist user communities.

Studying museum practitioners in two institutions in Scotland and Sweden, two other doctoral researchers in the POEM network, Kist and Tran (2021, 407), observed the negotiations processes of staff with the 'museum's connective capacities':

> Our analysis exposes how staff in both cases are actively engaged in negotiating these boundaries and crafting the activities that determine what kind of access the digital can help manifest. In particular, we find that staff in our case studies are compelled to negotiate perceptions of what constitutes an 'authentic' museum object and a professional museum role.

Based on their research, it becomes clear that people working in museums are themselves limited by institutional mechanisms and need to constantly work towards designing and crafting possibilities for access. In addition, museum staff experienced in creating access to analogue collections (for instance with handling kits) only started to work with digital objects during the Covid-19 pandemic. This was traced back to a critical stance towards 'restrictions of social and digital media that hinder the level of sociality and the ability according to one staff to "share emotions" around museum objects' (Kist and Tran 2021, 415). This relates to Hogsden and Poulter's (2012) suggestion of building networks around digital objects that foster communication and leverage the potential of digital objects. There is an apparent lack of tools and practices to connect people with digital objects on an emotional and social level in a way that outreach professionals trust. The lack of combined approaches might also be rooted in organisational silos that frequently separate outreach and

engagement workers in museums from digital teams or researchers within the same institution (Barnes et al. 2018). This also points, though, to their preference for using physical objects for community engagement sessions to elicit multiple meanings, as a result of their quality, which Hooper-Greenhill (1992, 215) describes as follows: 'The radical potential of material culture, of concrete objects, of real things, of primary sources, is the endless possibility of rereading.'

The polysemic potential of objects affords different layers of connection ranging from emotional to cognitive, and from individual to social layers of meaning with potential to resonate with people. As has been demonstrated, digital objects are well suited for the processes of rereading and reinterpretation as they are easy to edit and share. However, within museum learning, engagement, and outreach, this potential has not yet been fully recognised, indicating a need for more research that combines engagement practices with digital objects.

On the other hand, this potential is one of the main claims made by advocates for open access to cultural heritage collections. Building on some success stories of open access such as the Rijksmuseum's Rijksstudio,[5] the Open GLAM movement stresses the creative and participatory aspects of digital collections based on open licensing. Open GLAM was founded by the European Commission and initiated by the Open Knowledge Foundation (OKF) around 2010, and has pushed the implementation of Creative Commons (CC) licences as standards for increasing access to digital collections. The movement is supported by an almost evangelical enthusiasm, which has fuelled many successful projects and supported museum professionals in their struggle with implementing change in their institutions. At the time of writing, an ongoing informal survey by McCarthy and Wallace[6] lists 1,211 GLAM institutions around the world that have released digital collections with an open access policy. Open in this context is defined by the Open Definition 2.1 of the OKF (n.d., no page): 'Knowledge is open if anyone

[5] See Rijksstudio website: https://www.rijksmuseum.nl/en/rijksstudio, accessed 21 November 2021.

[6] See Google spreadsheet for survey information and data: https://docs.google.com/spreadsheets/d/1WPS-KJptUJ-o8SXtg00llcxq0IKJu8eO6Ege_GrLaNc/, accessed 21 November 2021.

is free to access, use, modify, and share it – subject, at most, to measures that preserve provenance and openness.'

For digitised collections, the act of reuse, which would turn data into knowledge, is regulated with CC licences that range from CC0 to CC-BY-NC-SA (see figure 2). The CC non-profit organisation[7] was founded in 2001 with the aim of providing standardised and free copyright licences to better communicate how content can be reused in private or commercial contexts (Terras 2015a, 742)

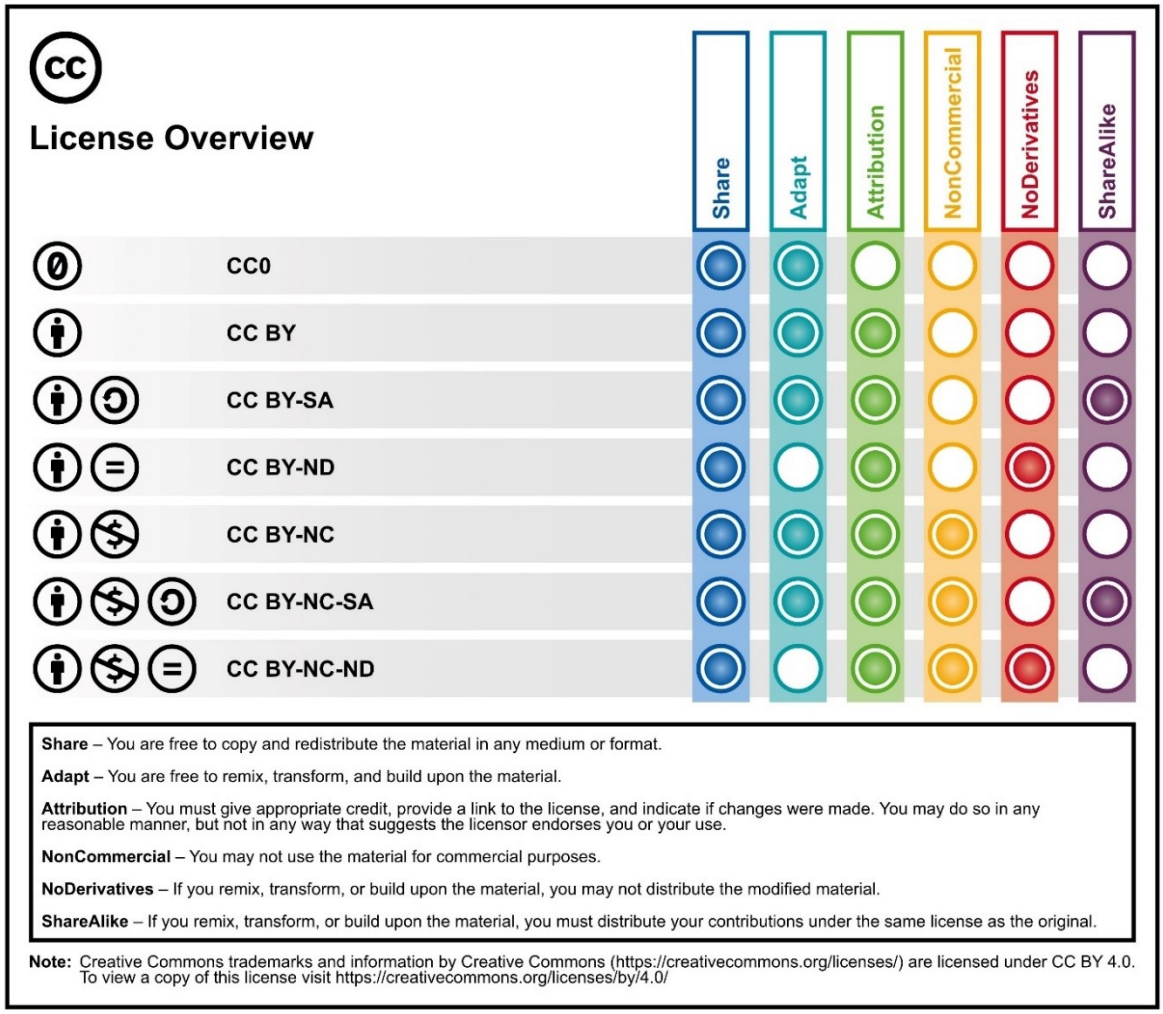


Figure 2: Creative Commons licenses. Floba007, CC BY-SA 4.0.

Another related framework to enable access to data, albeit with a stronger focus on research communities, is the FAIR principles framework published in 2016 by an interdisciplinary group of stakeholders from academia, industry, funding

[7] See Creative Commons website: https://creativecommons.org/, accessed 21 November 2021.

agencies, and publishers. While CC and Open GLAM usually address creative and commercial reuse, they focus on the needs of research with machine-driven automatic processes and suggest four qualities: data needs to be findable, accessible, interoperable, and reusable (Wilkinson et al. 2016). As an increasing number of GLAM institutions are developing APIs to enable machine-readable interfaces to their digital collections, these principles have attracted attention. For this research, however, they are less central, and I focus more on the ramifications of Open GLAM values for the research questions.

These various developments shed light on a different aspect of access: openness in terms of legal licences that enable the public to use digital collections. However, in her research into the meaning of openness, Tzouganatou (2021, 355–356), another doctoral researcher in the POEM network, outlines that, for openness to be achieved, not only licences are needed:

> Being open means also in organisational terms; the mode of sharing, collaborating, participating. Furthermore, it refers to the openness of cultural heritage knowledge for the public. This is seen as an emerging way for opening up the collections online.

Building on the definition of open knowledge quoted above, Tzouganatou argues that openly licensed data can be reused by the public and thereby become open knowledge. Thus, openness can be defined as a combination of open licences, infrastructures, and organisational modes that support sharing and engagement.

Recent research into open digital GLAM collections shows that all of these aspects could be improved for better access (Warwick et al. 2007; Terras 2015b; Terras 2015a; Valeonti et al. 2019; Gooding et al. 2013). Terras together with various colleagues have conducted several studies in recent years that point out problems with unclear licensing and design of interfaces that inhibit reuse. First, they shed light on the importance of open and clear licensing for access:

> The difference between digitising content to make it more accessible and making digitised content OA [open access] is all in the choice and the promotion of a clear, open and free license for reuse: it can be argued that digitisation without an open license restricts reuse, and therefore access, despite ongoing rhetoric about the democratising nature of digitisation (Terras 2015a, 741).

Second, access is dependent on the platform and design of the interface. GLAMs have different options for publishing their collections: on their own website, in collection aggregator projects (e.g., Europeana, Digital Public Library of America) and community-driven platforms (e.g., Flickr Commons, Wikipedia Commons, Scan the World). They offer different functionalities to look at, interact with, and download content in the form of website design, search function, comment function, download, and APIs. It is apparent that these functionalities influence the accessibility of digital collections. Applying a user-centred methodology, Valeonti et al. (2019, 1) identified three barriers to access: unclear licensing, image quality, and image tracking. They also recommend standardising website elements to help users to orientate and understand – for example, what a download button means.

Third, beyond the technical aspects of open licensing, the organisational mode of openness leaves much to be desired. Following Fouseki and Vacharopoulou (2013, 1), the traditional museum position of authority, control, and ownership is also acted out in digital contexts underpinning museum interests to increase visitor numbers, public reputation, income, and the digitisation process itself. This indicates that institutional structures for creating and mediating knowledge penetrate the digital and perpetuate professionally constructed object categories, terms, and perspectives that can restrict access to other users. In her study of one of the early examples of open access, Rijksmuseum's Rijksstudio Axelsson (2019, 75) found that:

> Although open collections, metadata and protocols facilitate new modes of audience engagement, the agency of display has not necessarily been reformed in its entirety. Museum curators still shape knowledge in new machine-assisted modes of curating. While the reinvention of online collection databases that depend on text-based search relies on the interpretative frameworks provided by data and metadata, discovery-based search models are dependent on themes and categories suggested by museum staff involved in designing interfaces.

It is therefore evident that openness can be fully granted for data quality and licensing, while the structure and transfer of knowledge remains closed and top-down. In a comparative study of museum websites between 2008 and 2017 Gil-Fuentetaja and Economou (who is also part of POEM) (2019, 12), however, see

online collections evolving towards constructivist models, marking a shift ‘from the institutional intervention towards user freedom’.

The literature has shown the complexity of openness and access: neither licences and websites nor engagement and networks alone will make digital collections and objects more useful and usable for the public. All sides need to collaborate to reach this goal.

2.3.3 Users and reuse of collections

Openness of and access to digital collections are not stable qualities but highly dependent on various human and non-human factors. It is, then, no surprise that current knowledge about reuse is limited and, as Gooding et al. (2013) observe, in this transitional phase, the lack of impact evidence often leads to controversial debates. Building on Bolter and Grusin’s (1999) concept of remediation, they suggest that instead of emphasising the newness of digitised content, further research could focus on ‘real-world usage in order to fill the knowledge void that exists’ (Gooding et al. 2013).

Huggett (2018) provides a good overview of the few known areas relating to data reuse and the major gaps that remain to be bridged if we want to move from making data accessible to actually reusing it. Huggett defines reuse based on authorship of data as ‘any secondary use by those other than the primary producer(s)’ and shows the wide variety of meanings this can take, ranging from combining data, over-using data in a different context, and repurposing it (ibid., 96). Building on the data lifecycle (Higgins 2008), Huggett (2018) argues that the digitisation phases that prepare data for reuse are well understood by now but the ‘rich and complex cycle of interconnections, interactions, and interrelationships’ involved in reuse have received less attention (ibid., 101). Huggett thus states that the usefulness of data for reuse can only be validated once ‘reuse becomes part of mainstream practice alongside archiving and sharing’ (ibid). Following Huggett, this project understands reuse as remixing, recycling, recontextualisation, and repurposing of digitised collections, and aims to contribute insights into actual reuse to better understand the complex interrelations between user and digital object.

Looking at digitised collections from the perspective of users and their media practices shifts the focus from the conditions for reuse to the social processes of adopting new media. Different users' established media practices might also indicate a way of approaching digital objects – e.g., for interpreting and meaning-making. For understanding what people want to do with digital objects and how this connects to their previous media practices, however, it is necessary to look at their engagement, not technology. As Jenkins (2006a, 23) wrote:

> As long as the focus remains on access, reform remains focused on technologies; as soon as we begin to talk about participation, the emphasis shifts to cultural protocols and practices.

In reviewing the last fifteen years of digital heritage participation and access, questions emerge relating to whether 'talking' about participation is enough or whether doing so means that the problem is merely covered with other big concepts. In this vein, more critical researchers such as van Dijck and Nieborg (2009) have emphasised the underlying logic of consumption, which also involves the digital turn towards user engagement: 'the homogeneous term "users" is misleading in that it conceals the difference between active and passive involvement or, put differently, between producers and consumers of user-generated content' (ibid., 861). Van Dijck and Nieborg warn against the term users in the context of business value creation models intended to champion empowerment of customers to cover the commercial logic underpinning this rhetoric. In keeping with this critical perspective, I am cognisant of the pitfalls in assuming that replacing the term museum visitors with users will broaden people's agency. However, within the museum world, a stronger focus on using, usability, and usefulness of digitised collections rarely involves commercial interests and rather helps to strengthen the social orientation of museums. Thus, within the context of this research, user studies offer a helpful lens through which to literally change perspectives from the interests of the museum to the practices and motivations of people.

User studies aim to understand the needs and requirements of those for whom a service, system, or product was designed. It is an interdisciplinary approach conducted slightly differently in information studies, communication and media studies, and human–computer interaction, to mention only the most prominent

fields. Dervin and Lynn Reinhard (2006) note a collapse of traditional divisions between users and audiences. While users had been conceptualised as individuals 'who voluntarily made use of information and communication systems' (ibid., no page), audiences have been understood as 'groups of individuals that communication, media and information systems attract or entice with arrays of offerings' (ibid., no page). Building on a growing body of literature, they suggest that:

> [U]sers by any other name, citizens, lay persons, patients, patrons, participants, attendees, viewers, game players and so on, increasingly have greater and greater control over their access and use of all manner of information and entertainment systems. In this sense they are no longer best conceptualized as users or as audiences but rather as persons with agency (ibid., no page).

I will draw on this definition of users in the thesis – as persons with agency and a variety of information and entertainment options to choose from. This ties in with Parry's (2019) recent reflection on the ideation history of the 'user' in the museum context. Drawing on fifty years of computerisation, he identifies three different constructions of the digital user: 'operator (part of the system)', 'individual (outside the system)', and 'actant (active 'in the world')', further observing that:

> Concurrently, in these different constructions, we notice the principal capability of the 'digital user' shifting from 'automation' (set within a 1970s–80s system-orientated context of organizational efficiency); to 'personalization' (amidst 1990s–2000s priorities of usability and experience design); to finally 'empowerment' (against which social value and agency are the new indices of success) (ibid., 276).

In particular, researchers have critically examined the focus on the user as an individual for whom museums design digital services in recent years. Studying the design and use of online collections has shown that their interfaces and functions are often made for researchers or enthusiasts who know what they are looking for (Wrigglesworth and Watts 2017, 135). Other users, casual visitors, accidental wanderers, and people with a general cultural interest but without specialised knowledge might struggle to find an entry point to these archivally designed databases. This divergence of user experiences has been studied from

different perspectives: understanding user motivations for accessing existing online collections and exploring new interfaces for engagement with collections.

On one hand, some researchers have closely examined the users and uses of museum websites and online collections. In a survey of users of the Europeana database, Clough et al. (2017, 217) found that the majority of users searched information with the intention of creating new work in the context of an open-ended task, such as research. Their study distinguishes cultural enthusiasts, who prefer browse-and-explore searches, from academics focused on specific-item searches (ibid., 216). Considering the online collection held by the Metropolitan Museum of Art, Villaespesa (2019) developed an online audience segmentation that differentiates between six groups: professional researcher, personal interest information-seeker, student researcher, inspiration-seeker, casual browser, and visit planner. She bases this typology on three main motivations for visiting the online collection – intellectual, inspiration, and visit planning – and relates them to a range of self-descriptions, such as academic or personal researcher, art enthusiast, student, artist, teacher, and combines them with user behaviour. The 'intellectual' approach is associated with different forms of research and marks the prevalent way of using the MET's online collection, followed by access on the part of users looking for inspiration and small groups of future visitors.

On the other hand, museums have also started to develop different tools to support a variety of information-seeking and sense-making behaviour. After the enthusiasm for putting collections online fizzled out, it became clear that more exploratory ways of entering collections were needed for potential users not sure what they were looking for – casual browsers. Dörk et al. (2011, 1) argue that an 'information flaneur' who 'represents curious, creative, and critical information-seeking' needs to be met with the design principle of 'explorability'. Indeed, today, many collection interfaces have integrated such exploratory functions in the form of visual, associative, and narrative networks that guide users from one digital object to another. Kreiseler et al. (2017) have investigated digital collections with a focus on exploratory functions, following concepts of view, movement, contextualisation, and participation and

concluding that, besides viewing objects, all other functions were poorly developed. Thus, possibilities for contextualisation and participation in online collections allowing the user to become more actively involved were observed to fall behind the standards of in-gallery engagement.

Although, the participatory museum movement has begun to endorse the term user more frequently, the literature review indicates that the concept is mostly applied to signal an orientation towards individual needs and personalisation or user-centred design principles (Simon 2010). In contrast, what Parry (2019) calls 'actant' – the user with agency – is less supported in how online collections are designed. What is known about uses and users of online collections suggests that digital objects are being made accessible for other researchers and people who know what they are looking for. Usability and design appear to be the main concerns, with questions of social value and participation less central.

Importantly, as a starting point, opening up collections implies many different user perspectives on digitised collections, going beyond the perspectives of GLAM professionals. This requires a renegotiation of interests between old and new stakeholders. Some researchers argue that user involvement represents a crucial 'guide and sustained roadmap to the design, development and conduct of digitization projects' (Dobreva et al. 2012, 76). In addition, I propose that a stronger emphasis on participation with digitised collections beyond their well-designed surfaces might be needed to question the knowledge structure in which information is embedded and enable more active reuse. The following section explores this direction further.

2.4 Digitally enabled participation with collections

While up to date, most practice and research has focused on making the digital collections that cultural organisations have created accessible, it is necessary to study the engagement and active use of collections which users have developed. This is not only required to better understand the perspectives of different users, but also to explore the social value of digital collections. As Crossick and Kaszynska (2016, 7) concluded at the end of the AHRC Cultural Value Project:

> thinking about cultural value needs to give far more attention to the way people experience their engagement with arts and culture, to be grounded in what it means to produce or consume them or, increasingly as digital technologies advance as part of people's lives, to do both at the same time.

Within the context of digitised cultural heritage collections, two formats emphasising active engagement with this resource have emerged in the last ten years: crowdsourcing and hackathons (Schmidt 2020, 53). Although these differ widely in their structures, processes, and outcomes, they can be understood as forms of digitally enabled participation. Ridge et al. (2021, 2) use this term to describe crowdsourcing as a format 'that promises deeper, more engaged relationships with the public via meaningful tasks with cultural heritage collections'. I will subsequently adapt it as an umbrella term for engagement formats that approach digitised collections as a resource for participatory relationships between GLAMs and the public. By examining their characteristics, I aim to shed light on two different approaches – online collaboration and face-to-face events – supporting participatory potential of digitised collections.

2.4.1 Cultural heritage crowdsourcing

In the early 2000s, Howe (2006) coined the term crowdsourcing as the act of outsourcing labour to an online crowd of technologically advanced amateurs within the growing gig economy. Since then, promises and dangers have been negotiated in relation to democratisation, efficiency, moral issues, and labour conditions while an array of crowdsourcing projects was launched (Brabham 2012). While the first waves have since abated and the discussion has been normalised, the underlying tension between moral concerns and participatory potential is still tangible in most related literature. However, the discussion has gained from the development of a large number of crowdsourcing projects that generated practical learning and more specific insights into the process of crowdsourcing.

The cultural heritage sector saw a slightly delayed adaptation of crowdsourcing, with a growing number of project launches from 2010 onwards (Terras 2016). In contrast to economic interests in crowdsourcing, the cultural sector interpreted

it as a form of opening up internal documentation processes to the public. Terras (ibid., 423–424) thus defines crowdsourcing as follows:

> Heritage crowdsourcing projects are not about anonymous masses of people, they are about inviting participation from those who are interested and engaged, and generally involve a small cohort of enthusiasts to use digital tools to contribute (in the same way as they may have volunteered offline to organize and add value to collections in the past). The work is not 'labor' but a meaningful way in which individuals can interact with, explore and understand the historical record. It is often highly motivated and skilled individuals that offer to help, rather than those who can be described with the derogatory term 'amateurs'.

In this description, Terras identifies the crucial elements of crowdsourcing – the crowds, digital tools as a medium, and the process of interaction with the material – and evaluates these within the field of cultural heritage. She states that the crowd is usually not particularly big, the participants are often professional, and the process is about meaning, not labour.

In contrast to its original context, crowdsourcing in cultural heritage is always conducted without any financial renumeration. Deals are not based on exchange of work for money, but rooted in volunteering. With the help of volunteers, a lot of work related to the process of digitising collections is carried out. In this context, filling the gaps that digitisation makes visible – whether in relation to staff resources or metadata – is considered a useful contribution. This type of crowdsourcing results not only in more complete records, but more knowledge about the records, co-created by many different participants.

To date, Ridge et al. (2021, 2) have claimed that crowdsourcing 'is moving from an experimental activity to something more embedded within institutional priorities'. One reason for this is apparent in Ridge's invaluable contributions to the discourse. As early as 2007, she urged museums to develop a routine for dealing with user-generated content (Ridge 2007) and in 2014 she published the influential edited anthology *Crowdsourcing Our Cultural Heritage*. Ridge relates crowdsourcing to core GLAM principles such as connecting and engaging audiences with cultural heritage. Using the internet and its infrastructural principles, the tradition of volunteering in cultural heritage institutions is

renewed and extended in scale, connectedness, and ease of use (Oomen and Aroyo 2011, 145). Building a continuum with pre-digital forms of volunteering, many authors use this comparison to convey their understanding of crowdsourcing as a 'logical development' of a 'long-standing tradition' (Owens 2013, 121; Dafis et al. 2014, 144). Here, Bolter and Grusin's (1999) idea of remediation applies to the relationship between cultural heritage institutions and volunteers, translated into a new medium.

In summary, adaptation of crowdsourcing in the cultural heritage field was first accompanied by an overall negation of the economic origins of crowdsourcing. Second, the sector reinterpreted the concept as something familiar that has been around since the beginning of all GLAMs: a participatory practice to enrich knowledge. Third, this idea of digital volunteerism makes crowdsourcing compatible with the mindset of cultural institutions and fits withing existing power relation structures.

In this way, cultural heritage crowdsourcing has been designed to access and enrich digital collections but structured according to institutional needs. This becomes clear in Oomen and Aroyo's (2011) highlighting of compatibility with digitisation workflows in the GLAM sector. They use the digital content lifecycle (National Library of New Zealand n.d.b) to show that all phases benefit from the involvement of volunteers. However, describing, interpreting, tagging, and creating content allows participants not only to fill in missing factual metadata but can also be used to explore the polysemic potential of objects and gathering of multiple meanings, opinions, and perspectives in rather unstructured and narrative forms. Overall, though, crowdsourcing offers a rather structured framework for engagement with digital collections that directs the attention towards a shared goal (Ridge 2013a).

There is an ongoing discussion in the field about the level of engagement and the question of the extent to which crowdsourcing projects are participatory. Most studies of crowdsourcing define it as a contributory process that focuses on a clearly defined goal or research question and assumes the rigour that professional and academic workflows imply (Oomen and Aroyo 2011; Dunn and Hedges 2012). However, other researchers argue that crowdsourcing can offer

different levels of participation for those interested in a deeper level of connection. Quoting Raddick et al. (2010) from the citizen science project 'Galaxy Zoo', Ridge (2013a, 442) writes:

> At the first level, volunteers participate in simple classification tasks; at the second they participate in community discussion (for example, on a project forum or blog), and at the third and final level they move to 'working independently on self-identified research projects'.

This example examines how all three levels of engagement can be combined in crowdsourcing and how participants' involvement can change over time if they wish. Other authors, such as Blaser (2014) in the 'Old Weather' project, have also noted this development. She particularly argues for enabling feedback loops to 'respond to new areas of enquiry that emerge as participants interact with the collections' (ibid., 54). According to Blaser, this enhancement of participants' involvement would even strengthen scientific results.

Participants have demonstrated different motivations for taking part. Ridge (2013a) differentiates between three types of crowdsourcing motivation: altruistic, intrinsic, and extrinsic. She summarises intrinsic motivations to participate as 'fun, the pleasure in doing hobbies, enjoyment in learning, mastering new skills and practicing existing skills, recognition, community, and passion for the subject' (ibid., 441).

The distinction between intrinsic and extrinsic motivation is a classic dichotomy in psychology and the self-determination theory shaped by Ryan and Deci (2000). They describe intrinsic motivation as focused on the 'inherently interesting or enjoyable' process of doing something, and extrinsic motivation as oriented towards a 'separable outcome' (ibid., 55). Internal or intrinsic motivations are often associated with positive emotions, such as enjoyment, fun, and curiosity, while external motivations are more often negatively linked with control or punishment but can also stand for money or other rewards. External motivators are often opposed in Open GLAM and Open Source contexts while ideas of passion and enthusiasm are foregrounded (Estellés-Arolas and González-Ladrón-de-Guevara 2012).

In a scoping study on crowdsourcing in humanities research, Dunn and Hedges (2012, 10) find that participants are mostly attracted by areas of subject and further distinguish,

> between abstract interest in a subject area, such as mapping, and highly focused, or even obsessive, interest in a subset of that subject, e.g. maps of a particular period or area, often deriving from a personal or family connection.

These highly specialised interests are carefully structured in most crowdsourcing projects – for example, split into micro-tasks to make a contribution as easy and quick (only a few minutes to be spent) as possible.

Eveleigh (2015, 174) frames the variety of user motivations within 'intertwined concepts – cognition and affect, and a social versus an individual context of participation'. She therefore identifies multiple user motivations ranging from belonging and taking part, to being useful or feeling challenged, to relaxation and procrastination. Usually, people are motivated by a combination of internal and external reasons and some scholars argue that the binary does not suit the complexity and entanglement of motivational factors – for example, when it comes to internalised external reasons (Russo and Peacock 2009).

In a longitudinal mixed-methods study of the crowdsourcing platform Micropasts, Bonacchi et al. (2019) examined the democratising potential of crowdsourcing. Their findings point in an interesting direction – while on one hand the socio-demographic make-up of crowdsourcing users was found to be similar to that of visitors from the same institutions (e.g., regarding level of education and income), on the other hand they suggest that the task or activity itself could potentially bring in participants with less established connections to GLAM institutions or subject area. They emphasise:

> the potential of crowdsourcing as a method for participatory heritage creation, enhancing and interpretation that museums, galleries, archives and libraries can adopt to involve people whose primary interests do not necessarily relate to GLAMs collections or indeed themes, but are instead strongly linked to the activities that crowdsourcing projects enable (ibid., 13).

Reaching out to possible users not only based on subject interest but also in relation to certain user practices is an interesting concept, which might be particularly useful for this research project.

Another interesting perspective comes from Eveleigh, who positions herself against one overall participatory dimension of crowdsourcing and its related ideological connotations and instead suggests that crowdsourcing allows different points of contact between participants and professionals. Her analysis of the ambiguities of different crowdsourcing projects leads to four different types characterising the relationship between archival professional practices and participants' tasks (see table 1).

	Community	Crowd
Organic	**Collaborative Communities**	**Archival Commons**
Mechanistic	**Outreach and Engagement**	**Transcription Machine**

Table 1: Adaption of Eveleigh's (2014) user participation matrix

Although always fluid, these frames help to classify and study crowdsourcing attempts not only from the basis of what is done, but also from their participatory impact. Archival Commons represent a stereotype of ideological Web 2.0 visions: all-encompassing and open but also fragile, with weak social ties (Eveleigh 2014, 218). In contrast, Outreach and Engagement relates to established professional practices of engagement and might involve departments responsible for creating access, bringing collections to people, and working in education. This represents one method of collaboration to merge expertise within institutions, as discussed earlier. Following Eveleigh, in crowdsourcing this is a solid model used by many institutions claiming to bring cultural heritage to users, but it also implies a hierarchy between user contributions and the authority of professionals (Eveleigh 2014, 220). Eveleigh sees Collaborative Communities as a more egalitarian model of participation where both sides meet on an equally new and uncertain terrain to catalyse and develop collaborative processes (Eveleigh 2014, 221–222). In describing the fourth frame – Transcriptions Machines – she concludes that 'if outreach-style participation is to defend the professional boundary, Collaborative Communities seek to redraw it,

and the Archival Commons to dissolve it, a fourth option is to reinforce it' (Eveleigh 2014, 223). Transcription Machines are further conceptualised as rigidly structured processes that ask for standardised input and focus on quality control. Taken together, these four variations of crowdsourcing offer a helpful guideline for institutions to consider what they want to achieve with their crowdsourcing project and on which form of participation they want to build it. The framework suggests that different participant conceptions and the ways in which the whole process is organised serve as frames that allow professional boundaries to become more or less permeable to influences from outside institutions. These influences and their impact on professional practice symbolise an important aspect of knowledge creation and transfer: the more permeability, the more shared authority in the co-creation of knowledge. While Transcription Machines are less associated with collaboration and more with creating output, Outreach and Engagement is very different: very collaborative but not very productive. Archival Commons and Collaborative Communities range between these – the former has a stronger emphasis on creation and the latter is more associated with collaboration.

2.4.2 Cultural heritage hackathons

Similar to crowdsourcing, hackathons emerged in the tech world around 2000 as face-to-face events combining a problem-oriented challenge with a co-creative solution-finding process in a short timeframe. The term is a combination of two words – hack and marathon – indicating a short and intense period of time during which people come together to hack.

The term hacker and the related activity of hacking are ambiguous and date back to the 1960s and 1970s. Back then, the word meant:

> someone who, driven by necessity, had to make use of what was available around [sic] to come up with ingenious solutions to a technological problem. Someone, whose creativity was a driver for finding usefulness to things that seemed completely useless. Hackers got together not to destroy things, but to build them (Moura de Araújo 2018, 16).

This positive perception highlights the creative component of reusing all materials available during the task of finding a solution to a problem. It also mirrors an early self-description of a sub-culture drawing from enthusiastic publications of the 1980s such as Levy's *Hackers: Heroes of the Computer Revolution* (1984). However, since then, public perception of the term has turned 180 degrees, so that Steinmetz (2015, 125) states: 'Hacking has come to denote any person engaged in an array of high-tech troublemaking.' Steinmetz traces this common understanding back to one sub-area of hacking – so-called security hacking. To avoid confusion of this sub-area with the whole spectrum of hacking activities, he suggests using more specific terms to describe cybercrimes. Building on an ethnographic study, he defines hacking as craft(y) and argues that:

> Both hacking and craftwork consist of similarities across mentality, an emphasis on skill, ownership, commitment, similar social-learning structures, an emphasis on process over results, and experiential similarities. Additionally, both hacking and craftwork are stitched together through the politics of resistance and transgression – though hacking may be more flagrant in its transgressive tendencies (ibid., 140).

In the context of this research, Steinmetz' understanding of hacking as a transgressive craft has interesting implications, highlighting the productive and skilled community of practice as well as the transgressive aspect of resistance that might critically question and subvert authority.

Another inspiring definition of hacking is provided in Wark's (2004) hacker manifesto. Focusing on the role of hacking in making possibilities tangible, he claims that: 'to hack is to release the virtual into the actual, to express the difference of the real' (ibid., no page). From this perspective, hackers are understood as 'abstracters' who work across different creative contexts such as programming or arts, pursuing the practice of abstracting. This is defined as follows:

> To abstract is to construct a plane upon which otherwise different and unrelated matters may be brought into many possible relations. To abstract is to express the virtuality of nature, to make known some

> instance of its possibilities, to actualize a relation out of infinite relationality, to manifest the manifold (ibid., no page).

For the purpose of this study this understanding of hacking as making possibilities tangible from the perspective of different hackers offers a fruitful notion that hacking might be a way of reusing digitised collections to show some of their potential.

However, it should also be mentioned that 'the hacker' also denotes a popular stereotype with strong implications about the socio-demographic make-up of hacker communities. Ensmenger (2015, 41) relates the hacker cliché to American popular culture, which he deems to have perpetuated the characteristics of the computer nerd as 'white, male, middle-class, uncomfortable in his body, and awkward around women'. Based on this stereotype, he cautions against the dominance of males and hypermasculinity in contemporary computer programming. Thus, while hacking can challenge the power dynamics between GLAM institutions and users through transgressive, inventive, subversive, creative reuse of digitised collections, there might also be underlying inequalities in hacking communities that need to be considered.

In the cultural sector the term hacking did not play a major role prior to digitisation of collections. With the production and publication of cultural data, an overlapping field with computing practices emerged – in particular, hackathon events became a field of interest for GLAMs.

Tech companies and tech-savvy communities developed hackathons as 'techno-creative events during which participants get together in a physical location' (Richterich 2017, 1). Taylor et al. (2017, 1202) described the effective advantages of hackathons in three ways: bringing people together, emphasising doing (instead of talking), and peer-learning. Building on these common traits practitioners and researchers have further described the modes of hackathons as participatory design methods (Rey 2017), material participation in speculative design (Lodato and DiSalvo 2016), and co-creation with collections (Schmidt 2020).

Cultural heritage hackathons emerged around 2010 in Europe and North America and usually address the accessibility, usability, and relevance of digitised cultural heritage collections within the Open GLAM framework (Terras 2015a; Schmidt 2020). The legal frameworks of CC licences and the Open GLAM movement are deeply entangled with the spread of cultural heritage hackathons, as this format was arguably advantageous for demonstrating the potential and value of reusing collections (Schmidt 2020). To do this, and to convince other cultural institutions to share their collections with user-friendly licences, hackathons were launched. In a hackathon, following an open call, people are invited to form teams, hack content, and create prototypes.

In their research into issue-oriented hackathons, Lodato and DiSalvo (2016, 554) call this process a 'collective imagination of how future users could themselves participate'. Based on the concept of speculative material participation, they conclude that issue-oriented hackathons are less about output than 'contribut[ing] to our social imaginaries' (ibid.). This echoes Wark's (2004) definition of hacking and the key drivers of Open GLAM hackathon organisers, who want to show the possibilities of reusing cultural heritage data. Their perspectives highlight the creative and imaginative potential of hackathons, but also their emergent and fragile operational mode. Critiques note the unsustainable and unreliable nature of hackathon outputs as one of the format's main shortcomings (Arrigoni et al. 2020).

Within this research, cultural heritage hackathons are understood as collaborative events in which people come together to creatively explore and interpret the potential of collections usually under Open GLAM conditions. They work together over a predefined amount of time with the aim of developing a tangible output to showcase their ideas. This process of fast and focused ideation and prototyping follows ideas from design methodologies and agile project structures. Invitations to these events usually apply an open call principle – everyone who feels that they identify as a hacker or interested in co-creating ideas and prototypes can join. Participation is voluntary but needs to follow the time schedule of the event. Cultural hackathons are a form of digitally enabled participation, similar to crowdsourcing projects. Both facilitate

engagement with digital collections but, while crowdsourcing projects often ask participants to undertake concrete tasks, the hackathon brief leaves the use of collections open to participants and employs co-creation methods. This is a salient characteristic in relation to this research interested in the connective qualities of creative practices.

At present, there is almost no research on cultural heritage hackathons and the perspective of participants. One exception is Moura de Araújo's (2018) doctoral thesis, which argues:

> Because of the special nature of Cultural Institutions, Hackathons for Cultural Heritage cannot be understood in the same way as their counterparts happening in a purely engineering domain. Problem solving and conceptualization through collaborative programming are entangled with the significance of the content matter they intend to deal with: the institutions' collections (ibid., vii).

Based on analysis of Coding da Vinci hackathons, he suggests that this format is 'a constructionist method for the interpretation of heritage' (ibid., 168). Drawing on the concept of constructionism, he develops the idea that participants in cultural heritage hackathons interpret collections 'through the algorithmic recontextualization of digitally represented objects of collections as narratives, which are externalized as shared computer applications, and, for the most part, open source' (Moura de Araújo 2018, 169). He defines the created prototypes as digital interpretive artefacts – computer applications that facilitate the process of 'digital fabrication and co-construction' (ibid). In this vein, hacking digital collections can be understood as a co-creative reuse process that leads to new interpretations of collections. Yet, the participatory dimension of hackathons, the role of GLAM practitioners and the question of why people participate in cultural heritage hackathons is less central in Moura de Araújo's research.

2.5 Conclusion

In conclusion, this part of the literature review has critically examined the socio-technical processes of digitising, using, and engaging with collections. The chapter showed that digitising collections does not automatically widen public

access or trigger reuse of cultural heritage. Rather collaboration between different actors within and outside GLAM institutions is needed as part of an ongoing practice of designing access, negotiating rules, and creating networks that connect the potential of digital collections with user needs, media practices, and social values. Based on the literature review these actors can be roughly outlined as three groups of stakeholders: museum practitioners, the Open GLAM community, and active users. Museum practitioners, as stewards of collections and remediation experts, face multiple processes of change through digital technology, social movements, and critical discourse, challenging professional roles and practices. The Open GLAM community, as a coalition of open access organisations, GLAM institutions, and GLAM users, aims to support these processes of change through advocating the opening up of digitised collections with public domain and CC licences. Active users, as defined by Parry (2019), represent the third and least clearly outlined group. Within this research they are understood as people with agency, interested in using collections for a range of personal and professional purposes, and participating in hackathons and workshops on a voluntary basis. Also, these stakeholder groups are not neatly separated but overlap, as illustrated in figure 3.

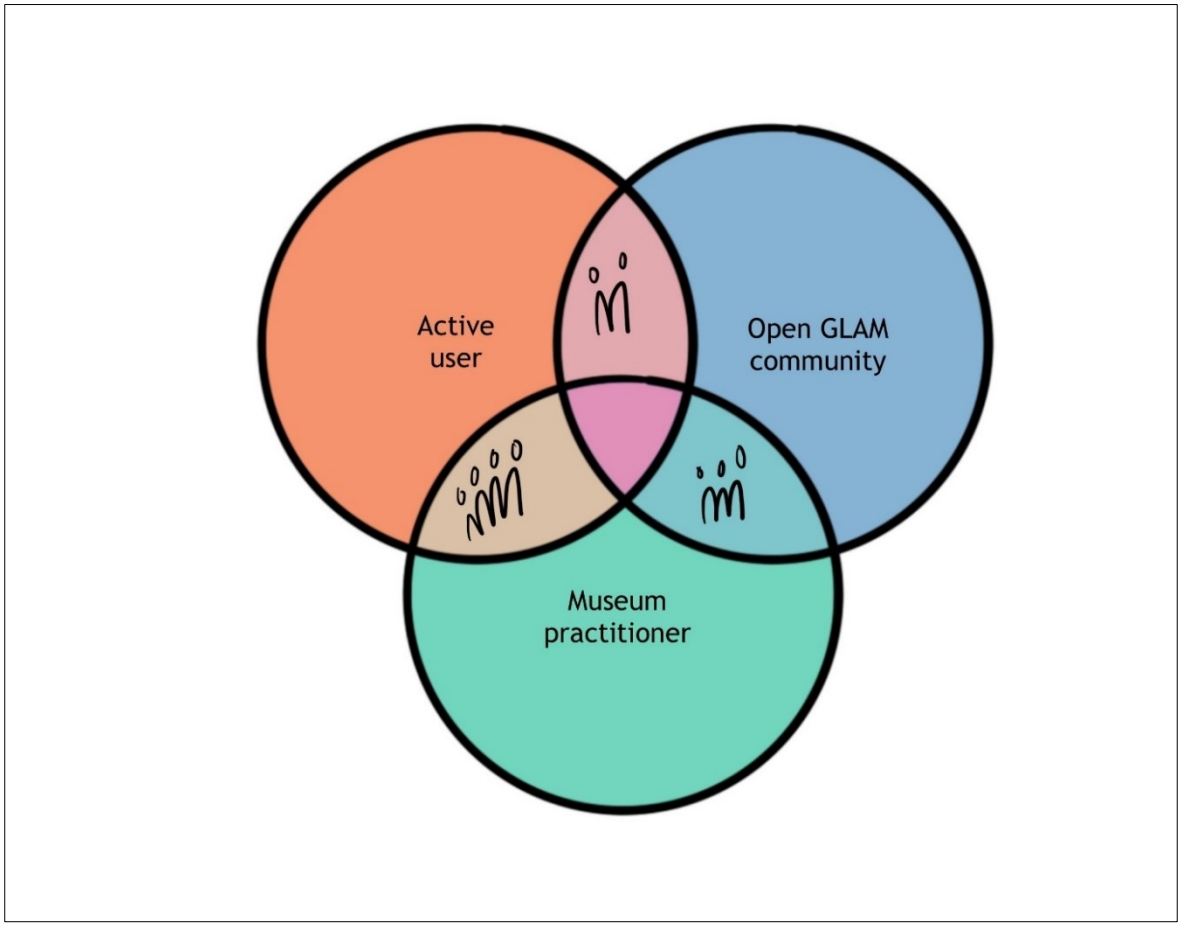


Figure 3: Stakeholders reusing digital collections. Mucha, CC BY 4.0.

The digitisation of GLAM collections is characterised by fragmentation and hybridity, which emerges at the intersection of digital tools, knowledge archives, professional standards, institutional culture, infrastructural resources, and, last but by no means least, individual practice. Acknowledging the human factor in digitisation is crucial to harness the potential of digitised collections: they can be used to recreate relationships between objects, information, people, and institutions. However, in order to make digitised collections useful for society in this way, the affordances of digital objects need to be understood as relational and situational. Thus, a reflective position towards ongoing media practices, technology, and institutional logic is essential. Furthermore, the literature indicates that a combined approach is necessary, rather than licences, websites, engagement or networks working in isolation. Turning to the user perspective, current research and practice focuses on the usability, design, and personalisation of online collections for different users. However, a gap was identified when focusing on more participatory forms of engagement that highlight the social purpose of collections and involve users more actively in

research and practice. Thus, the final part of the literature review examined existing literature on two exemplary formats of such digitally enabled participation: cultural heritage crowdsourcing and hackathons. The review indicated that, although crowdsourcing offers different levels of engagement, participants are often asked to undertake concrete tasks following the institutional logic of collections. In contrast, hacking engenders a subversive and creative attitude that rather aims to repurpose digitised collections and thus might be more useful in shedding light on their potential beyond institutional framing.

As this part has touched upon the notion of participation several times and the hackathon format has been defined as a co-creative method, the next chapter further examines literature on participation and co-creation.

Chapter 3 Co-creation: Participation, practices, and digital media

3.1 Introduction

This chapter brings into dialogue literature on participation and co-creation from museum studies, critical heritage studies, media studies, participatory design, and social innovation. Drawing on literature from different fields aims to provide a better understanding of what is meant by participation and co-creation in cultural heritage, as well as outlining the ongoing discussion of these concepts and different practical approaches.

At its core, participation is a political term, closely linked to the concept of democracy and 'the struggles to minimize or to maximize the equal power positions of the actors involved in the decision-making processes that are omnipresent in all societal spheres' (Carpentier 2011, 11). Different aspects of democracy complicate the matter of participation. As media and philosophy scholar Carpentier (2011) has argued, representative and direct democratic models imply opposing ideas of political participation. While on one hand a minimalist approach favours power delegation to a small group of representatives, macro-structures, and institutions, and unidirectional participation focusing on homogeneity, on the other, a maximalist approach aims to maximise the group of participants in political processes, favouring micro-structures across all social dimensions and multi-directional participation focused on heterogeneity (ibid., 17). This inherent ambiguity of participation is replicated in the context of cultural heritage, leading to a wide range of different participatory intensities on the ground and intense academic debate of these differences.

Co-creation is framed by this wider participatory discourse and describes a specific form of collaboration, which pursues participation through a shared process of creativity (Sanders and Stappers 2008, 6). The prefix 'co-' is derived from Latin and means: '"together", "in company", "in common", "joint, -ly", "equal, -ly", "reciprocally", "mutually'" (OED Online 2020, no page). However, within the ideological and normative arena of participation and in combination

with digital media, co-creation has also become a loaded term with many connotations, which the following literature review aims to unpick. Thus, I first outline participatory discourse in museum and cultural heritage studies, before examining collaboration and creativity as practices that together form co-creation and reconnecting co-creation with digital media.

3.2 Participatory museum discourse

Within the context of cultural heritage and museums, the term participation resonates with normative values and the discourse is infused with positive assumptions about participation as value in itself (Piontek 2017, 83–84; Carpentier 2011, 22–23). Emerging with the New Museology movement in the 1990s, participatory enthusiasm can be seen as a direct reaction to critical voices questioning the relevance of museums for the public and their impact (Carpentier 2011, 62). Criticism from inside and outside the museum sector instigated a (self-reflective) institutional critique and led to changing expectations, practices, and roles. Taken together, a widely supported call for more social inclusion, representation, and multivocality in museums was expressed and participation was considered one of the solutions (Sandell 2002c; Brown and Mairesse 2018; Crooke 2015). In this sense, participation in museums and cultural heritage envisages a different relationship between people and institutions: instead of being ‘passive’ visitors, participants are invited to actively influence cultural heritage.

3.2.1 Participants and levels of engagement

Media and museum researcher Pruulmann-Vengerfeldt and Runnel (2019, 153) (referring to (Runnel et al. 2014) offered a vision of the shifting roles in a pyramid, leading from the broad ‘passive’ public base to audiences and visitors in the middle, to users and participants on top. Participants are defined as ‘people who by invitation or from their own agenda contribute to the museum by changing the power-relations in some way’ (ibid.). Beyond the different relationships, it is evident that, counter to the idea of radical maximalist participation, participants form only a small group of museum audiences.

One way of dealing with this variety of audiences to widen participation is to adjust levels of engagement to their different needs and levels of interest in being involved. In her book *Participatory Museum*, Simon (2010) outlined such an approach which at present is one of the most influential frameworks in participatory museum practice. Based on four functional relationships between a museum and participants, the framework differentiates between contribution, collaboration, co-creation, and hosting. Simon draws on user-centred design methodologies and the 2009 published CAISE report 'Public Participation in Scientific Research', in which the authors originally tackled the question of how the public literacy of science could be improved through informal forms of learning and knowledge exchange. Analysing projects of informal science education, they reached the conclusion that projects vary mainly in the degree of control and involvement offered to the public, ranging from contribution to collaboration and co-creation (Bonney et al. July 2009).

Assuming similarity between museums and science labs – in both contexts, experts create knowledge for the wider public – Simon (2010, 187) adapts these levels of engagement and adds the notion of hosting. Her framework offers a continuum of participation tailored to the needs of participants ranging from tightly scaffolded to open processes. In contributory projects (e.g., feedback stations and crowdsourcing), museums invite members of the public to bring in objects or knowledge in very specific forms. Collaborations aim for more active partnerships between museums and other stakeholders so that participants can influence not only their own contributions but also overall project design. Co-creative projects, the third form, emphasise the process of early involvement of all participants and shared participant engagement in many decisions, from ideas to content production and process structure. Hosting describes projects where museums facilitate independently organised projects with resources, such as exhibition spaces.

Arguably, this influential framework coined and popularised the notion of co-creation in the cultural heritage sector following Simon's (ibid.) definition:

> In co-creative projects, community members work together with institutional staff members from the beginning to define the project's

> goals and to generate the program or exhibit based on community interests. […] The staff partners with visitors to co-produce exhibits and programs based on community members' interests and the institution's collections.

She emphasises the early involvement of all participants: ideally, members of the public function as initiators of the whole process, developing goals together with members of the institution. The act of creating something together, meanwhile, indicating that shared activities are inherently creative, represents a second focus.

However, similar to the political discussion around participation, the wide array of different participatory conceptions, levels of intensity, and decision-making power of participants also triggered heated debates about underlying logics and inequalities. Following museum researcher Morse (2021, 41–42), two ways of thinking act as primary influences on the current discussion: Arnstein's (1969) hierarchical concept of the ladder of participation in citizen planning projects and Clifford's (1997) spatial concept of museums as contact zones. These concepts illustrate the ongoing influence of analysing participation using binary opposites such as control/choice of participants or institutional centre/periphery. While these critical frames rightly point to the political roots of participation, they are also prone to value judgement and reducing relationships to power negotiations.

3.2.2 Participatory ideal and institutional critique

Participation in museum contexts raises critical questions about the agency of all involved actors and equality during the process. In general, 'sharing' of certain aspects that determine power, such as 'authority', play an important role and need to be implemented in the process (Legget 2018, 723; Hutchison 2013, 143). This integration, though, is a major challenge for institutions involved. Critical positions stemming from academic accounts as well as practitioners' perspectives have added to the ongoing discussion of whether the maximalist concept of participation can ever be fully realised in an unequal collaboration of the dominant institution with a few participants. Dahlgren and Hermes (2015, 123) address this crucial question and propose that:

> [P]articipation does not per se have to involve perfectly symmetrical power relations, and in most cases it does not. Yet it is important to be able to gauge the depth of any participatory context if one is making a case for democracy.

The importance of evaluating participatory projects is highlighted here alongside the need for transparency with structural inequalities. This level of critique mostly focuses on the museum as a 'power–knowledge nexus' (ibid., 135) and related binaries such as 'experts' and 'amateurs'. As illustrated in the case of digitised collections, museums have a long tradition as knowledge institutions with museum professionals managing the standardised practices involved in creating categories and interpretations. This leads to institutional positions of authority, expertise, and power, which, in participatory projects, need to be bridged and negotiated by the people involved. The ways in which people are addressed and targeted can already define specific roles or fields of expertise, considering for instance the different implications of the term 'crowds' in crowdsourcing or 'hackers' in hackathons. Thus, many authors suggest that participation needs to start with a change of institutional structures in order to create a less hierarchical environment.

This re-conception of the museum is not entirely new as museum researchers and participation advocates Meijer-van Mensch and van Mensch (2013, 10) state:

> There is a clear line leading from the concept of 'integrated museum' as the most typical expression of the 'Muséologie nouvelle' of the 1970s, to the concept of participatory museum of the early 21st century. The integration of museums and society involves active participation in all professional domains of the museum. This challenges the autonomy and authority of the museum professional, indeed even the very definition of professionalism.

Whether participation is really able to rock the foundations of museums as the van Menschs predict here or whether long-standing definitions and roles need to be changed before genuine sharing of decision-making and power can take place are assessed differently. One of the most prominent critics of museum participation, Lynch (2017), does not see museums willing to change on their own. Instead she criticises tokenism, empowerment-lite, and other forms of collaboration that 'in fact serve to disempower and control people's

contributions (particularly those that challenge a museum's carefully managed "storyline")' as potentially 'widespread' in museum engagement practices (ibid., 226). Lynch (ibid.) criticises the hypocrisy of institutions only claiming to offer participation while in reality 'rob[bing] people of their agency'.

Despite valid criticisms of inequalities and counterproductive institutional structures in museum participation, the normative drift of the discussion runs the risk of ignoring the new practices and roles that museum professionals negotiate and enact. In other words, the theoretical discourse has a tendency towards assumptions of 'good' participation, overlooking nitty-gritty on the ground practices involved in building relationships. Indeed, the participatory ideal and the institutional critique both address participation at organisational level. While this perspective is important, it tends to overlook individual relationships of practitioners and participants and the social and political impact that might lie beyond the institution.

3.2.3 Changing participatory logics

Attesting a deadlock in the academic discussion of participation based on good/bad, centre/periphery, control/choice, more/less binaries, some scholars have provided inspiring ways to reframe participation (Graham 2016; Morse 2021; Piontek 2017; Carpentier 2016; Onciul 2015). Their work has been influential for thinking through participation and co-creation in this research process.

For a nuanced analysis of the ideological–democratic struggles around participation across medial, political, and cultural contexts, Carpentier's (2011) book *Media and Participation* is helpful. Referring to the different 'articulatory contexts for notion(s) of participation' (ibid., 126) in each and every field and varying emphasis on minimalist and maximalist forms of democracy, Carpentier notes a 'significatory chaos' (ibid.). In order to deal with the variety of meanings, he identifies two strategies: an attempt to 'rescue' participation in that its advocates define what is included and what is not. Given the variable and relational character of definitions, this approach structures the discussion along the binaries previously described to differentiate authentic from pseudo

participation. In contrast, Carpentier proposes accepting the inherent political–ideological struggle of participation as an alternative strategy. From this perspective, there is no clear line between in and out – participation is rather conceptualised as a continuum ranging from minimalist to maximalist understandings of democracy. However, Carpentier positions himself as an advocate for more maximalist participation and thus also integrates aspects of the first strategy into his thinking: he places power and power sharing in society as central to participation and introduces a clear differentiation between participation and its 'conditions of possibility' in the form of access and interaction. This leads to the access interaction participation model (AIP model), which will be reviewed in section 3.4 on co-creation and digital media.

Tying in with Carpentier's idea of maximalist direct democratic participation, the clear statements of Graham (2016) in her action-oriented research in cultural heritage and museums provides another important way of thinking about participation. Claiming that 'museums are not representative' she points to the implications of participation through different methods of scaling: 'Participation is about people acting for themselves directly. […] Direct democracy is enabled by person-scale action and decision-making. As a small politics, participation requires different ideas of scaling (ibid., 254). Translating this concept to museums, Graham identifies two different scaling approaches – vertical and horizontal – adding a useful perspective to the process of participation by 'break[ing] down ideas of vertical scale' and 'think[ing] about everything in museums in a relational way' (ibid., 254–255). Graham therefore recommends starting participation with people who are already there, introducing four steps for museum professionals: act, connect, reflect, situate.

The relational and practice-oriented approach to participation with a stronger emphasis on community engagement can be also found in Onciul's (2015) concept of engagement zones and Morse's (2021) logic of care. Both focus on the relational, practice-oriented, caring, and creative elements that make community engagement work on the ground and consider emotional and social factors of participation without ignoring the political and institutional power dynamics within.

Onciul (2015) advances Clifford's (1997) widely used metaphor of the contact zone to engagement zones, which she (ibid., 83) defines as 'a physical, temporal and conceptual space created through engagement'. It is an unpredictable terrain, public and private at the same time, where boundaries between insiders and outsider blur, power is negotiated, and tangible 'products' such as exhibits, programming, new curatorial practice and ethos, knowledge creation, and new relationships are created. This processual perspective is less restrictive in labelling levels of engagement and more organically follows the relationships and inner workings that unfold in the engagement zone.

Morse (2021) suggests that many participatory projects in museums, despite their level of engagement, are underpinned by a contributory logic that follows institutional interests or aims to change the museum to a more social and inclusive space. The key aspect of this logic is that the relationship between participants and institutions is focused on 'contribution from one into the other' (ibid., 50) and she further states:

> The logic of contribution defines the evolution of the public museum as a participatory place that individuals and groups input into through donations, bequests, through telling their stories, through to visitor-generated content and co-produced collaboration.

Instead, she argues that a stronger focus on effective professional practices in community engagement reveals a logic of care that 'takes on distinct relational, material and affective dimensions involving museum objects and creative activities' (ibid., 186). She further states that:

> [C]are is fundamental to museum participatory practice: without care, attempts to broaden access to a wider range of people in museums are likely to fail. If care is not attended to, if it is not talked about and if it is not recognised as work, as a purposeful effort and a mindful stance, then the felt qualities of community engagement risk being eroded – we risk taking the 'heart' out of engagement with museums (ibid.).

Together, these perspectives offer analytical and practical lenses to unravel the participatory knot by reflecting the slippery concept of participation itself, thinking about underlying logic, and proposing strategies to work with the conundrum. This understanding of participation suggests that a thorough

examination of participatory practices is needed to define co-creation. The next section thus focuses on practices of collaboration and creativity.

3.3 Practices of collaboration and creativity

This section reviews literature from different fields that approach practices of collaboration and creativity, shedding light on the co-creative process.

Design researchers and practitioners Sanders and Stappers (2008, 6) offer a basic definition of co-creation as 'any act of collective creativity, i.e. creativity that is shared by two or more people.' As simple as this might sound, designers, researchers, and museum practitioners who have tried to apply co-creation in the context of museums have identified various challenges. In practice, difficulties range from 'including multiple agents in creative processes in museums' (Holdgaard and Klastrup 2014, 190), to balancing structure and openness in the process (Craig et al. 2016, 267–268), and sharing skills, tools, and ownership over the co-created output (McSweeney and Kavanagh 2016, 19).

For these questions, perspectives on co-creation from design theory and practice offer helpful insights as they build on longstanding experience with collaborative design processes in participatory design dating back to the 1970s.

3.3.1 Levels of creativity

Addressing the question of how to include multiple agents in design processes and how to support participants, Sanders and Stappers (2008, 12) note that users can become co-designers if they feel enabled through their 'level of expertise, passion, and creativity'. Assuming that everyone is creative but enacts this on different levels, they advocate for appropriate guidance in the process as follows:

> As researchers we will need to learn how to: lead people who are on the 'doing' level of creativity, guide those who are at the 'adapting' level, provide scaffolds that support and serve peoples' need for creative expression at the 'making' level, and offer a clean slate for those at the 'creating' level (ibid., 14).

This is a helpful addition to museum discourse, structuring participants' needs in terms of their creativity level – doing, adapting, making, and creating. This sensitises practitioners for specific levels of support needed for the creative act while theoretically offering the whole range of shared authority in other aspects of the participation. In other words, although a person might need more support in expressing creativity, they can still have a major say in the overall collaboration.

3.3.2 Engaging and collaborating

However, although design perspectives naturally offer more insight into the creative side of co-creation, its participatory aspects are also widely discussed. Similar to the museum discussion around participation, design researchers also struggle to keep alive the political aspect of participatory design. Design researchers Smith (also part of the POEM network) and Iversen (2018), who argue for a stronger focus on engaging people instead of further dissections of participation, have introduced a more nuanced approach to this. With three dimensions of engagement, they aim to add the missing complexity to the process and describe gradual changes through 'Scoping: from user involvement to protagonist communities', 'Developing: from technological artefacts to digital practices and conceptions of technology' and 'Scaling: from tangible outcomes to sustainable social change' (ibid., 3). In all three dimensions, interesting shifts in conceptualising the collaboration become visible: the beginning is defined as the 'scoping' stage, moving from involving single users with weak social ties to creating a community with strong social ties, which becomes the central protagonist. In the 'developing' stage, the focus shifts from the product to its use and conception. Finally, the 'scaling' stage relates to the completed results and the impact of these outputs.

Crucially, involving, engaging, and collaborating with people comprises one half of co-creation. However, in many larger collaborative museum projects, catering to the needs of different groups involved is often one of the main challenges. Thus, Holdgaard and Klastrup (2014, 199) 'recommend that museums, as well as museum researchers, consider the value of co-creation carefully.' As designers involved in a collaboration with a museum and an artist group, they have

experienced difficulties related to unclear decisions and power sharing. On a broader level, the marginalising mechanisms of 'being included' in institutions have also been widely criticised in debates around diversity (Ahmed 2012). Various research has shown that the targeting of particular groups has fallen short time and time again in improving social inclusion (Nightingale and Mahal 2012). This is contextual, but it underpins the need to rethink institutional perspectives on collaborative practices in line with O'Neill and Silverman's (2012, xxi) claim that:

> All museum visitors, all citizens, and all the people who created the museum objects must now be seen as fully human. This requires seeing the world within new and unfamiliar frames, and has to be carried on, not about, but with people who have been represented as somehow 'other'.

However, seeing the world within new frames in collaboration with people from outside institutions also implies the will for an epistemological shift.

3.3.3 Processes of knowledge production

Co-creation requires ways of knowing that differ from museum professionals' expertise on collections, such as embodied knowledge and practical know-how, which become visible through care and design practices. Jannelli and Gesser (2019), two museum outreach practitioners at a German city museum, have identified the translation of these different forms of knowing as central to co-creation: making various forms of knowledge tangible and thus discussible would require specific translation methods. Similarly, Graham and Vergunst (2019, 3) highlight that understanding collaboration as a form of co-producing research enables them 'to more appreciatively noticing, enacting and creating different kinds of knowledge through doing heritage.' Building on these perspectives, co-creation can be understood as a concrete step of criticising institutional knowledge authority – a process of actively engaging with other forms of knowledge and manifesting these through creative practice.

Co-creation can therefore be a form of knowledge production with potential to support social change and social innovation – a strand examined in social innovation research. Although the question of impact should be approached

carefully as the discussion around social inclusion has indicated, co-creation holds a central place in social innovation research, albeit with slightly different meaning and wording. Coming from the field of public administration and society studies in the Netherlands and the US, Voorberg et al. (2015) conducted a systematic review of co-creation and co-production. Their aim was to define 'citizen participation' in greater depth, deemed essential for social innovation in the public sector. Building on 122 definitions, published between 1987 and 2013, they (ibid., 15) identified three forms of co-creation:

> (a) citizens as co-implementer: involvement in services which refer to the transfer of implementing activities in favour of citizens that in the past have been carried out by government, (b) citizens as co-designer: involvement regarding the content and process of service delivery and (c) citizens as initiator: citizens that take up the initiative to formulate specific services. Furthermore, based on this distinction, we would like to reserve the term 'co-creation' for involvement of citizens in the (co)-initiator or co-design level. Co-production is being considered as the involvement of citizens in the (co-)implementation of public services.

While, in museum participation, co-creation and co-production are often used interchangeably (cf. (Craig et al. 2016), Voorberg et al. connect the terms in relation to the activity or phase in which citizens are involved. Initiating or designing – both forms of conceptualisation – are seen as co-creative activities, in contrast to implementation, which is deemed a co-productive activity. Reserving the term co-creation for stages that happen early in the development process ties in with other definitions of co-creation, comprising more than the implementation of predefined concepts. Another aspect of this differentiation is apparent in the origins of the term co-creation, which is rooted in the private sector with a 'stronger emphasis on the importance of value creation' (Stott 2018, 5). In contrast, the public sector, incorporating museums and cultural heritage, bases co-creation less on models of business value creation but rather upon volunteering principles and participatory goals. This might lead to different co-creative expectations in collaborations, bringing together stakeholders from public cultural sectors and private sectors.

However, although the private sector and social innovation are more output oriented, it is surprising that Voorberg et al. (2015, 16) find almost no evidence

of the specific outcomes mentioned, concluding that co-creation and co-production are treated as solutions in themselves without further consideration of actual created knowledge or products. This is a crucial gap in the literature on co-creation, requiring further research. The reviewed literature on various forms of knowing and the production of tangible knowledge indicate one method of filling this void. In addition, this section has foregrounded collaboration and creation practices as central aspects of co-creation that require more attention in further research. Although the field of research relating to the notion of co-creation is crowded, the participatory process has received less attention and the participatory literature reviewed offers useful tools for this. In particular, I suggest a combination of co-creative approaches with two advanced versions of the contact zone approach, Onciul's (2015) engagement zones and Hogsden and Poulters (2012) digital contact networks, to open new perspectives on reuse of collections using various forms of knowing. Finally, the role of digital media in co-creation should be scrutinised to complement the perspectives presented from cultural heritage, design, and social innovation.

3.4 Co-creation and digital media

This part aims to clarify the relationship between digital media and co-creation and therefore mostly draws on discussions of participation in media studies. Media theory incorporates many discourses on the relationships between transmitter and receiver, producer and consumer, or, in a wider sense, participatory barriers and enablers of media. The development of mass media in the twentieth century provides a backdrop against which the participatory appeal of new digital media shines brightly. In particular, contrasting the broadcasting communication model and negative experiences of media propaganda and manipulation with the possibility for users to generate their own content in the internet age raised high hopes. Although, more recently, many studies show a relation between social media use and hate speech, echo chambers, and conspiracy theories on one hand (Matamoros-Fernández et al. 2021; Theocharis et al. 2021; Cohen-Almagor 2015), and the commercialisation of platforms and data on the other (Kenney and Zysman 2016; Fuchs 2021) belie the internet's democratising image, an underlying tendency remains to characterise the medium as participatory (Sützl 2018, 1)

3.4.1 Participatory digital culture

Jenkins' (2006b; 2007) influential concept of 'participatory culture' is closely intertwined with the enduring belief in the participatory impact of digital media. This concept is based on the assumption that new media technologies have dissolved the traditional dichotomy of consumers and producers of media, offering the role of participants to both (Jenkins 2006a, 3). Yet, Jenkins (2007, no page) emphasises that different communication technologies, such as the internet, need to be shaped by social and cultural use to develop a participatory dimension:

> Participatory culture is emerging as the culture absorbs and responds to the explosion of new media technologies which make it possible for average consumers to archive, annotate, appropriate, and recirculate media content in powerful new ways. A focus on expanding access to new technologies carries us only so far if we do not also foster the skills and cultural knowledge necessary to deploy those tools towards our own ends.

Jenkins does not equate technology with participation – rather, the interactive characteristics of new media support the growth of a participatory culture around it. Its participatory characteristics are further described by low barriers to engaging in artistic and civic context, an emphasis on creating and sharing content, supportive knowledge exchange between experienced members and beginners, and a feeling of social connection and appreciation amongst group members (ibid.). These groups usually comprise fans, who Jenkins (2006a, 23) depicts as so-called early adopters of new technologies, and 'disproportionately white, male, middle class, and college educated'. Yet, they have the necessary skills and access to 'fully participate in these new knowledge cultures' (ibid.). Based on this quite specific socio-demographic structure of fan groups around mainstream popular culture, which resemble the previously reviewed stereotype of the hacker, Jenkins develops the concept of online communities who shape and create their own cultural interpretations and, in turn, become active consumers and producers in the media sphere.

This idea has subsequently been applied to many different contexts, leading to an array of closely related terms and buzzwords, such as Web 2.0 or read/write

culture. The latter can be seen as directly connected to participatory culture, based on the concept of active users 'add[ing] to the culture they read by creating and re-creating the culture around them' (Lessig 2008, 28). Lessig (2008) coined this term in contrast to the 'read only' culture of the twentieth century in the Western world, an exceptional time in human history 'when popular culture had become professionalized, and when the people were taught to defer to the professional' (ibid., 28–29). Thus, internet technologies would not grow or invent anything new, but rather help to translate former textual recreation into multi-media ecosystems, simplifying practices and making them affordable and accessible for everyone. As Lessig (ibid., 82) puts it:

> All that's new is the technique and the ease with which the product of that technique can be shared. That ease invites a wider community to participate; it makes participation more compelling. But the creative act that is being engaged in is not significantly different. […] It is creativity supported by a new technology.

Although technologies and creative processes have become more intertwined since Lessig's publication – e.g., training artificial intelligence in creativity (Amabile 2019; Mazzone and Elgammal 2019; Jennings 2010), three aspects resonate with the wider participatory discussion to date: the division between 'amateurs' and 'professionals' producing culture, the role of technology in supporting continuous creative practice in popular culture, and the contrasting rhetoric of two cultural modes: read only versus read/write.

The participatory aspect of digital media and the internet infrastructure, as discussed by Jenkins and Lessig, is located in interactive media, an extension of tools for co-creation, and wider accessibility. In both approaches, participatory culture and remix culture, technology is conceptualised as socially constructed, leading to a clear distinction between characteristics of technology – e.g., interactive – and characteristics of culture – e.g., participatory. The active and skilled user becomes a nodal point in these ideas of online participation.

Information studies researcher and POEM supervisor Huvila (2015) suggests that concepts like Jenkins' 'participatory culture' heavily influenced interpretations of participation as a cultural category, and he links this to an increase in related

concepts. ‘Produsage’ is one of these notions, which conveys the idea of an active cultural user (Huvila 2015, 359). This word denoting production and usage was coined by Bruns (2007), building on former notions, such as prosumers, but emphasising the ‘informational nature’ of what is produced:

> In such models, the production of ideas takes place in a collaborative, participatory environment which breaks down the boundaries between producers and consumers and instead enables all participants to be users as well as producers of information and knowledge – frequently in an inherently and inextricably hybrid role where usage is necessarily also productive: participants are produsers (ibid., 101).

This idea has dominated discourse in the cultural heritage sector, giving rise to the idea of a new online active audience. One frequently made argument is based on the idea of a ‘cognitive surplus’, a term which Shirky (2010) developed to describe the cumulative free time of the (educated) global population, understanding this free time as a resource or, ‘general social asset that can be harnessed for large communally created projects, rather than as a set of individual minutes to be wiled [sic] away one person at a time’ (ibid., no page). Building on the idea that everyone has a minute or two, it is argued that, while this does not mean much on its own, taken together and connected by the internet infrastructure, this forms a valuable resource, meaning that many crowdsourcing projects were launched in subsequent years. More and more memory institutions followed the conception and promises of this online connected and engaged audience. The wide array of user motivations drawn together in research into crowdsourcing in cultural heritage and citizen science (see section 2.4.1) suggests that the generalisation of an active worldwide crowd just waiting to be tapped into is misleading. The concept of creative users, such as ‘produsers’, indicates a fixed user group, while it is actually quite difficult and specific in each and every project to reach, invite, and motivate users, as well as to sustain this engagement. In addition, the concerns raised previously about marginalising particular groups in participatory projects also apply to online projects.

Taken together, although the oversimplification of popular culture as read only culture of the twentieth century can be questioned (Hügel 2007), passive–active rhetoric represents a common strategy highlighting new possibilities of the

internet, blurring the lines between access, interaction, and participation. A more critical examination of these terms is thus needed to obtain a better grasp of digital media and participation.

3.4.2 Access, interaction, and participation

Carpentier's work on definitions and tools to analyse mediated participation is a useful tool here as he traces the concepts of access, interaction, and participation back across different disciplines. As analytical points of entrance, Carpentier (2016, 84) offers two different academic perspectives: a sociologically derived understanding of participation and a political approach 'where participation is seen as power-sharing'. He relates the sociological perspective to the terms 'access' and 'interaction' and argues 'that access refers to the establishment of presence, and interaction to the development of socio-communicative relations' (ibid., 73).

The relevance of this academic differentiation between access – the basic possibility to achieve presence – and interaction becomes even more tangible when breaking down interaction into its social and communicative meanings:

> While the social dimension of the definition of interaction can be found in concepts like contact, encounter and reciprocity (but also (social) regulation), the communicative dimension is referred to by concepts such as response, meaning and communication itself (ibid., 74).

All three levels together allow participatory processes, such as co-creation, and, as seen in the discussion around opening access to collections, access and interaction, are the pre-conditions for participation.

Building on Carpentier in their case study of participatory technologies for the Estonian National Museum, Pruulmann-Vengerfeldt and Runnel (2014, 15) carefully distinguished between technology and participation, concluding that:

> More generally, the change we are talking about is a turn towards a communicative museum where the new technologies introduced are first and foremost communication technologies, enabling dialogue, interaction and power-sharing.

Again, technology is not defined as deterministic but rather as a layer for enabling other processes. In dialogue with Jenkins, Carpentier (2013, 271–272) further reflects that:

> I would argue that these circumstances for a participatory democratic culture are driven by the equality of power relations in all decision-making processes in society. This implies that a participatory democratic culture is strengthened when we manage to construct more equal power relations in a variety of societal fields, ranging from the family to the media.

In this sense, Carpentier advocates building networks in which hierarchies and inequalities are challenged across societal fields, including museums and the media. Focusing more on the perspectives of users in such a participatory culture, danah boyd (also in conversation with Jenkins and Mizuko Ito) has stated that not only access is needed, but also,

> agency, the ability to understand a social situation well enough to engage constructively, the skills to contribute effectively, connections with others to help build an audience, emotional resilience to handle negative feedback and enough social status to speak without consequences. The barrier to participation is not the technology but the kinds of privilege that are often ignored in meritocratic discourse (Jenkins et al. 2016, 21–22).

This makes evident that the internet is not a de-hierarchised participatory project, but rather that ongoing social and power relations also impact the digital participatory culture. The privileges boyd notes are important to consider for museum professionals in designing for access – a point stressed in previous sections on the digitisation of collections. Furthermore, this echoes the influential work of Castells (2000; 2004) on the network society and the way in which the digital divide has increasingly been conceptualised.

3.4.3 The digital condition

After clarifying the terms of access, interaction, and participation, a final position is introduced to explore how ideas of co-creation can be combined with digital media without essentialising technology. In his publication *Kultur der Digitalität* (2017), translated in English as *Digital Condition* (2018), media and culture scholar Stalder provides an inspiring approach, reconnecting cultural,

social, and technological developments and practices. He traces aspects of the transformation that has led to the digital culture of today back to the nineteenth century to develop a multi-factorial perspective. Drawing on the rise of the knowledge economy, critiques of heteronormativity, and post-colonial thinking as catalysing processes, Stalder (2018, 4) states that:

> More and more people have been participating in cultural processes; larger and larger dimensions of existence have become battlegrounds for cultural disputes; and social activity has been intertwined with increasingly complex technologies, without which it would hardly be possible to conceive of these processes, let alone achieve them.

He claims that, around the 2000s, different developments started to reinforce each other and merge into a new form of cultural condition, challenging the authority of established cultural institutions. Stalder's ideas clearly build on the previously criticised concept of participatory and remix culture, but he advances this concept with a holistic approach that combines multiple factors – cultural, social, technological – and relates them to a cultural turn, allowing for a more nuanced examination of digital and co-creation. Useful for this endeavour are Stalder's definitions of three characteristics of this digital condition: 'referentiality', 'communality', and 'algorithmicity'. In his words:

> Referentiality - that is, the use of existing cultural materials for one's own production - is an essential feature of many methods for inscribing oneself into cultural processes. […] The second feature that characterizes these processes is communality. It is only through a collectively shared frame of reference that meanings can be stabilized, possible courses of action can be determined, and resources can be made available. […] The third feature of the new cultural landscape is its algorithmicity. It is characterized, in other words, by automated decision-making processes that reduce and give shape to the glut of information, by extracting information from the volume of data produced by machines. This extracted information is then accessible to human perception and can serve as the basis of singular and communal activity (ibid., 5–6).

These forms are essential for the cultural concept Stalder maps out and are mutually dependent on each other. 'Referentiality' builds on the idea of remix in a read/write culture (Lessig 2008) but adds the context of uncertainty as an essential motivation for engaging in meaning-making processes. In the next step, he points out the need for shared social reference systems in which meaning is

negotiated and resources are shared. These practices lead to new social formations, which he conceptualises as ‘communality’ – a term that comes closest to the concept of ‘communities of practice’ (Wenger-Trayner and Wenger-Trayner 2006). However, both are dominated by social and cultural perspectives and depend on a third factor, which he calls ‘algorithmicity’. Included in this term are processes of automation – here, we can easily draw a connection to the five principles of new media (Manovich 2001), which structure information and guide human perceptions.

Taken together, Stalder builds on several media theory strands and merges them into a comprehensive framework inspired by postdigital and post-structural thinking. For analysis of co-creation and the digital, this offers a useful lens, broadening the perspective to consider not only digital media but rather the ‘relational paradigm’ (Stalder 2018, 9). In addition, Stalder also provides a balanced reflection of two opposing developments that frame the digital condition: the idea of the commons and the commercialisation of the internet. The idea of the commons particularly resonates with this research and its inquiry into co-creation with openly licensed digitised collections.

3.5 Conclusion

The literature review drew a line from digital collections to co-creation and examined the underlying social, technical, institutional, public, and political dynamics of both. The first part revealed the importance of understanding the digitisation of collections as a cultural and social process. Thus, the creative and social potential of digital objects depends on contexts that frame their reuse: both users and institutions impact these contexts with their practices. Recent research into access and use of digitised collections indicates that a combination of various aspects such as open licences, online collections, and engagement frameworks are more likely to increase access and thus reuse. Hackathons and hacking were identified as one of the few examples to bring together these variables and support creative repurposing of collections. The second part then critically examined the notion of participation, concluding that the term itself presents a fluid and discursive political arena for discussion. For thinking about

engagement with digitised collections, the literature review thus foregrounded perspectives that focus on relations, situations, and practices.

As digital media alone does not automatically work towards democratising heritage, settings in which different people from within and outside institutions can negotiate their referentiality and communality could represent the missing link between participatory aspirations and reuse practices in the digital condition. Three stakeholder groups and their practices were outlined as museum practitioners, active users, and the Open GLAM community. Co-creation is understood as a participatory design concept consisting of collaborative and creative practices and has potential to help to generate new insights into the social value of digitised collections and the challenges of reusing this cultural resource from the perspective of these different stakeholders. The findings not only stress a change in defining co-creation beyond participatory dichotomies but, moreover, suggest a research approach that is process-oriented and builds on explorative, creative, and practice research methods. The methodology chapter maps this approach onto this project and introduces methodological details.

Chapter 4 Methodology

4.1 Introduction

The aim of this study is to understand creative reuse and engagement with digitised cultural heritage collections in relation to the social, emotional, and relational aspects that shape these practices. Existing studies on use of open collections mostly rely on methods such as online surveys or build on statistical data such as website analytics. These methods offer a good overview of download numbers, the time users spend online, and user feedback on website functionalities – elements supporting access to and interaction with online collections. However, the literature review indicates that a difference exists between access, interaction, and participation and that engagement with collections is not only a matter of digital technology but is also socially constructed. Furthermore, digitising collections relates to previous remediation practices of GLAM practitioners and GLAM users to make sense of cultural heritage, meaning that digitised collections entail issues that predate digital media. Building on participatory theory in museum, media, and design studies, the concept of co-creation has been re-examined as a practice-oriented framework for collaboration and creative engagement. The literature review suggests that three elements are crucial for this framework: people with different motivations, roles, and interests; knowledge about methods, topics, and practice; and a space in which tools, knowledge, and people come together to collaborate.

Taken together these aspects point to a research methodology that supports in-depth analyses of how different people relate to each other, to museums, and to cultural heritage collections in the digital condition. Thus, mapping these findings onto research questions, the study focuses on the frameworks and relationships that impact upon and emerge through engagement with digitised collections guided by the central question of: How do co-creative events frame engagement with museum objects and digitised collections?

The methods required to address this question then need to explore creative processes and ways to capture the collaboration and creativity of participants. A

lens is needed that focuses on what people do during these processes, as well as providing the means to reflect *with them* about their practices. Finally, different perspectives have to be considered so that power relations, diverging motivations, and roles in the participatory process are not sidelined.

Addressing this set of requirements, I drew on a methodological framework that combines the strengths of established qualitative and ethnographic approaches with more experimental practice research interventions. Inspired by the work of design anthropologists and POEM supervisors Smith and Otto (2016), I adopted the idea of research 'as a distinct way of knowing, one which incorporates both analysis and intervention in the process of constructing knowledge' (ibid., 19). As they (ibid.) asserted:

> This approach involves defining and inventing the ethnographic field, and even to an extent the ethnographic subject(s), as well as acting situationally to produce various cultural agendas through the research and design process.

Building on long traditions of fieldwork in cultural anthropology and ethnography, participant observation in various co-creative events, hackathons, and workshops was an essential research practice to understand the situational and contextual nature of user behaviour (Dervin 1998). As a practice researcher, I also co-organised some of these events to design specific spaces for engagement with collections. After each event, I used focus groups or interviews to reflect on the event and co-creative process with a different group of stakeholders interested in reuse of collections: museum practitioners, the Open GLAM community, and active users with an interest in culture. To foreground their social practices, the analysis was informed by practice theory, which entails specific ontological and epistemological positions such as understanding practice as the smallest unit of the social and challenging the dualisms of object/subject and mind/body with concepts of embodied knowledge, object affordances, and practical sense (Schatzki et al. 2001; Reckwitz 2002; Bourdieu 1990).

The research was also influenced by my role as research fellow in the European Training Network, POEM. As outlined in the literature review, this context

framed my perspective on a theoretical level – e.g., by questioning the participatory nature of digital media and addressing social inclusion in cultural heritage practices. However, it also impacted this research on a practical and methodological level: the overall funding application outlined participatory engagement with digital cultural heritage collections as research area. It was conceived as part of a working group focused on memory institutions and 'connectivity built by professionals' and defined two European museums as partners for 'action research' (Document of Action, POEM).

Together, this led to a series of ethnographic research cases infused with collaborative practice research studies conducted between the beginning of 2019 and March 2020 in Glasgow, Dortmund, and Berlin. This fieldwork across countries generated research data in German and English. The following sections first introduce the methodological framework, before explaining the research questions and design of the study, and finally giving insights into the ways in which data was generated and analysed.

4.2 Methodological framework

The project draws on two different qualitative research traditions – ethnography and action research. Both conceptualise the researcher as engaging with the field of research. However, while the participant observer represents the classical role of ethnographers, action researchers are more actively involved in changing and influencing the field. I further discuss these different research relationships, but to summarise my position at the outset, I focused more on understanding the phenomenon in order to recommend changes that might be required in future practice.

The design anthropology approach offers an array of inspiring research examples that can be developed at the intersection of observing and intervening, serving as 'ethnographies of the possible' (Kjaersgaard et al. 2016, 4). As outlined in the literature review, reuse of digitised collections is not yet a mainstream phenomenon and, in order to avoid theoretical hypothesising about the potential, I wanted to study real-life practices with people and collections. Thus, I combined the roles of participant observer and practice researcher and

crafted three research cases in collaboration with museums and organisations applying research methods on, for, and in practices (Mills et al. 2010, 582).

4.2.1 Museum ethnography

Ethnography is an established research approach in museum studies and Macdonald et al. (2018) have recently summarised its characteristics as a set of commitments in time and presence building on ideas of 'deep hanging out' (Geertz 1998) and going 'behind the scenes' (Macdonald 2002). Through the 'presence of the ethnographer in the world she studies and its long-term systematic observation', deep insights into other participants' motivations and meaning-making practices can be gained (Buscatto 2018, 329). 'Behind the scenes' also evokes the image of access to backstage working practices usually not visible to outsiders, which can lead to concerns that have not been anticipated (Macdonald et al. 2018, 143). All these aspects have made ethnography a popular way of studying the inner workings of museums as organisations (Morgan 2018; Morse et al. 2018), the things visitors and practitioners do in museum spaces (Munro 2014; Debary and Roustan 2017; Kendzia 2018), and the negotiations of boundaries, power, and meanings (Dicks 2000; Bhatti 2012). However, Macdonald et al. (2018) also note that few ethnographic studies have focused on practices that cut across institutional borders such as cross-institutional work and practices that connect museum work and the daily lives of people and communities. This is an area to which this project aims to contribute.

Hammersley and Atkinson (2010) have noted that ethnography has undergone complex development since its origins in the nineteenth century. They (ibid., 3) therefore suggest that focusing on the research practices of ethnographers might enable better understanding of what ethnography is:

> In terms of data collection, ethnography usually involves the researcher participating, overtly or covertly, in people's daily lives for an extended period of time, watching what happens, listening to what is said, and/or asking questions through informal and formal interviews, collecting documents and artefacts – in fact, gathering whatever data are available to throw light on the issues that are the emerging focus of inquiry.

This understanding builds upon five aspects that set the scene for undertaking ethnographic research: (1) 'research takes place "in the field'", (2) 'participant observation and/or relatively informal conversations' are the main methods used, (3) data collection is 'relatively "unstructured'", (4) research is usually conducted as 'in-depth study', (5) mostly producing 'verbal descriptions, explanations, and theories' (ibid.).

In applying ethnographic principles to this research, the first question involved how to define, or, in Smith and Otto's (2016) words, 'invent' the field. Building on the literature review, I outlined the field as co-creative face-to-face events such as hackathons and workshops, in which digitised cultural heritage collections were used by different stakeholders, including museum practitioners, Open GLAM community members, and users with an interest in culture. The field was defined by several parameters (see figure 4 below) – the organisational and participatory frameworks of hosting institutions, digitised collections and museum objects, the different stakeholder groups of participants, and practices of relating to objects and each other.

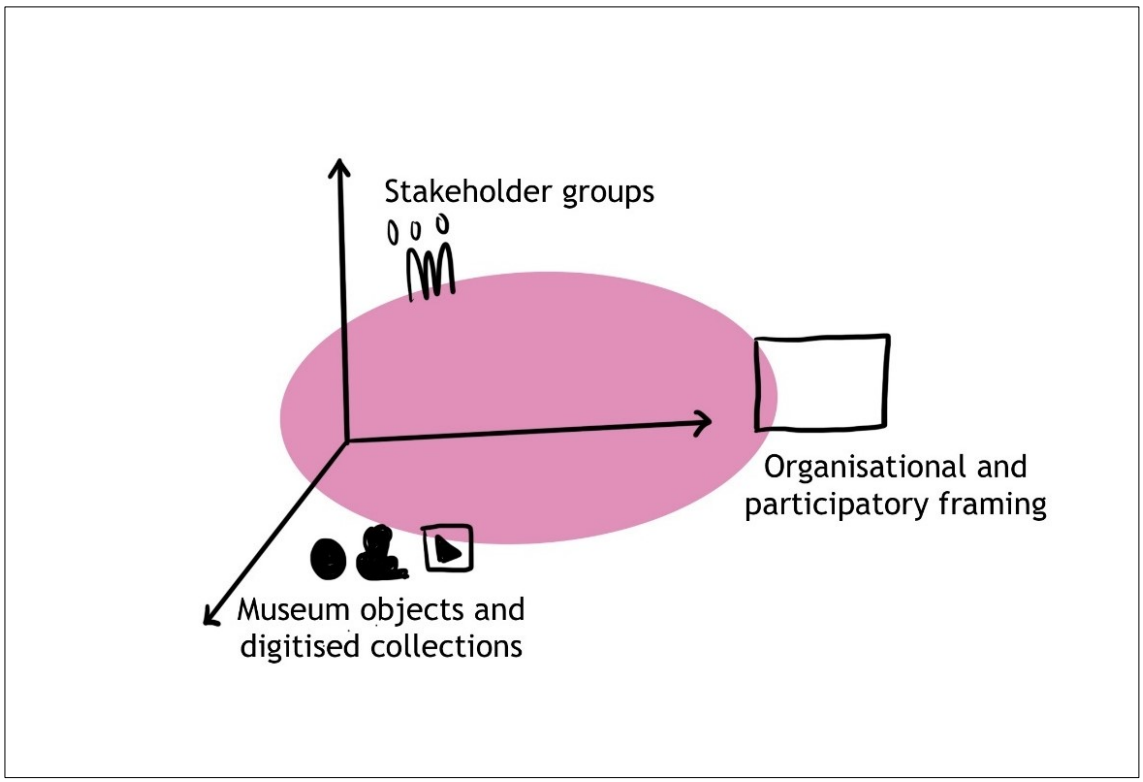


Figure 4: Defining the research field. Mucha, CC BY 4.0.

Not much ethnographic research has taken place into hackathons, let alone cultural hackathons, and one key aspect of this research is therefore to contribute to a better understanding of the co-creative format in the cultural sector. Studying issue-oriented hackathons, speculative design researchers Lodato and DiSalvo (2016, 542) understand them as compelling sites for ethnography because they represent, 'a new mode of design practice, which brings together a diversity of participants (experts and novices, professionals, and amateurs) to conceptualize and develop new products and services.' The strength of ethnography in this field is the ability to observe and participate in these practices, experience directly implicit demarcations between different roles and experts and, through this experience, generate all kinds of data to shed light on the research topic. In this way, I was able to immerse myself in an existing cultural hackathon event in Germany – Coding da Vinci Westphalia-Ruhr (CdV West) – and studied these demarcations in depth. By their nature, hackathons are time limited, and the periods of time that can be spent with hackathon participants range from a few hours to a full weekend to several events. However, contact between event organisers and participants expanded over a few months, encompassing several meetings, the events themselves, and the follow-up interviews. Much data could be gained through participant observation, fieldnotes, surveys, and interviews, providing evidence for analysis of the complex relationships between GLAMs sharing data, hackathon participants using this data, and their creative practices with this data.

This touches upon the second characteristic of ethnographic research: its many different modes of observation and participation, summarised under the ambiguous term of participant observation. Hammersley and Atkinson (2010, 18) reflect on the fundamental role of the participant observation method:

> All social research is founded on the human capacity for participant observation. We act in the social world and yet are able to reflect upon ourselves and our actions as objects in that world.

In this quote, Hammersley and Atkinson describe participant observation simply as the act of being in a social situation and reflecting upon this later. Breaking this down to this basic description is helpful in highlighting that all social researchers take part in the world they study – they cannot detach themselves

from what they see and how they see it. Thus, the concept of reflexivity is essential for this form of research, which relies heavily on observation and notes taken by the researcher (Wästerfors 2018).

However, the relationship between researcher and participant is an ongoing subject of debate among ethnographers because it entails the paradox between participating in a group and observing its practices. The ways in which ethnographers balance this contradiction vary as they engage differently in the field. The classical typology introduced by Gold (1958) distinguishes between four types: complete participant, participant-as-observer, observer-as-participant, and complete observer. Arguably, these roles give a helpful orientation, but, as O'Reilly (2012) points out, both extremes of fully participating or observing would not meet effectively the aims of ethnographic research. She (ibid., 159–160) develops the aspect of the oxymoron further, saying:

> I believe the tension is exactly the point. Ethnographers need to both empathise and sympathise, to balance destrangement and estrangement. Participating enables the strange to become familiar, observing enables the familiar to appear strange. The important thing is for ethnographers to consider why they want to use participation – to what ends.

Balancing this tension has sometimes proved challenging in this study, especially during practice research, but overall participation enabled real-life reuse processes for digitised collections to be experienced, observing the relationships between people and objects and understanding their motivations, emotions, and interests. Some key questions I was interested in exploring were as follows: What does openness and access to digitised collections mean in the context of a cultural hackathon? Who joins these events and why are the participants interested in the reuse of digitised collections? These questions underpinned and directed my participant observation of CdV West.

However, some questions could not be answered through this research case and the ethnographic method. As museums and other cultural heritage institutions have just started to look beyond the, albeit crucial, steps of digitising collections, publishing them in online collections, not many examples exist

combining reuse of digitised collections with participatory formats. In particular, the two museum partners within POEM experienced a transitional phase rather than offering well-developed case studies for reuse of digitised collections. Thus, in order to empathise with their change processes, but also to study real-life reuse processes and the complex issues of engagement, collaboration, and creativity that surround these, I had to incorporate research methodologies transcending the ethnographic role of the participant observer. Building on action and practice research and inspired by combined approaches such as design anthropology, I included interventions in my research process and took on the role of facilitator and practice researcher. The next section introduces the family of action research approaches and outlines the practice research methodology upon which the interventions in this project were based.

4.2.2 Action and practice research

Under the umbrella of action research, a whole family of practice-oriented approaches has emerged, ranging from very activist positions aiming towards social change to less involved positions aiming for practical recommendations for change. On this continuum, which mirrors the participatory struggles discussed in section 3.2, this project is closer to the latter position, aiming to understand through practice and drawing on the concept of practice research. This is further explained here after an introduction to the main ideas of action research, which also frame practice research.

Action research is a mode of active and involved research aiming not only to contribute theoretical knowledge but also to act as a catalyst for social change. It was developed by social psychology pioneer Lewin and others in the field of social science, who attributed action research with the special role of ‘bringing about social change’ (Lewin 1947, 143). This assumed capacity for improving people’s lives made action research an attractive process across various fields such as education, health, development, and geography. Today there are many different strands of action research, which Kindon et al. (2007, 10) trace back to a non-linear global development of community-based research approaches. What unites these movements is a strong focus on collaborating with communities and participants in research to tackle real-life problems. For this reason, it is

sometimes also called participatory action research (Kindon et al. 2007). Overall, following Reason and Bradbury (2011, 1), action research can be understood as ‘an orientation to inquiry that seeks to create participative communities of inquiry in which qualities of engagement, curiosity and question posing are brought to bear on significant practical issues.’ I tried to embrace this mindset in my collaborations with museum practitioners, hackathon organisers, and active users. Instead of using participants or communities as the subjects of my research, I aimed to work ‘from an orientation of change with others’ (ibid., 1).

The findings of the literature review, my own working experiences as a digital curator, and the demands of critical heritage studies, new museology, and socio-museology to improve the social role of the museum all underpinned this approach (O'Neill 2002; Gesser et al. 2020; Kryder-Reid 2018; Sandell 2002b; Sandell and Nightingale 2012; Sandell 2002c). Various forms of action research have gained influence in museum studies in recent years, with research projects targeting, for instance, digital transformation of institutions (Malde and Kennedy 2018) and collaborations with young people in museums (Tzibazi 2013; Ampartzaki et al. 2013). However, taking into account the long-term nature of change processes and the close collaboration required, this project focused on critical and evidence-based interventions upon which change can be proposed, rather than being a project that itself ‘changes’ practice. Thus, the main goals were, first, to practically explore the elements that impact relationships between museums, digitised GLAM collections, and users of this resource, and, second, to formulate recommendations for cultural heritage practitioners that might change the social role of digitised collections in the future.

The focus on multiple perspectives is an important aspect of this research as these illuminate the complexity of the issue. Few studies have examined the perspectives of both GLAM practitioners and users in relation to co-creative events with digitised collections and museum objects. I therefore developed two different interventions – one that focused on museum practitioners and critically tackled institutional questions of change and another where I invited people from outside the museum to explore creative ways of using objects. These

interventions were inspired by a sub-form of action research, which Goldkuhl (2011) simply described as practice research. While the focus on participatory collaboration and local change characterising action research poses an intense social commitment for researchers, Goldkuhl describes practice research as more flexible in its levels of engagement. In addition, he states that the blurred demarcations between community and researcher interest in action research tend to raise practical questions that have not yet been fully answered relating to, for example, balancing benefits for scientific and local communities or combining different forms of knowledge (Goldkuhl 2012, 65).

Although, in contrast to Goldkuhl, I see the potential of relationships that blur the lines of expertise and act as catalysts for organic co-creation of knowledge, the openness, intensity, and timelines of such approaches did not suit this research. In turn, Goldkuhl's more structured practice research approach offers a methodological framework with the potential for multiple interventions in different contexts – particularly better suitable for this project. The framework consists of two main research activities – the theorising and situational inquiry – which have different connections with academic communities and practitioners. A situational inquiry is understood as a researcher's empirical fieldwork and can also function as a problem-solving process for practitioners. Through this process, data is generated for analysis in the theorising process to inform the research community and practitioners on a more abstract or general level of practice and knowledge. Goldkuhl (ibid., 67) highlights the 'situational inquiry' as a crucial link between the interests and perspectives of researchers and practitioners:

> From the perspective of the local practice, situational inquiry functions as an arena for practical problem solving. The situational inquiry generates situational knowledge for the sake of the local operational practice. From the perspective of practice research and theorizing, the situational inquiry functions as a generator of empirical data and an arena for tests and trials of ideas and hypotheses.

In practice research, the practical nexus is seen in continuous interplay with theorising processes to generate abstract knowledge useful for both transfer to other contexts and use within the ongoing situation. This form of adapted action

research with the central element of situational inquiry enables the incorporation of both ethnographic and action approaches, which are crucial for studying an emerging participatory field of practice. Adapting Goldkuhl's model for my research (see figure 5), helped to clarify the relationships between different research approaches and participants' perspectives for this project:

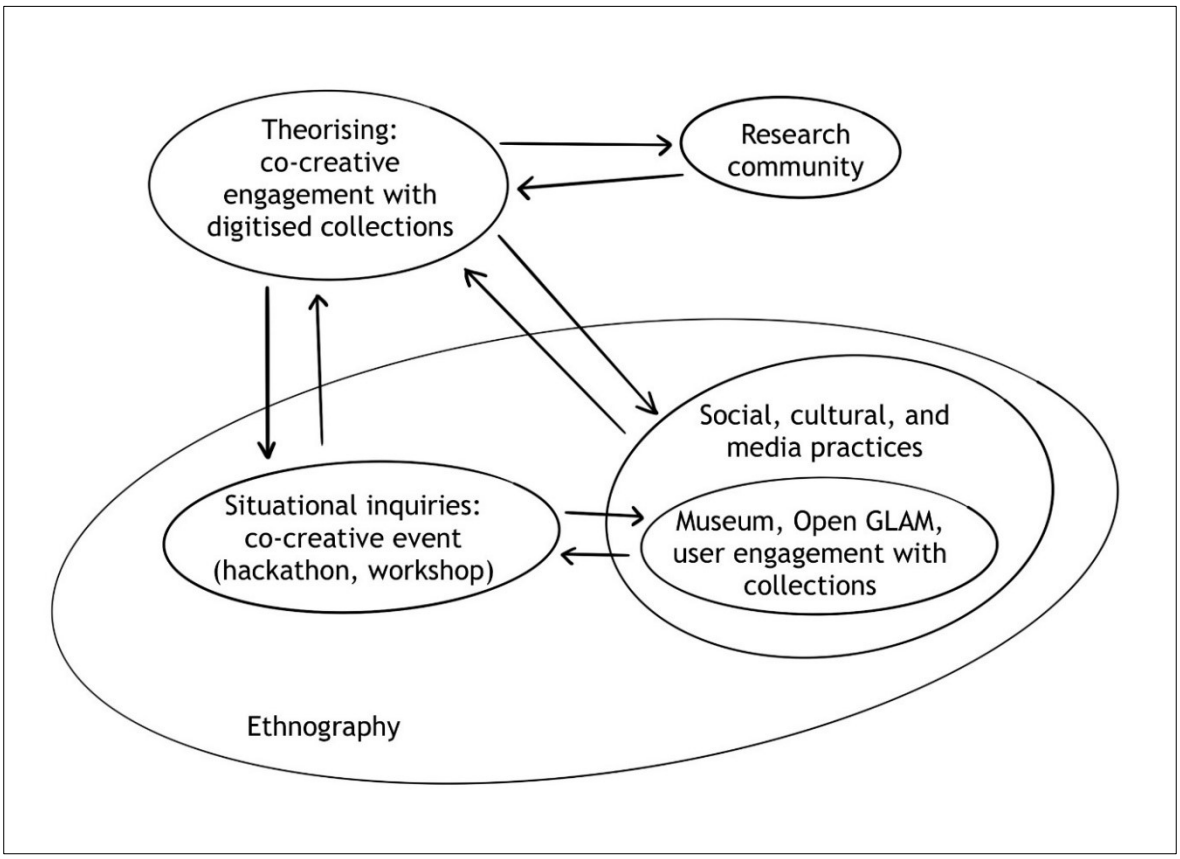


Figure 5: Practice research design for this project. Adapted from Goldkuhl (2011, 2012).

This project examined the broader topic of co-creative engagement with digitised collections as academic research inquiry and its relationship with lived social, cultural, and media practices. With situational inquiries in the form of co-creative events such as hackathons and workshops, empirical data was generated about different practices. Each situational inquiry focused on a different group of stakeholders, including, as already outlined, museum practitioners, Open GLAM community members, and active users.

Taken together, this research built on a methodological combination of ethnographic approaches and practice research. Ethnography framed the entirety of the research and was useful for taking a step back (especially as a former practitioner) and allowing the 'familiar to become strange', as well as

enabling transit from theoretical inquiry to the social field and understanding of the relationship between institutional context and other stakeholders. However, in the context of this research, ethnography alone was insufficient to understand what needs to be changed to support future reuse of digitised collections. Ethnography was therefore complemented with practice research to design situational inquiries enabling exploration of possible scenarios involving reflecting, reusing, remediating, and repurposing collections. All three events are further understood as situational inquiries in which I was involved in different roles, organising and/or observing.

As practice – in the form of the research method and the focus of this inquiry – plays a pivotal role in this methodology, a closer examination of practice theory and its ontological and epistemological ramifications completes the methodological framework.

4.2.3 Practice theory

Practice theory is not a unified 'grand' theory but rather a broad field of different approaches in social science, which has been applied across many disciplines, including organisation, gender, and science and technology studies. The umbrella of practice theory brings together thinkers from different disciplines and traditions with a shared emphasis on and conception of practices 'as embodied, materially mediated arrays of human activity centrally organized around shared practical understanding' (Schatzki 2001, 11). Elements of practice theory can be traced back to a range of very different influential philosophers of the twentieth century including Bourdieu, Giddens, Garfinkel, Foucault, and Butler. However, Bourdieu's (1990) writing on the logic of practice and the concept of habitus clearly laid the foundations for a praxeological theory. Bourdieu outlined practice theory as cultural theory, which basically differs from other theories, such as culturalist mentalism, textualism, and intersubjectivism, in its understanding of practices as the smallest units of the social (ibid., 52). With this stance, practice theory positions itself against the intellectualism of other cultural theories and challenges object/subject and body/mind dualism in Western epistemologies (Reckwitz 2003, 291; Schatzki 2001). To move beyond this dualism, materiality and implicit logic are introduced as central concepts in

practice theory (Reckwitz 2003, 289–299): by using an object or artefact, embodied knowledge and affordances of objects merge into practices understood as 'skilful performance' (Reckwitz 2003, 290; Bourdieu 1990). Thus, the materiality of objects and bodies on the one hand and the implicit character of knowledge on the other need to be considered. Within the body, a practical sense – know-how, resides, which Bourdieu (ibid., 66) describes as follows:

> Practical sense is a quasi-bodily involvement in the world which presupposes no representation either of the body or of the world, still less of their relationship. It is an immanence in the world through which the world imposes its imminence, things to be done or said, which directly govern speech and action. It orients 'choices' which, though not deliberate, are no less systematic, and which, without being ordered and organized in relation to an end, are none the less charged with a kind of retrospective finality.

In this sense, implicit knowledge means that it is not explicit or cannot be isolated from practice – knowledge exists in relation to practice. Implicit knowledge entails three aspects: interpretative understanding of meaning, methodical knowledge like a script, and motivational–emotional knowledge (Reckwitz 2003, 292). This knowledge only becomes activated and tangible through the performance of the body. This can be observed by others and forms the social shape of practice.

Within the object, understood in most practice theory thinking as a thing, tool, or commodity, certain characteristics allow for specific forms of use. These are not infinite but limited by its affordances – i.e., the possibilities of the object in relation to the implicit knowledge of the body in using it (Reckwitz 2003, 285). Objects are important to activate or initiate practices and sometimes new objects lead to a whole new range of related social practices. In this way, a new research field around affordances-in-practices emerged in studies of new media, building on the philosophical positions of practice theory (Bareither 2019; Costa 2018). Knorr Cetina (2001) introduces another interesting distinction relevant to this research, differentiating between habitually used and epistemic objects. The latter are defined by their 'changing, unfolding character' (ibid., 191) – a lack of concreteness making them particularly suited to 'meaning-producing and practice-generating' (ibid., 192). Although Knorr Cetina based this concept on

studies in the field of scientific research, digitised collections and museum objects might share similar traits with epistemic objects in labs and experiments. They are not part of habitual use, imply many different meanings and uses, and require interpretation 'experts' who are motivated and interested in further unfolding their possibilities.

Based on these different types of objects, practices oscillate between two seemingly ambiguous sides: routine and innovation. In addition, structural characteristics of the social world in which they take place – for example, context, time, complexes of practices, and complexes of knowledge within subjects – impact practices and their daily performance, leading to failure, new interpretations, and repetition (Reckwitz 2003, 294).

Practice theory has gained influence in the social sciences since the 1980s and Schatzki et al. (2001) even speak of a 'practice turn'. Within museum studies, praxeological approaches are less established and McCarthy (2016) identifies an absence of the practice theory perspective in most museology literature. However, recent publications implicitly and explicitly draw on practice theory to analyse, for example, what museum practitioners do when designing digital cultural heritage projects (Mason and Vavoula 2021), or how museum practitioners engage with communities (Morse 2021). These perspectives stress the importance of process over outcome in analysis. In information and media studies, the practice turn has recently opened new perspectives on, for example, the affordances of social media (Bareither 2019) and social practices interwoven into information activities (Cox 2012).

Practice theory lends itself to the study of processes to understand implicit forms of knowledge practised in specific situations with specific tools. A subject of study is broken down into practices – e.g., practices of labour, interaction, and self – which can then offer insights into understandings, methods and emotional motivations. Research is often conducted with ethnographic methods, involving thick descriptions and participant observation of practices (Reckwitz 2003, 298).

For this research, practice theory is a powerful heuristic tool to reconnect the idea of the creative reuse of collections with the social practices of different stakeholders. The ontological and epistemological implications of practice theory outlined support a focus on the process to better understand the use of digital and physical museum objects. Instead of solely looking at possible future audiences, we need to consider the different practices of active users, museum practitioners, and members of the Open GLAM community, as well as how they relate to each other and the collections to develop a more realistic understanding of reuse. In practical terms, practice theory was used in the research process to analyse data generated, following practices such as collaborating, creating, constructing, communicating which emerged in between people, motivated in different ways, and the affordances of various objects such as museum objects, workshop materials, digitised collections, and event venues.

Based on this methodological framework, I move to consider the specific research questions of this study and explain how the research cases and design addressed these.

4.3 Research questions, design, and cases

Based on gaps identified in research into the reuse of digitised museum collections (outlined in Chapter 2), the participatory framework and co-creation practices (Chapter 3), as well as the methodological framework (section 4.2), I narrowed down the focus of this project to one leading research question with several sub-questions:

How do co-creative events frame engagement with museum objects and digitised collections?

1. What are the challenges and benefits of these co-creative events for different stakeholders – museum practitioners, Open GLAM community members, and active users?
2. How do museum practitioners, Open GLAM community members, and active users collaborate and what are the factors impacting such collaboration?

3. What is the role of digital reuse and creative practice in engaging active users with cultural heritage collections?

Rooted in the belief that museum collections are for public use, the main purpose of this study is to better understand what creative reuse of digitised collections means for active users, how people relate to, remediate, and create meaning from these collections, and what role museum practitioners and the Open GLAM community can play in effectively supporting this social practice. Thus, co-creative events were studied and initiated to address the research questions.

As defined in the literature review, hackathons are open stages for collaboration and emerging design practices, thus offering a fruitful field for ethnographic study. However, as museums are only beginning to test these types of engagement with their digitised collections, understanding museum practices and how they relate to creative practices is as important as understanding the perspectives of the Open GLAM community and individual users. In addition, as Open GLAM hackathon participants often tend to be GLAM practitioners themselves or experienced users of digitised collections (Moura de Araújo 2018, 25–26), other formats for approaching less experienced users also needed to be considered. I therefore decided to work with three situational inquiries, each of which allowed me to study in depth the role and practices of different groups of research participants: museum practitioners, active users, and Open GLAM practitioners and experienced users.

4.3.1 Facet methodology

Case study research often goes hand in hand with ethnography and is defined as an in-depth approach to examining a social phenomenon in a real-life context within the boundaries of one or more cases (Swanborn 2010, 13). A multiple case study approach has the advantage of studying different facets of a research topic, such as different participant perspectives, and collating these into a multi-perspective analysis. This also enables comparison of different circumstances and study of relationships of conditions across cases, helping to illustrate ‘issues across a more varied range of circumstances than a single case

can provide' (Mills et al. 2010, 582). This research was inspired by multiple case study research but did not have the capacity to develop the rich in-depth and context analysis that case study research would usually require. In order to place a stronger emphasis on the interrelations between aspects of the cases, Mason's (2018, 45) notion of facet methodology offered a productive approach, conceptualising the research design based on the metaphor of a gemstone with different facets, designed to provoke 'flashes of insights' into the research questions. Here, these facets are defined as 'mini-investigations that involve clusters of methods focused on strategically and artfully selected sets of related questions, puzzles and problematics' (ibid., 44).

This way, the constellation of different problems is foregrounded, making a good fit for the multiple dimensions and stakeholders shaping reuse in this research. Building on previous research, I conceptualised these facets as follows:

- First, perspectives of museum practitioners on collecting, documenting, and framing objects needed to be reflected to bring ongoing museum remediation practices to the fore and discuss them with people from outside the institution.
- Second, emerging practices involving opening up and reusing digitised collections needed to be examined to understand the impact of the Open GLAM community and the skills and experiences of individual users within this community.
- Third, the mediation of these skills to less experienced users needed testing to explore how reuse of cultural heritage might tie in with other social practices involving sense-making in digital culture.

Based on these aspects and the methodological framework already outlined, I collaborated with three different institutional partners – The Hunterian, Coding da Vinci (CdV), and the Museum Europäischer Kulturen (Museum of European Cultures, MEK) – to develop situational inquiries (see figure 6). Situational inquiries, as defined by Goldkuhl (2011), are arenas for practical problem-solving and, in contrast to case studies, can be shorter interventions following a specific practical problem. The wider context of collaborating with these different organisations led to ethnographic possibilities in going backstage and finding

unanticipated issues. Thus, the combination of both wider collaboration and specific situational inquiry constituted three research cases as an empirical base for this research, which I will further detail and justify.

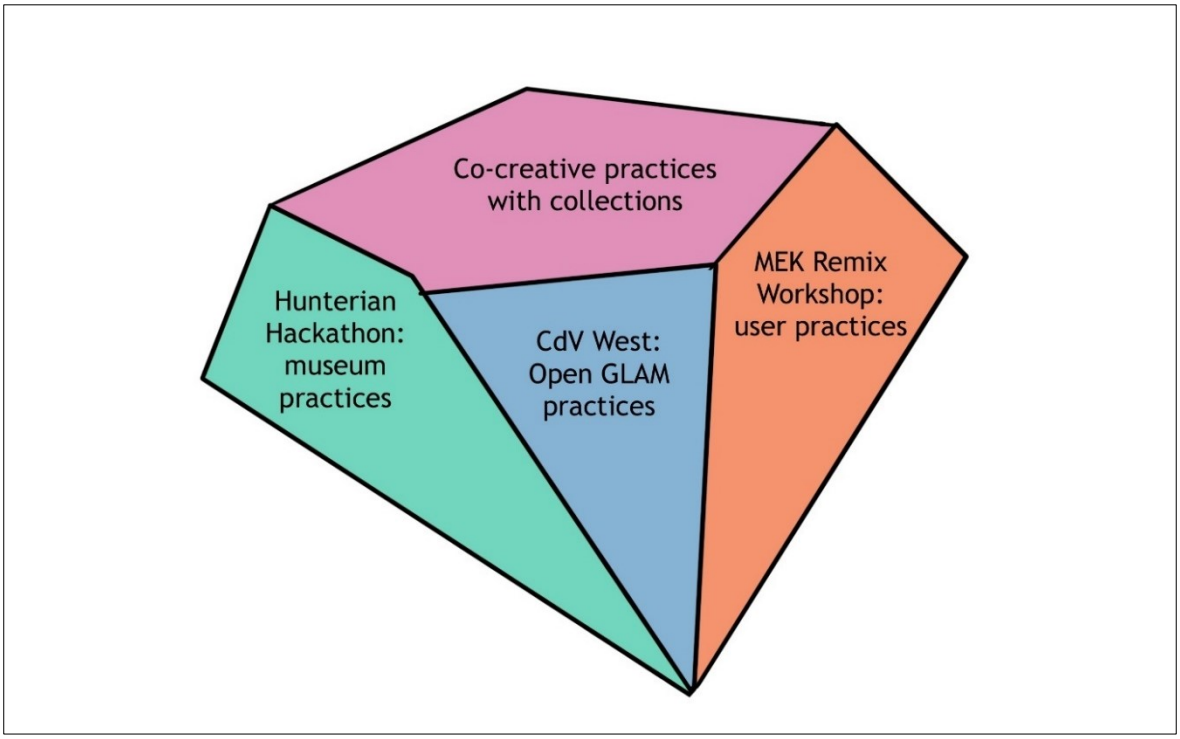


Figure 6: Research facets forming a gemstone. Mucha, CC BY 4.0.

The first case encompassed the collaboration with the University of Glasgow's museum and art gallery, The Hunterian, leading to the participatory intervention, the Hunterian Hackathon (HuH). Various aspects made the case relevant for this project: as The Hunterian is the university museum, the collections were originally meant for educational use, the museum was in the process of opening up collections in a new publicly accessible research and study centre, and the new museum director (who started work in 2017) was interested in critically reflecting professional practices in relation to social inequalities and colonial legacies. The museum was also a partner in the POEM research project. In 2018, when this project started, The Hunterian was undergoing personnel, spatial, and conceptual changes, opening new avenues for critical and participatory museum practice relating closely to this research.

The second case included collaboration with the German cultural hackathon organisation CdV and participant observation of the hackathon event CdV West in Dortmund. I chose this research case study for several reasons: since its

founding in 2014, CdV has grown into the biggest German non-profit organiser of cultural hackathons – at least once a year it brings people together from within GLAM institutions and beyond to reuse openly licensed digitised collections. It is rooted in an Open GLAM community approach, addresses experienced users who create tangible examples of creative reuse, argues for the opening up of digital potential, and translates the hackathon idea into the cultural sector. In summary, CdV promised a focus on the digital potential of collections through the practices of experienced users, insights into the motivations and practices of the Open GLAM community, and negotiation of openness and collaboration on the ground.

The third research case was set in Berlin and incorporated collaboration with the MEK and the Remix Workshop (ReW). Many aspects underpinned the collaboration with the museum: the ethnological museum recently reviewed their collection concept to reframe collections as social engines, while the collection also has a strong focus on crafts and objects of everyday culture and the museum has experience with various participatory museum projects and collaborations with communities. At the time of the study, it was undergoing structural changes within the broader museum service in Berlin and was a partner of POEM and host of a five-month secondment during the course of this research. In conclusion, the MEK understood the need to focus on user practice and interests and supported the idea of creatively repurposing objects on display.

The three research facets that were developed were incremental: when collaborating with museum practitioners in The Hunterian, I saw the role of the museum practitioner in a different light – the impact of participatory intervention on collection and museum practices became a central concern of the collaboration. As my next step, I explored what digital experts do with objects and what their approaches tell us about using digital objects. The collaboration with CdV was aimed at this group of people and the hackathon offered a rich environment in which to follow the practices of and talk to both organisers and participants, gaining valuable insights into their motivations, emotions, and interests. The final step of the research allowed me to test

creative methods in the museum with a group of active users. In collaboration with the MEK and a POEM colleague, I designed a workshop that enabled participants to generate digital content based on museum objects.

On a more pragmatic level, the research design was also influenced by my role as research fellow in POEM as the timetable of the POEM network and prescheduled collaborations with different institutional partners, conceived as secondments with the network, framed this project. Collaboration in the training network also provided specific training units as part of Knowledge Hubs (KH), meetings which brought together POEM research fellows, supervisors, and partners in different hosting institutions across Europe. Moreover, these meetings fostered exchange with the two other working groups, described as ‘connectivities built by people and groups’ and ‘memory modalities’, providing inspiring insights into various methodological approaches, as already noted.

In the middle of the project, in March 2020, the Covid-19 pandemic hit Europe and lockdowns, travel and meeting restrictions subsequently impacted the second half of the research design, as illustrated in the following table 2.

When	Where	POEM	Research	How
Oct 2018	Glas-gow		Arrival and familiarisation with research context	
Nov				
Dec		KH 1		
Jan 2019			Connecting research interests with museum and university context	
Feb				
Mar		Ethics/ KH 2	Situational inquiry Hunterian Hackathon	Participation in Hunterian events and meetings
Apr				Open interviews and conversations with staff
May				Collaboration to conduct Hunterian Hackathon
Jun				Follow-up survey, meetings, and interviews
Jul			Formative evaluation	
Aug				
Sep		KH 3	Preparing research design and refining research questions	
Oct	Berlin /Dort-mund		Situational inquiry Coding da Vinci Westphalia-Ruhr	Participant observation of hackathon events
Nov		Second-ment MEK		Emails and online surveys
Dec				Interviews with hackers
Jan 2020			Situational inquiry Remix Workshop	Participation in MEK events and meetings
Feb				Collaboration to conduct Remix Workshop
Mar				Follow-up survey and interviews
Beginning of COVID-19 pandemic in Europe				

Apr	Home office / Lock-down	KH 4	Transcription and familiarisation with data	
May		Second-ment Glasgow Museums		
Jun				
Jul			First coding cycle	Attributive coding with descriptive variables
Aug				Developing coding categories
Sep		KH 5		Descriptive and in-vivo codes
Oct		Report	Developing analysis	Comparing data with data, codes, and categories
Nov				Writing and rewriting analysis drafts
Dec				
Jan 2021			Second coding cycle and analysis	Pattern and descriptive coding
Feb		KH 6		Writing memos and analysis
Mar				Cycles of refining coding and writing
Apr			Final write-up	
May				
Jun		KH 7		
Jul				
Aug				
Sep				
Oct				
Nov 2021				

Table 2: Timeline and research design

4.3.2 The Hunterian and the Hunterian Hackathon

Figure 7: The Hunterian main gallery. LornaMCampbell, CC BY-SA 4.0.

4.3.2.1 Institution and collections

The Hunterian is a university museum based in the University of Glasgow. It was founded following Dr William Hunter's bequest in 1807. The obstetrician's collections reflected his professional interest in anatomy as well as offering a wide range of insights into other topics such as anthropology, numismatics, fine arts, and natural science. In the form of a holistic and interdisciplinary approach to knowledge and use of objects for learning and teaching, the collections encapsulated the philosophy of the Enlightenment. On the museum's website[8] this Enlightenment mission is described as central to The Hunterian's place as Scotland's oldest public museum, with large collections recognised as collections of national significance. Today, The Hunterian consists of several venues across the University of Glasgow's campus. The collections encompass over 1.5 million objects, which are in the process of being moved into the recently built Hunterian Collections Study and Research Centre at Kelvin Hall.

[8] See The Hunterian website 'About us' section: https://www.gla.ac.uk/hunterian/about/, accessed 15 October 2021.

One aim of the Kelvin Hall project was to widen public access to the collections through the new Collections Centre, which the website (The Hunterian n.d.a) describes as follows: 'The state-of-the-art storage facilities at Kelvin Hall allow our collections to come together for the first time in an accessible location for researchers, students and the public.'

These new access possibilities were also combined with an attempt to connect collections across different Kelvin Hall partner institutions via a shared online interface called Open Collections.[9] However, the digital collaboration was marked by technical problems and, at the time of writing, a disclaimer on the website still points to its beta status of development. The Hunterian's collections can also be searched in an online catalogue,[10] which offers access to object images, metadata, and short descriptions for some objects. In addition, collection summaries, object highlights, and thematic online exhibitions can be found on the website. Digitised objects cannot be downloaded and there is no clear licensing of images or metadata.

4.3.2.2 Mission

The first phase of the Kelvin Hall project (2015–2020) was conceived as part of 'an interesting period of change', which aimed to increase engagement with and use of the collections and 'foster collaborations and partnerships outside the University' (Economou 2014, 8–9). The outlook of new storage facilities and the repurposing of a historical building in partnership with the City Council, Glasgow Life, the National Library of Scotland, the Royal Highland Fusiliers Museum, the National Galleries of Scotland, and the University of Glasgow seemed to act as a catalyst for a process of institutional change. In a leaflet (Kelvin Hall partners n.d., 4)., the project's vision is entitled 'Understanding the World, Inspiring Creativity', further explained as follows:

> The Kelvin Hall is a world first, a partnership of national, civic, charity, university and heritage organisations working together to create a unique facility that celebrates Scotland's contemporary

[9] See Open Collections: https://opencollections.org.uk/, accessed 15 October 2021.

[10] See The Hunterian online catalogue: http://collections.gla.ac.uk, accessed 15 October 2021.

> creativity, improves health and wellbeing and enhances our understanding of the world.

The high-profile partnership, the new physical site at Kelvin Hall, and the introduction of a new museum director in 2017 all contributed to a sense of new possibility. This not only implied a stronger focus on outreach and engagement, as the strategic plan 2015-2020 (The Hunterian n.d.b) claims, but also necessitated a careful examination by the museum of internal, institutional issues requiring a process of organisational change.

This mission was also underpinned by the Curating Discomfort project, for which the museum sought funding from Museums Galleries Scotland in 2019. The funding application indicates a need for more critical approaches to interpretation and display methodologies that address identity, gender, and colonial issues and further explains that:

> While traditional processes of consultation with community partners, organisations, artists, the public and researchers, can help to shed new light on collections and bring new facts and stories to the fore, these methodologies all commence with the premise that the results of the consultation will shape well-established curatorial and institutional developmental paths and outcomes. We believe that some of the most pressing of these questions will only be effectively addressed through institutionally and curatorially 'discomforting' processes in which even outputs and outcomes are shaped through community engagement with the collections (The Hunterian 2019).

Collaboration with bigger EU research projects such as EMOTIVE[11] and POEM also added to the feeling of departure within the Hunterian Museum: as part of these research projects, the museum aimed to open up to more participatory and audience-centred approaches through collaborative action research.

4.3.2.3 Collaboration

As POEM research fellow assigned to work with The Hunterian as one of the project partners, I collaborated with the museum mostly during the first year of my doctoral studies with the goal of developing a collaborative pilot study. Two of my PhD supervisors were museum staff: Steph Scholten, the museum director,

[11] See EMOTIVE website: https://emotiveproject.eu/, accessed on 15 October 2021.

and Maria Economou, who has a joint appointment in Information Studies and the museum, where she leads digital initiatives. We started with regular supervision meetings at the offices of The Hunterian alongside informal exchanges with other members of the museum team, which helped me to become familiar with the museum's context and understand different perspectives on the museum.

Closer collaboration with the museum took place between March and June 2019 and peaked with the organisation of an event in which museum staff, university lecturers, and students could 'hack' museum objects together. The idea of the HuH emerged as an intersection of different interests: the museum was keen to try more participatory approaches and address uncomfortable issues around the creation and interpretation of the collections, while my thinking was moving more towards reusing collections, and a group of global history researchers at the University of Glasgow received funding for a series of analogue hackathons in archives and museums.

We therefore set up a multilateral collaboration in which I supported the Global History Hackers with my hackathon knowledge, while the existing framework of Global History Hackathons at other museums and archives convinced The Hunterian to join. In a small steering group made up of Hunterian staff, we further tried to conceptualise the hackathon. Within the steering group, consisting of the Head of Collections Management, the Curator responsible for writing the project grant for Curating Discomfort, my supervisors, and me, we had to negotiate different perspectives of what the hackathon should be: a space for reflection on uncomfortable museum practice, a pioneering attempt to reuse digital collections, a space to test interdisciplinary collaboration in the university, and/or a reason to think about difficult objects on display? Together we shaped a situational inquiry of benefit to different stakeholders and decided on using the hackathon format to critically examine animals and humans in the museum display and reflecting on uncomfortable museum practices with participants from an interdisciplinary group of Global History Hackers and other participants.

4.3.2.4 Situational inquiry

As part of this multilateral collaboration, we designed the HuH as a participatory event in which the digital notion of hacking was enhanced by a postdigital understanding of repurposing material with a critical or subversive attitude. We made the assumption that, if digital content and software practices are removed from the hackathon, a form of event in which small teams work intensively on creative problem-solving and exchange knowledge through hands-on group work is what remains. This adaptation was also impacted by two more pragmatic reasons: Global History Hackers received funding for testing hackathons as a learning and research method and the museum's digitised collection was not ready for reuse because of unclear technical and legal issues. Thus, we explored the possibilities of an 'analogue' version of the hackathon using the objects on display, albeit without touching or changing them, as prompts for discussing discomforting feelings about them. The hackathon was structured in three phases: first, participants would go through the gallery space alone and choose objects that made them uncomfortable; second, they would discuss these objects in mixed pre-defined teams consisting of people from within and outside the museum; third, they were given a template and other poster materials to develop ideas of how to address these issues.

In this way, the event enabled a conversation about difficult feelings that might arise as part of engagement with objects and, moreover, the relationship between museum professionals and visitors conveyed in object displays. As outlined in the literature review, these topics – institutional framing and discomforting legacies of collections, as well as the ways in which both are communicated – are important factors that impact reuse of digitised collections. The hackathon foregrounded them and thus offered interesting perspectives from museum practitioners and participants from outside the institution, which also contributed to understandings of reuse of digitised collections. After all, digitised collections are only another form of remediation, which entail the same institutional traces and issues.

However, lack of material to work with, including digital copies of objects or print-outs, might have contributed to less emphasis on hands-on activities.

Emotionally challenging topics and the fact that the gallery space did not provide a proper workshop setting led to less tangible outcomes and partly contradicted the idea of hackathons creating solutions or alternative approaches to existing problems. The pilot study was an approach to working with people in the museum, involving them in a participatory research project and ask discomforting questions. As ethnography enables new issues to shine through, the collaboration showed the lines of conflict between professional museum practice and urgent questions relating to colonialism, racism, sexism, and extinction, which the public might address to those responsible for collections today. Given the reflective work required from museum practitioners in light of such confrontations, this reveals an unexpected but crucial facet of reuse.

4.3.3 Coding da Vinci and Coding da Vinci Westphalia-Ruhr

Figure 8: CdV West website header. CdV.

4.3.3.1 Organisation and collections

Resulting from a collaboration between Wikimedia Germany, Open Knowledge Foundation (OKF), digis, and German Digital Library (Deutsche Digitale Bibliothek, DDB), CdV originated in 2014 in Berlin. The founding members equally represented GLAM-oriented and public-facing organisations and were connected through the Open GLAM community. The idea to organise a cultural hackathon was appealing to them for various reasons: Wikimedia and the OKF were interested in organising a hackathon with openly licensed cultural collection data, while the newly funded research centre for digitisation, digis,

was looking for examples of reuse, and DDB had just developed an API, which they wanted to put to use (Bartholmei and Mucha 2019). Thus, they launched a pilot event of the cultural hackathon – CdV 2014 in Berlin – which has, since then, grown into a regular hackathon series. At least once a year, the event brings together cultural heritage data from different GLAM institutions and challenges a group of up to fifty hacking participants to use it creatively. CdV received a major four-year funding grant from German Federal Cultural Foundation (Kulturstifung des Bundes, KSB) in 2019, with a head office set up in Frankfurt to organise regional hackathons such as CdV West, together with local organisers in the region.

The cultural hackathon provides a platform for GLAM institutions to publish openly licensed digital and digitised collections (applied licences are public domain, CC0, CC-BY, CC-BY-SA) and see how the hackathon participants reuse cultural data. The structure and timeframe of CdV hackathons differs from the usual hackathon format: instead of one intense twenty-four to seventy-two hour event, CdV consists of several event phases – a kick-off weekend, followed by six to eight weeks of hacking sprint, closing with the award ceremony. The attendees have different roles throughout the event: GLAM practitioners present the datasets they provide for the event, while hacking participants choose datasets and team partners to develop a creative prototype. In contrast to other hackathons, there is no main challenge for the hacker teams to solve – reusing collections is the challenge.

Galleries, libraries, archives, and museums of all shapes and sizes have shared digital and digitised collections throughout the CdV hackathons and the website provides these datasets for further reuse.[12] Thus, the website has grown into a repository for German Open GLAM collections, which can be downloaded and reused with clearly marked open licences.

[12] See CdV website: https://codingdavinci.de/de/daten, accessed 15 October 2021.

4.3.3.2 Mission

On its website, CdV differentiates between its concrete goal and long-term vision. The growing project archive on their website is presented as a source of inspiration for digital collection curators and managers to 'find and experience the potential inherent to openly accessible and reusable cultural data' (Coding Da Vinci n.d.). The hackathon format is used to promote the process of opening up collections not only in terms of digitisation but in relation to thinking about following steps of user-centred reuse and remix. In the long term, CdV aims to,

> install lasting structures that allow cultural institutions to work with interested members of civil society on the basis of open data. We want to bring about structural change in cultural heritage institutions, put open data as a subject on the political agenda and popularise the accessibility of cultural heritage in all parts of society (ibid.).

These aims clearly resonate with the goals of the international Open GLAM community and the broader mission to convince more cultural institutions to digitally open up their collections. CdV thus describes its intention to 'alleviate' the concerns of many GLAM institutions in relation to opening up, such as devaluation, decontextualisation, commercial reuse of collections, and, ultimately, loss of authority (ibid.).

4.3.3.3 Collaboration

I had been in touch with the CdV team since I was involved in a collaboration for CdV Rhein-Main in 2018 in my former position as digital curator in the city museum of Frankfurt. This previous collaboration provided me with practical experience with the organisational structure of the hackathon, as well as an understanding of CdV's strong roots in the Open GLAM movement, and insights into interesting struggles between different stakeholders, including founding members, local organisers, GLAM institutions, and hacking participants.

CdV is not part of the POEM network but is a partner organisation I chose for this research because of its focus on reuse of digitised collections, its role as the best-known series of cultural hackathons within the German GLAM sector, and the collaborations and conflicts between its stakeholders. These aspects relate

to the research questions in this study and I therefore contacted the CdV head office to exchange ideas about a collaboration. One of my first meetings with the CdV project coordinator also involved the contact person of the funding organisation KSB. Together, we brainstormed various overlapping fields of interest that could be more closely examined and evaluated, including impact, sustainability, outreach, and non-participants. In the end, the focus on hacking participants became the main point of interest for this research, but we also developed an extended pre- and post-event feedback survey to shed light on the perspectives of GLAM data providers and organisers.

4.3.3.4 Situational inquiry

Figure 9: Zollern Colliery, LWL-Industriemuseum. Hausschildt, CC BY 4.0.

The focal point for our collaboration was the regional hackathon CdV West, which took place between 12 October and 6 December 2019 in Dortmund. The event followed the outlined CdV hackathon structure of a kick-off weekend (12-

13 October), a decentralised hacking sprint (eight weeks), and an award ceremony (6 December).

This event offered a rich environment in which to study the interests of different stakeholders in opening and reusing digitised collections. The hackathon encompassed the provision of data and testing of its accessibility, usefulness, and meaningfulness. The CdV website summarises this in four challenges: ‘mash it!’, ‘move it!’, ‘discover it!’, ‘improve it!’. Most importantly, though, the event brought together a group of participants who voluntarily spend their time reusing digitised GLAM collections, providing an interesting ‘field’ in which to get to know these experienced, creative users better. Thus, CdV West added to understandings of what it means to reuse digitised collections from the perspectives of active users. In addition, the hackathon served as one example of how to organise and set up co-creative opportunities, supporting reuse with a focus on digital potential.

My role as researcher was clearly outlined in the ways that I carried out participant observation and interviews with people participating in an event organised by others. As a situational inquiry, it allowed me to observe what hacking participants do and ask them about their creative practices, skills, knowledge, and relationships with memory institutions. Particularly during the kick-off weekend, tensions between the interests of GLAM data providers, data users, local organisers, and the CdV team emerged, giving further insights into the Open GLAM community that has formed around CdV. In addition, the anonymous online survey before and after the hackathon generated more feedback from all involved parties.

This case aimed to generate qualitative data of, by, and with experienced users of digitised collections, learning from them in the process. During the face-to-face events and interviews, different implicit and explicit insights into their creative practices, motivations for participation and relationships to GLAM institutions were gained.

4.3.4 Museum Europäischer Kulturen and Remix Workshop

Figure 10: Museum Europäischer Kulturen. Nightflyer, CC BY 4.0.

4.3.4.1 Institution and collections

The MEK was founded in 1999 and is one of fifteen national museums in Berlin (Staatliche Museen zu Berlin, SMB) belonging to and administered by the Prussian Cultural Heritage Foundation (Stiftung Preußischer Kulturbesitz, SPK). Merging two museums and collections – the Museum of German Folklore (Museum für Deutsche Volkskunde) and the European collection of the Ethnological Museum (Museum für Völkerkunde) – MEK represents a shift in perspective from national to European identities and cultures. The museum is located in Berlin-Dahlem, where it used to share an exhibition site with two other SMB museums – the Ethnological Museum and the Museum of Asian Art. Both have recently moved to the Museum Island in central Berlin, where they form part of the Humboldt-Forum project. The museum holds a collection full of arts, crafts, and everyday objects, drawn from different European regions, and the permanent display of these objects offers a rich source of inspiration.

Using a dialogic process, the MEK team recently reviewed their collection strategy and published a new concept in 2019 on their website, which states that:

> the MEK sees its collection as an engine of social processes: via its objects, it forms networks and connections between people and thereby fosters dialogues between them. The participatory approach to collecting that the MEK follows enables very different groups and individuals to participate in the development of the museal memory and its museal representation. In this way, the museum contributes to recognising social diversity and to fostering inclusive processes and mutual respect. Moreover, necessary social debates can be initiated and held via the collection (Museum Europäischer Kulturen 2019a, 8).

The new collection concept suggests a dynamic relationship between collecting practices, an emphasis on inclusion and representation, and use of the collection for social debates. The digitised collection is published in a shared online catalogue with the other SMB collections.[13] It provides a short description, metadata, and object images licensed under CC-BY-NC-SA.

4.3.4.2 Mission

The museum's core mission conveys a pluralistic and dynamic definition of cultures as comprising constantly changing relationships, contacts, and exchanges (Tietmeyer 2013). As with the process of change at The Hunterian, the MEK finds itself in a process of self-reflection for several reasons. Not being part of the contested but nonetheless high-profile project, Humboldt-Forum has restructured the MEK's relationship with other institutions in the SMB and turned their shared exhibition site in Berlin-Dahlem into a half-abandoned building. The overall political questioning of the 'European project' impacts their European profile and the MEK started to reflect exhibition and collection practices – e.g., reviewing the collection concept.

One manifestation of this institutional process was apparent in the conference 'What's Missing? – Collecting and Exhibiting Europe', which took place in June 2019 on the occasion of the museum's twentieth anniversary. Starting off with

[13] See SMB online collection database: http://www.smb-digital.de/eMuseumPlus?service=ExternalInterface&lang=en, accessed 15 October 2021.

critical questions raised by historical collections and blank areas in museum practices, the two-day discourse touched upon many urgent issues such as representation and participation, asking: ‘How can a reinterpretation and contemporisation of collections and exhibitions through (post)migratory, queer, decolonial, fugitive, dis/abled or other marginalized lenses be established in mainstream museum work?’ (Museum Europäischer Kulturen 2019b, 5).

While the MEK shares this critical perspective on contemporary museum practices with The Hunterian, they already have participatory experiences and a keen interest in developing collaborations with different communities. In contrast, the museum does not focus on digital innovation and rather follows cross-institutional developments within the SMB, such as the shared online catalogue.

4.3.4.3 Collaboration

The MEK is a central partner of the POEM network, hosting several visiting research fellows and one permanent fellow, Susanne Boersma. The museum director, Elisabeth Tietmeyer, is one of the POEM supervisors and has a vivid interest in research into participatory practices from the perspectives of museum professionals and cultural institutions. Within the POEM grant application, a five-month secondment at the MEK in Berlin was scheduled for this research project between November 2019 and March 2020.

Prior to the secondment, I visited the MEK for the What’s Missing? conference in June 2019 and a first team meeting, where I presented my previous research from The Hunterian and suggested staging a similar hackathon. In the months that followed, I also started to collaborate more closely with Susanne Boersma and together we outlined remix as a shared field of interest.

During my five months at the MEK I joined various team meetings, participated in a Wikipedia Edit-a-thon at the MEK, and visited collections, exhibitions, and events. Aiming to develop a better understanding of the institutional context, I tried to find a way to combine my research questions with the MEK’s interests.

Over time, in meetings with staff, in lunch breaks, and in close collaboration with Susanne Boersma, the idea of the ReW emerged.

4.3.4.4 Situational inquiry

The ReW took place on 29 February 2020 and follow-up workshops were planned for the beginning of March – these had to be cancelled because of the Covid-19 pandemic.

Together with Susanne Boersma, we conceptualised 'remix' as a shared 'area of curiosity' for the museum, our research interests, and a younger international group of external participants. Remix was a versatile and relatable topic to work with and, once we started to browse through the collections at the MEK, many objects turned out to be remixes, such as the Ramadan advent calendar produced by Eurogida and the European costumes created by artist Stephan Hann.[14] For us, these objects conveyed the idea of remix, cultural crossovers, and fragmented identities, which are a lived reality for the Berlin-based workshop participants.

Based on my previous research experiences at the HuH and CdV West, where the participation of GLAM practitioners turned out to be particularly dominant, we deliberately decided not to invite the staff of the MEK museum to join the workshop. The workshop therefore offered a safer space for participants from outside the museum to speak their mind but also to focus on their needs, interests, and practices as active users.

We considered the organisation and invitation phase carefully and tested the methods of the workshop ourselves. The whole process took place between January and March 2020 and enabled closer collaboration with museum staff and insights into the practical challenges of digital co-creation, such as technical infrastructures and devices. Based on the previous research experiences of both an analogue and a digital hackathon, the workshop added another

[14] See object 'Die Europäerin' in online collection: http://www.smb-digital.de/eMuseumPlus?service=ExternalInterface&module=collection&objectId=1607779&viewType=detailView, accessed 15 October 2021.

methodological facet, exploring creative remediation practices with which less experienced users could translate objects on display into digital interpretations. It consisted of three steps: first, participants chose and discussed objects in the permanent exhibition, before developing ideas with storyboards, print-outs of object images, and collages. Third, they made a digital stop-motion film with a mobile app. This method of reusing objects differed from the critical discussions of discomfort at The Hunterian and the focus on open data reuse at CdV West – instead, the workshop functioned as a hybrid concept, offering both reflection of the institutional framing of collections and personal interpretation processes supported by digital media. However, these methodological differences have an impact on the analysis, as discussed in sections 4.5 and 4.6.

The workshop shed light on remix literacies and practical skills – both needed to reuse analogue and digital collections. It indicated that more formats for learning and exchange might provide the tools required to make use of collections meaningful. However, as it was our first time testing the format, we also encountered time pressure and challenges in facilitating the workshop while at the same time observing it for our research. In addition, we worked with a group of only ten participants, all with some kind of affiliation with culture. While we were also interested in how other participants would make use of collections and tools within the workshop framework, because of the Covid-19 lockdowns, which started in March 2020, no further workshops could take place.

4.3.5 Overview of participation in situational inquiries

The research collaborations led to three situational inquiries, which differed in various aspects, including timeframe, number of participants, and participant profile. The following table gives a comparative overview of the participation in co-creative events and framing research methods. Table 3 shows the different forms in which people participated in this research: by participating in co-creative events, feedback surveys, and follow-up interviews. In addition, there was a structural difference in participation at the co-creative events between GLAM practitioners who joined in their professional roles as part of their jobs and participants who joined on a voluntary basis. Thus, to differentiate between these in the analysis, I further refer to the two groups as GLAM practitioners and

(hacking) participants, although, from an organisational perspective, the GLAM practitioners were also participants.

	HuH	CdV West	ReW
Co-creative event	3-hour HuH, The Hunterian	2-day kick-off weekend CdV West, Zollern Colliery	1-day ReW, MEK
Event addressees	University students, lecturers, museum staff, invited participants with special interests – e.g., global history, animal studies, creative methods, critical museology	GLAM practitioners, digitally and culturally skilled users, students, young professionals, hobbyists, hack space and fab lab communities, developers, designers	Creative users, international students, young professionals, stop-motion animators, creative museum visitors
Forms of invitation	Word-of-mouth, Eventbrite page, email newsletter, Twitter, personal invitations	Roadshow, email newsletters, Twitter, CdV community, collaboration with regional partners	Museum network, email contact with young international/migration initiatives, Facebook, stop-motion gif, flyers, personal flyer distribution on university campus
Event attendees	32 attendees	~70 attendees at kick-off	13 attendees
Event organisers	Global History Hackers, museum steering group, researcher: 9	CdV local team and head office, CdV founding members, moderator, documenter, researcher: 16	Workshop facilitators, researchers: 3
Event participants	Hunterian museum practitioners: 9 Other participants (students,	GLAM practitioners providing data: 27 Hacking participants: 13	Workshop participants: 10

	lecturers, special interest): 14		
GLAM institutions involved	The Hunterian	25 libraries, archives and museums	MEK
Survey respondent feedback	13 survey participants	25 survey participants	6 survey participants
Stakeholder groups – follow-up reflection	Museum staff	Hackathon teams	Workshop participants
Participants – follow-up interviews	13 museum practitioners in 1 focus group 2 museum practitioners in individual interviews 2 other participants in individual interviews	13 hacking participants in 7 team interviews	5 workshop participants in individual interviews

Table 3: Participation in situational inquiries

The following section gives an overview of the specific research methods applied.

4.4 Data generation and management

This section is called data generation, following Mason's (2018, 21) recommendation to use the term instead of data collection, which implies the notion of researchers as 'neutral collectors of information about a world that they can somehow stand apart from.' In particular, the roles of practice researcher and participant observer relate to this perspective and make generating data more appropriate for the research methods applied in this project.

4.4.1 Ethical considerations

Working in collaborative and participatory settings requires careful consideration of research ethics on various levels. The research design presented above not only affected the form of data generation used but also confidentiality, GDPR, the researcher's role, and the co-created outcome.

Following well-established ethical guidelines and principles for conducting ethnographic research, particularly participant observation (Fluehr-Lobban 2015; Guest et al. 2013; American Association of Anthropology 2012), I considered the vulnerability of research participants, the public/private character of my encounters, and the type of data generated before entering the field. These differed in the three cases, as the participant observation at The Hunterian involved informal chats and staff meetings over a longer period of time, while participant observation at the CdV West hackathon and the MEK ReW focused more on the events themselves. In all cases, informed consent was sought from all research participants in two steps: emails before the events and invitations informing everyone about the research activities. At the events, I presented myself to the audience, explained my research, and provided all participants with an information sheet and consent form (see appendix A for details). The research was conducted in a context-sensitive and reflexive way after gaining approval from the ethics committee of the College of Arts at the University of Glasgow.

In the field, the approved information sheet and consent form had to be translated into German to be understandable by participants in CdV West and the ReW. Furthermore, the form of consent was carefully explained to all participants in its different conditions, including anonymity, the option to allow open access and re-use of the research data, and CC licensing to enable publication of co-created outcomes.

Participants had the opportunity to remain anonymous in this research project and they could specify their preferred form of identification in the consent form. Protecting research participants from any harm while also granting attribution for those who wanted to be named led to a conundrum. Finally, I

decided to anonymise all quotes to make sure that the highest standards of anonymity were met. To ensure anonymity throughout the research process, a confidential identification number was assigned to every participant and stored separately from the key. These identifiers refer to the research case (HuH, CdV, ReW), followed by numerical identifiers for each participant (1, 2, 3…) – e.g., HuH 1. If the quote is drawn from indirect or anonymised sources, a reference to the data generation method is added alongside a numerical identifier per data entry – e.g., HuH survey 1. To clarify, HuH 1 and HuH survey 1 do not refer to the same person.

The collaboration between researchers and participants at the core of the project involved co-creative knowledge production – in the form of creative workshops – and collaborative reflection upon these activities. Thus, the process led to shared ownership of ideas and outputs with the goal of publication with CC licences, attributed to all involved participants. At the same time, though, the anonymity of participants made it difficult to attribute the products – a situation that needs to be better planned out in future research. In this project I decided to anonymise participants to enable the broadest open access possible for the research data – a goal related to the topic of this research and the research funding from the EU Marie Sklodowska-Curie Actions within the Horizon 2020 programme.

Another ethical challenge of this research was that participatory processes are studied with participatory methods. Thus, the same questions that address power relations and hierarchy in the research area applied to the research methods. As a result of the dispersed character of my cases and the short-term involvement of participants, it was not possible for them to negotiate the structure and questions of the research (in contrast to action research approaches). An important learning of the first pilot study HuH was to clearly define the roles of all participants and transparently communicate the outcome of each research activity. I wanted to make the power relations supporting the research process visible throughout the project.

All data generation was carried out in compliance with article 8 of the European Union’s Charter of Fundamental Rights. In addition to the EU charter, generation

of data took place in compliance with the data protection acts, legislation, and directives of the partnering cultural institutions. In line with the General Data Protection Regulation (GDPR) and the University of Glasgow's charter, which states that 'we advance learning and knowledge by teaching and research', personal data was processed for research purposes under article 6 (1) (e) of the GDPR: 'Processing is necessary for the performance of a task carried out in the public interest.'

As pointed out already, the ownership of participatory generated data needs to be treated with care and different stages of data generation require different considerations:

- Interviewees retain ownership of their words spoken in interviews.
- Co-created or user generated material created by project participants remained owned by the creators and I aimed to license this work under CC-BY in consultation with participants to enable the work to be re-used.
- The thesis is owned by the university and the researcher and will be published with open access.

Data was securely stored on the approved, password-protected University of Glasgow cloud storage solution OneDrive for Business. Physical data, such as audio and video recordings, questionnaires, and transcriptions, were stored in locked rooms at the University of Glasgow. Copies of the data were also stored electronically on both password-protected hard drives and the OneDrive for Business account. Data could be transferred internationally as OneDrive for Business stores data in the EU.

After completion of this research, project data will be retained in the university's data repository for a minimum period of ten years, starting in 2022, as it is data of long-term value.

4.4.2 Language issues

As the research took place in Germany and the UK, the data generated encompassed the German and English languages. In particular, most fieldnotes

and interviews generated during CdV West and the ReW were originally in German. I coded them in German, as I am a native speaker, and only translated parts into English for use as quotes in the analysis chapters.

4.4.3 Co-creative methods

As described, in two cases, co-creative formats were developed, leading to the co-creative research events the HuH and ReW. Research into creative interventions with objects and cultural heritage have shown the fruitful framework that non-verbal methods can offer for participants (Mulville 2019). In their work as 'guerilla archaeologists', Mulville (ibid., 139) found that 'creative responses created new space for thinking and that provocative and challenging queries engendered a stimulating and participatory debate about our common human past, present and future.' Creative methods can support participants to access and interpret artefacts in the collection from a practical vantage point, such as creative writing (Sabeti 2015). At the same time, the creative technique itself can be an interesting skill for participants. As Stedman (2012, 120) noted, the methods needed for remixing can be taught, implying a shift 'from analyses of the affordances of digital tools, to analyses of the methods actually used to compose.' Other researchers have emphasised the role of design methods for more exploratory approaches in GLAM institutions with potential to resonate with the daily lives of participants – as Galani et al. (2019, 117) argue,

> design gives cultural institutions more readily the permission to use experimentation to co-create new meanings and forms of expression around heritage, which have the capacity to align with their audiences' (and non-audiences') everyday experiences.

In a similar way, we developed co-creative events in this research to explore uses and meanings of museum objects, focusing on two topics: discomfort and remix. The aim was to understand contextual practices of using objects and how their opening up and creativity can be improved. With this overall goal, two different co-creative events were organised. Table 4 summarises the key setups of the HuH and the ReW. It also presents the CdV method for comparison as greyed section.

	HuH	ReW	CdV West
Areas of curiosity	Global History, Hackathon, examining human and animal remains in museum displays, discomfort of institutional practices.	Remix, museum objects and their stories, collage-making, stop-motion.	Open GLAM, open access, cultural data, reuse, hackathon.
Grouping of participants	Participants were grouped in mixed teams of five to six with one moderator.	Participants were not grouped.	Participants were not grouped.
Venue	The workshop took place in the museum gallery.	The workshop took place in the museum gallery and a workshop space.	The kick-off took place in an event hall at the museum. The award ceremony took place in a cultural centre.
Food/drinks	Coffee, tea, and biscuits were provided for a break in between.	Food, drinks, and snacks were provided for lunch and a coffee break also took place.	Food and drinks for lunch, dinner, and coffee were provided.
Final presentation	After two hours of group work, each team presented their ideas in a 3-minute pitch in the plenary.	At the end, all stop-motion films were screened together.	At the award ceremony all prototypes were presented and judged.
Location	Hunterian Museum, University of Glasgow, Glasgow, Scotland	MEK, Berlin-Dahlem, Germany	Zollern Colliery, Dortmunder U, Dortmund, Germany
Day and time	Tuesday afternoon, 3 hours	Saturday, 6 hours	Saturday and Sunday, full days Friday, full day

Table 4: Co-creative methods

We developed and organised the events pursuing different questions around reusing collections with different groups of participants. In addition, the ReW

was built on learnings from the HuH. Thus, we used a range of different creative and collaborative methods and tables 5 and 6 give an overview of this.

HuH			
Step	**Space**	**Materials**	**Time**
1. Introduction and meeting in groups: all participants were assigned to a mixed (Hunterian and non-Hunterian) team of 3 to 6 people	Permanent exhibition in The Hunterian	Name tags	30 mins
2. Choosing objects: participants walked through the exhibition and chose discomforting objects	Permanent exhibition in The Hunterian	Sticky notes, objects on display	30 mins
3. Discussing objects: groups discussed objects together in front of display	Permanent exhibition in The Hunterian		45 mins
4. Clustering themes: groups connected objects and discussed overarching themes	Permanent exhibition in The Hunterian	Posters, flip charts, sticky notes	30 mins
5. Developing ideas: groups brainstormed how the issues could be addressed	Permanent exhibition in The Hunterian Museum	Template	45 mins
6. Presenting ideas: pitch in plenary group	Permanent exhibition in The Hunterian Museum		30 mins

Table 5: HuH co-creative steps

ReW			
Step	**Space**	**Materials**	**Time**
1: Introduction and meeting in the museum	Permanent exhibition on the MEK	Name tags	20 mins
2. Choosing objects: participants walked through the exhibition and chose remixing objects	Permanent exhibition in the MEK	Writing board, object sheet, sticky notes, objects	30 mins

3. Discussing objects: whole group discussed objects	Permanent exhibition in the MEK	Writing board, object sheet, sticky notes	1 hour
Lunch break	Workshop space at a different MEK building	Food, drinks	45 mins
4. Print-outs of objects: participants looked into collection database for more information and object images	Workshop space at a different MEK building	Printer, object image print-outs	1 hour
5. Developing remix ideas: participants used story-boards and collages to brainstorm and plan	Workshop space at a different MEK building	Material for collaging, a story-board template	1 hour
6. Stop-motion animation: Participants created stop-motion animations	Workshop space at a different MEK building	Stop Motion Studio app, smartphone or tablet, station for taking photos	1 hour
7. Final screening of films	Workshop space at a different MEK building	Screen, laptop	30 mins

Table 6: ReW co-creative steps

Although the Coding da Vinci method was not part of this research methodology the following table 7 gives an overview of the steps to explain the normal process of this hackathon event.

CdV West			
Step	**Space**	**Materials**	**Time**
1. Welcome and introduction to CdV	Event hall Zollern Colliery	Presentations	1.5 hours
2. 1-Minute Madness: GLAM representatives pitch data sets	Event hall Zollern Colliery	Presentations, data sets	1 hour

3. Longer parallel data set presentations by GLAM representatives	Event hall and workshop spaces Zollern Colliery	Presentations	1.5 hours
4. Lunch and brainstorming	Event hall Zollern Colliery	Food, paper, flip charts, tables, power sockets	1.5 hours
5. Idea pitches by hacker teams and team building	Event hall Zollern Colliery	Shared document, graphic recording, paper, flip charts, tables, power sockets	2.5 hours
6. Dinner and exhibition tours	Event hall and exhibition space Zollern Colliery	Food, exhibitions	2 hours
7. In parallel: group work and input workshops	Event hall and exhibition space Zollern Colliery	Presentations	6 hours
8. Self-organised hacking sprint	Different locations	Different materials	8 weeks
9. Final presentation of prototype	Cinema hall Dortmunder U	Presentations, tables for presenting prototypes	4 hours

Table 7: CdV West co-creative steps

4.4.4 Participant observation and fieldnotes

Following O'Reilly (2012) in relation to the concept of ongoing oscillation between participant and observer roles in participant observation, I applied the method with different emphases to generate data. I participated in teams of museum practitioners in The Hunterian and the MEK, and joined meetings, lunch breaks, and events to get to know the people working in these museums. I also co-organised events with participants and shared meetings to prepare and reflect upon these. At CdV West, the possibilities for 'hanging out' were more confined by the pre-structured face-to-face events. Here, my role as researcher doing participant observation was clearly distinguished from other participants' roles. I therefore did not blend in as much as I did in the museum environments. I introduced myself as a participating observer at the beginning of the hackathon and asked everyone to sign my consent forms. I intended to observe the whole setup, listen to group discussions, and examine how other participants form teams. I did not join any one team but decided to follow different teams

throughout the hackathon process. Afterwards, I met some hacking participants for interviews.

In general, the fieldnotes I took were crucial for 'evoking experience and creating analytical meaning' (Mills and Morton 2013, 91). I initially wrote my notes in an analogue notebook and later typed them into a Word document. Emerson et al. (2001, 353) define the most widely accepted aspects of fieldnotes as follows: selective 'form of representation', which combines 'descriptive accounts' and 'personal experiences' and, over time, eventually form a larger 'corpus of fieldnotes'.

During the creative events I organised, I participated in group work and observed other participants. However, my influence in designing, facilitating, and shaping the setting in its entirety was very different from my experience at the CdV West hackathon. During the HuH and the ReW, I was mostly concerned with making the methods work out for everyone. Afterwards, I took fieldnotes from memory and used photographs and material created in the workshops to enrich my notes. I also used the meeting minutes and a range of organisational material for contextual data for this research.

4.4.5 Interviews

I conducted interviews to find out more about motivations to participate in co-creative activities and to reflect with participants on this process. While participant observation and ethnography in general give researchers a perspective of 'lived experience, set in an eternal present'(Warren 2001, 85), interviewing reveals meaning-making on the part of participants in relation to their past and future. Often, ethnographic and interviewing methods are combined to complement what people do with what they say about it. Researchers can therefore collate social interactions and interpretations of social worlds – an approach which goes back to the sociology of the Chicago School (ibid.).

Interviewing using this research design followed ideas of complementing and collating the experience and observation of workshops and hackathons. All the

interviews were formally marked as interviews and recorded so that participants knew that this was not part of the workshop or hackathon. Also, all the interviews took place after the events. Building on semi-structured interviews (Olsen 2012), I used interview guides with themed questions that were adjusted to the different participants and settings. Interview guides covered creative practices, team collaboration, choice of objects/data and material/tools, motivations for participating, and event format (see appendix B).

Working with different groups of participants, I decided to use both individual and focus group interviews to understand group dynamics as well as individual opinions. I built on a broad definition of focus group interviews suggested by Morgan (1996). Here, focus groups are understood as 'a research technique that collects data through group interaction on a topic determined by the researcher' (Morgan 2001, 141). In a group setting, the question of moderation becomes more central than in one-to-one meetings. However, the semi-structured interview approach of building on prepared themes and questions while still being open to respondents' narrations and topics helped me to navigate both.

In the course of the HuH, two forms of interviewing were conducted: four individual interviews with hackathon participants (one student, one lecturer, two museum practitioners) and one focus group with thirteen participants working in the museum. The focus group was set up as a museum debrief meeting with more discussion and reflection about the event. Not all focus group members had participated in the hackathon but yet took part in the debrief meeting as they were interested in the outcomes of the hackathon and in discussing these with their colleagues. On the one hand, this showed institutional interest in learning from the event and adapting it to future occasions. On the other hand, the participants without hackathon experience had an easier position in criticising the event, which influenced the dynamic of the conversation and challenged other colleagues to explain why they acted in particular ways.

The interview guide encompassed questions about the phases of the hackathon, the group work, and the objects. All interviews were audio recorded, and all but

one interview, which was conducted online, took place in person (see appendix B.1).

In the case of CdV West, I conducted seven team interviews with thirteen hackers in total (three interviews with solo hackers, two interviews with teams of two, two interviews with teams of three) after the hackathon. Five of these interviews took place in person and two via the video call apps Skype and Zoom. I chose team interviews (if possible) in order to learn more about processes of collaboration, instead of focusing on individual motivations. Interviews with the whole hackathon team enabled me to talk about connections with each other and how they co-created together. Three teams had formed before the hackathon, while one formed at the event, and three 'teams' consisted of only one member. The criterion for asking participants to take part in interviews was that they had to have an active hacking role at the CdV West event using the data provided. The interview guide consisted of questions regarding the hackathon and the hacker role, choice of datasets and tools, creative practices, motivations for joining and the experience of joining (see appendix B.2).

In the context of the ReW, I conducted interviews together with the other POEM research fellow and individual workshop participants. In this way we interviewed five participants after the workshop via telephone or the video call app Skype because, at the beginning of the Covid-19 pandemic, face-to-face meetings were not possible. Individual interviews were fitting because this workshop did not have a strong group work component while the variety of biographical motivations was more emphasised. The interview guide consisted of questions regarding choice of object and material, creative practices, motivations for joining, and the experience of the workshop (see appendix B.3).

	HuH	CdV West	ReW
Number of interviews/focus groups	4 individual interviews and 1 focus group with 13 participants	7 team interviews 3 interviews with 1 participant 2 interviews with 2 participants 2 interviews with 3 participants	5 individual interviews
Number of participants	17 participants, mostly museum staff	13 participants, mostly hacking participants	5 participants, all workshop participants

Table 8: Participation in interviews and focus groups

All interview participants were anonymised using identifiers referring to the research case (HuH, CdV, ReW), followed by numerical identifiers for each participant (1, 2, 3…) – e.g., HuH 1. If a quote is drawn from indirect or anonymised sources, a reference to the data generation method is added alongside a numerical identifier per data entry – e.g., HuH survey 1. To clarify, HuH 1 and HuH survey 1 do not refer to the same person.

4.4.6 Feedback surveys

In all three cases, web-based feedback surveys were used after each event as an additional method to record first reactions and offer the possibility of low-threshold and anonymous feedback to participants. These surveys were designed at an early stage of the research, where the focus on methods and formats was stronger than in the final analysis. Thus, their usefulness for the analysis was limited (as explained in section 4.5.2). In their double function to support event organisers and this research, they provided organisers with helpful and practical information about the event and brought up topics which I examined further with participants in interviews and focus groups. As Vehovar et al. (2017, 146) point out, online surveys do not involve the researcher as interviewer, although it should be noted that the questions researchers ask highly influence the respondents. However, the absence of the researcher or organiser and the anonymity of the surveys gave participants more space to voice critical feedback. Furthermore, participation in an online survey is less time-consuming

and might be more convenient for participants. All surveys were developed in collaboration with the event organisers and aimed at evaluating and improving the events. These consisted of a combination of open- and closed-ended questions, as the small sample of participants allowed for detailed narrative answers to be analysed.

The HuH was evaluated with a Microsoft Forms questionnaire, consisting of fourteen questions. Nine questions were closed-ended questions encompassing multiple choice and rating scale questions about frequency of museum visits, confidence in using collections, information before the event, guidance through the workshop, and future likelihood of visiting the museum or joining a global history hackathon. Five open-ended questions offered the possibility of elaborating on some of the closed-ended questions and reflecting on the hackathon experience, the group work, and the topic of global history. The link to the survey was sent via email to all participants after the event. Participation was anonymous. Of thirty-two event attendees, thirteen responded to the survey (see appendix C.1).

In collaboration with CdV, the survey for CdV West participants was designed as a pre- and post-event survey. This approach was chosen in order to understand how participants conceived of hackathons and how this conception might change throughout the hackathon experience. Before and after the hackathon event, a web-based questionnaire published on the JISC Online Surveys platform was distributed via email to everyone who had signed up for the kick-off event (pre-survey) and the award ceremony (post-survey). JISC Online Surveys is recommended by the University of Glasgow as it is GDPR compliant and designed for academic research. These surveys were filled in anonymously and survey participants were asked to choose from four options to describe their roles at the event: participant, data provider, organiser, or other/mixed function. The category of ‘participant’ included everyone who joined the event to hack cultural heritage data and was understood as representing all hacking participants in the event. While a large number of participants attended the event, participation in the survey, especially within the category of ‘participant’ was very low: eleven people took part in the pre-survey, of whom four chose

'participant', while twenty-five people took part in the post-survey, of whom eight were 'participants'. The survey included a general part about the respondents and a hackathon part, which asked respondents to rate participation, input, goal, mode, and future outlook. A total of fifteen topic questions was asked, with eleven closed-ended and four open-ended questions (see appendix C.2)

With my research colleague at the MEK, I designed a small online survey to evaluate the ReW using JISC Online Surveys. After the event, we shared the link via email with workshop participants. The questionnaire was structured in three parts, focused on invitation, workshop, and reflection, and consisted of ten questions. The majority of questions followed an open-ended format and three questions offered multiple choice options. The latter were about museum visits, invitation contact, and workshop organisation. The open-ended questions explored motivations for joining, expectations of the workshop, group exchange, the role of facilitators, use of objects, and take-aways. Of thirteen workshop participants, six took part in the survey (see appendix C.3).

	HuH	CdV West	ReW
Participation pre-survey		11 responses	
Participation post-survey	13 responses	25 responses	6 responses

Table 9: Participation in online feedback surveys

This overview of methods to generate data showed that each research facet required slight variations in the applied methods. While this adaptation of methods to the related questions and contexts is in line with facet methodology, it impacts the comparability of the three research cases as a whole, meaning that only specific elements can be compared, such as collaboration between practitioners and other participants, object choice, or reuse practices across the different parameters of each event.

4.5 Data analysis and writing process

Before going into the field and generating data, several steps were taken to plan and structure the process of data analysis. In line with guidelines for postgraduate research at the University of Glasgow,[15] a data management plan was developed, while the POEM training programme offered additional sessions in data handling and analysis. Both elements helped me to prepare for basic practical questions, such as how to name and store data, and also impacted the epistemological challenge of identifying and interpreting important data (Mason 2017, 187).

4.5.1 Organising and exploring data

Using the methods described above, a wide range of data was generated and collected, including audio recordings, posters, sticky notes, online questionnaires, fieldnotes, photographs, drawings, digital prototypes, and documents. The following table gives an overview of these mixed source materials (see appendix D for further details on research data generated):

	HuH	CdV West	ReW
Organisational documents	Meeting minutes, invitation mails, to do lists (English)		Meeting notes, invitation mails, to do lists (English)
My fieldnotes from event	Reflections written in Word document after event (English)	Written on paper during event (German, transcribed)	Reflections written in Word document after event (English)
Audio recordings of event	Pitches of groups (English, transcribed)	Moderation, pitches, and presentations at kick-off and award ceremony (German, partly transcribed)	

[15] See data management training for postgraduate researchers: https://edshare.gla.ac.uk/940/, accessed 23 November 2021.

Photos for documentation	Professional documentation of event (Photograph unit University of Glasgow)	My own documentation of kick-off and award ceremony events	My own documentation of preparation and workshop
Materials created by participants	Templates, sticky notes, and posters created in group work (English, transcribed)	Process sketches and online descriptions of prototypes created by hacker teams (German)	Storyboards, collages, sticky notes, and stop motion films created by participants (German/English, partly transcribed)
Objects or data sets used by participants	List with museum objects (English)	List with data sets (German)	List with museum objects (German/English)
Interviews/focus groups with participants	4 interviews with individual participants, 1 debrief focus group with museum team (English, transcribed)	7 interviews with hacker teams (German, transcribed)	5 interviews with individual participants (German/English, transcribed)
Participants' written feedback	1 written reflection on group work (English)		
Online feedback surveys	Event evaluation in collaboration with Global History Hackers (English, export)	Event evaluation in collaboration with Coding da Vinci (German, export)	Event evaluation in collaboration with POEM fellow (German/English, export)

Table 10: Data generated at HuH, CdV West, and ReW

Mason (2017, 190) recommends reflecting on data after the fieldwork and deciding on relevant data for analysis. I therefore spent a few months transcribing and re-organising these materials. Various connections between the different research cases were possible and I asked myself several times about the best ways to use and analyse the data generated. Throughout this process, I engaged with my initial research questions and found that reframing was needed. While I initially focused on methods for engaging people with digital

collections, such as hackathons, I realised that, throughout the research, these methods and their definitions became less central. In turn, more space for what people do within such framing events was generated and became visible in the data. This included my own role as researcher, organiser, participant, and facilitator. This 'methodical-reflexive' perspective on research data functioned as a productive lens for exploring, familiarising, organising, preparing, and, most importantly, reflecting upon and reconnecting with the research questions and my own preconceptions (Rädiker and Kuckartz 2020, 35).

While this process questioned the relevance of some data generated, such as survey responses, the total of seventeen interviews/focus groups and all the data recorded throughout the creative processes moved into sharper focus. All audio-recorded interviews, central recordings of project presentations, and reflective meetings were transcribed and partly translated, while materials created throughout the creative process were digitised with scans and transcriptions. Two different tools for transcription of audio recordings were used: material generated during the pilot study was transcribed using the free online tool oTranscribe[16] and all later recordings were processed with the embedded transcription tool in MAXQDA.[17] Testing NVivo for a formative evaluation of the pilot study data, I experienced usability problems with the software's interface. Subsequently, I changed to using MAXQDA as the main software for organising, transcribing, and coding the data generated as it was extensively tested and became the preferred tool within the POEM research group, offering me additional support and the opportunity to discuss practical and methodological issues with my fellow POEM researchers.

4.5.2 Coding process with MAXQDA

My coding process employed different methods, which will be described in detail below. In general, I built on Saldaña's (2013, 58) understanding of the 'reverberative nature of coding' and followed a circular process for qualitative coding, consisting of several cycles of basic coding, fine coding, and analysis.

[16] See oTranscribe website: https://otranscribe.com/, accessed 15 October 2021.

[17] See MAXQDA website: https://www.maxqda.com/, accessed 15 October 2021.

These cycles are important because qualitative analysis requires several rounds of comparing data with data, codes, and categories to start drawing meaningful conclusions. In order to explain my coding methods and decisions in the process, I follow the steps proposed by Rädiker and Kuckartz (2020) in their guide on focused analysis of qualitative interviews with MAXQDA.

Step	What	When	Type of coding
1	Prepare, organise, explore data	April–September 2020	Attributive coding with descriptive variables
2	Develop categories for analysis	April–September 2020	Coloured categories for coding
3	Basic coding	July–September 2020	Descriptive and in-vivo codes
4	Refine coding and develop category system further	October 2020–April 2021	Pattern and descriptive coding in relation to writing memos and analysis

Table 11: Coding steps during data analysis

4.5.2.1 Step 1: Prepare, organise, explore data

After I had imported and synchronised all data in a MAXQDA project, I started an intense process of transcribing, listening to, and reading through the data. Mason (2002, 148) introduces three forms of data reading: literal, interpretative, and reflexive in relation to different data. Initially, I spent most time with literal and interpretative readings of interview transcripts and workshop materials as I was particularly interested in how the research participants made sense of the creative processes in which they were involved. Only then did I start reflective readings of my own fieldnotes and recognising organisational material, such as invitation emails and meeting minutes, as interesting data for my analysis. I documented my early ideas in two ways: highlighting sections that I found interesting or remarkable, and writing memos about whole text documents after rereading them. Simultaneously, I started to connect the datasets and cases to various points, using various facets or foci. This step also involved first

attributive coding by enriching all generated documents (fieldnotes, interview transcripts, survey downloads) with descriptive variables (Saldaña 2013, 64).

4.5.2.2 Step 2: Develop categories for analysis

My analytical coding journey started with a rough category system, which was then refined and extended through the coding process. Following my research questions, the research cases, and the interview guide, several topics formed the focus of the analysis: creative practices and tools, relations between participants and museum practitioners, objects and materials worked with, group composition, working settings, and co-created outputs. On this basis, a rough colour-coded system was developed to give an initial orientation for coding and allow comparisons across case studies:

- PRACTICE – what they do with cultural heritage, e.g., hacking, hackathon, learning
- USER – what we learn about interview partners, e.g., background, relationship to event, profile
- ORGANISATION – what we learn about the perspectives of organisers
- CREATION – what they created and creative aspects, e.g., ideas, outputs
- CO- – how the participatory/collaborative aspects were described, e.g., collaboration, team roles
- BARRIERS – what did not work out or hindered the participation
- PROCESS – how the work took place, e.g., flow and methods
- DATA – what was done with data, e.g., selection, meaning
- MOTIVATION – reasons for participation

4.5.2.3 Step 3: Basic coding

The coding of text passages followed a combination of descriptive codes, assigning topical labels (Saldaña 2013, 83), and in vivo codes, drawing from the language of interviewees (ibid., 84), – a 'mix and match' strategy, which Saldaña (ibid., 94) encourages to widen perspectives on data in the first coding cycle. These newly generated codes were created using the words of participants (in vivo) or paraphrasing text passages and were loosely connected to the category

system. Descriptive coding was particularly useful for analysing fieldnotes and other materials created in the process. Exploration of data, testing a rough category system, and basic coding form what Saldaña (ibid., 208) has described as the first cycle of coding: a process aiming to create an overview and inventory of all research data. The in vivo and descriptive approach fostered a close reading of all material but also questioned the rough category system and the comparison across cases. While I started with a comparative perspective, for the second cycle it proved more useful to look at each case separately as their strengths lie in their different facets, which together address the complexity of the research puzzle (see facet methodology).

4.5.2.4 Step 4: Refine coding and category system

According to Saldaña (ibid., 209), the second cycle of coding aims to condense codes into categories, find patterns, and fit everything together. In this case, the first coding cycle created a mass of codes, which were then grouped into more analytical and abstract codes and categories. In starting to outline the first analysis chapter, the relevant categories were chosen as entry points into the data. While writing, I checked the codes and memos and went back to read through the whole document, sometimes going back into coding again or changing the codes to make them more precise and context related. The writing of the analysis and the coding process in MAXQDA were therefore deeply entangled. During this phase, pattern and descriptive coding were used to group codes into bigger categories for analysis. They functioned to correct and review the colour-coded high-level structure with which I started.

With a growing number of coded segments in each category and a bifurcation of sub-categories, this process felt chaotic at times. The application of practice theory helped to unravel this coding knot. During this stage of restructuring the data, Richards' (2014, 104) note on qualitative coding helped keep the goal of coding in focus:

> The goal is to learn from the data, to keep revisiting data extracts until you see and understand patterns and explanations. So you need to retain the data records, or the relevant parts of them, until they are fully understood. Coding is not merely to label all the parts of

> documents about a topic, but rather to bring them together so they can be reviewed, and your thinking about the topic developed.

Based on the idea of retaining and not labelling the relevant parts of data, I started a new round of refining my codes, which led to the final analysis. This final structure of categories looked very different to what I started out with:

- PARTICIPANTS
- MOTIVATIONS FOR JOINING
- PRACTICES OF COLLABORATION
- PROVIDING DATA
- USING OBJECTS – digital and analogue
- HACKATHON PRACTICES
- REUSING PRACTICES
- REFLECTING FORMATS

4.5.3 Writing process

The coding process revealed patterns and relations across cases, or, in the vocabulary of facet methodology, the facets refracted light on each other. Rooted in practice theory as an overarching theoretical lens, I utilised a range of concepts for specific analyses of participatory format logic (Morse 2021; Swidler 2001), engagement zones between different participants (Onciul 2015), and sense-making and remediation practices with museum objects and digitised collections (Dervin 1998; Bolter and Grusin 1999). Throughout the writing and rewriting process, which took roughly a year from the first ideas to the fully fledged analysis chapters, the analysis gradually evolved from codes and patterns, to growing clusters, to connected topics. As previously indicated, comparing all three cases would have understated the interesting variety they all brought to the table. Thus, I developed the following structure for the analysis chapters (see figure 11):

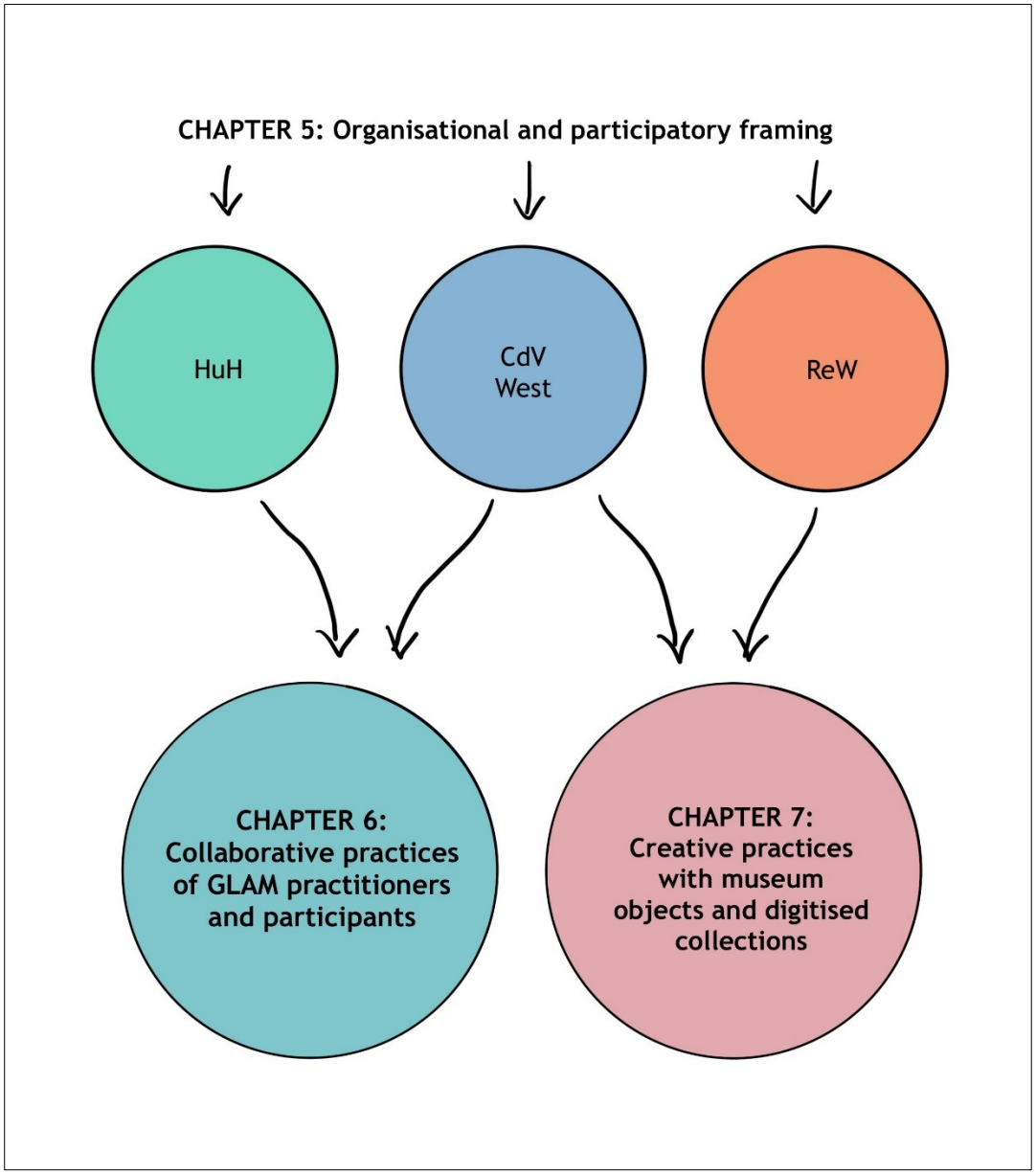


Figure 11: Analysis of research cases. Mucha, CC BY 4.0.

4.6 Methodological limitations

Facet methodology enabled research into multiple aspects impacting reuse of collections in co-creative events. However, the differences between case studies limited the comparative analysis and thereby led to small data samples, which needed to be analysed within their respective contexts. Thus, studying, for instance, more CdV hackathons in different regions or organising multiple ReWs with different groups of participants would have built more evidence for the analysis. Instead, this research identified important research elements and directions requiring further examination in future projects.

The combination of focus groups, group interviews, and one-to-one interviews created different spaces in which participants could reflect on their practices. Focus groups and team interviews were helpful for studying dynamics between team members or work colleagues, thus considering the broader contexts that framed their participation. One-to-one interviews were more effective for following participants' interests, thereby gaining insights into their individual motivations. While each method furthered interesting reflections with participants, the group methods also limited the possibilities for all participants to speak their minds equally. In particular, the big focus group with museum staff in The Hunterian did not offer a safe space to share personal insights. This could have been improved with a more nuanced combination of spaces for group and individual reflection processes.

Practice research enabled the design of co-creative events in which collaboration and participant creativity became tangible. However, these situational inquiries were also time-intense research methods that required several months of planning, organisation, and follow-up. In combination with the short timeframes for action research with The Hunterian and the MEK defined by the overall POEM schedule it was not possible to follow iterative cycles of testing, evaluating, and improving hackathon and workshop methods.

Another methodical limitation was associated with the definition of the field as face-to-face engagement with collections. Consequently, when all face-to-face events were cancelled during the Covid-19 pandemic, the fieldwork came to an abrupt end.

Chapter 5 Organisational and participatory framing of co-creative events

The academic discussion of participatory museum theory has stressed the existing power inequalities between institutions and participants across various projects and countries (Lynch et al. 2020; Sternfeld 2018; Holdgaard and Klastrup 2014). Thus, it is important to consider these dynamics throughout the different organisational formations and examine their impact on collaboration and creativity. However, inspired by critiques of academic models that hierarchically categorise participation discussed in the literature review (see section 3.2.3) (Carpentier 2011; Onciul 2015; Graham 2016), this analysis does not attempt to judge good or bad participation based on the level of shared choices or control. Rather, it takes a closer look at how the conditions for participation were shaped by organisational practices, format, and topic of the co-creative events, following Morse's (2021) suggestion of different participatory logics. For this purpose, co-creation was defined as 'any act of collective creativity' (Sanders and Stappers 2008, 6).

The research therefore built on public face-to-face events in which people came together to negotiate meaning and use of museum collections with collaborative and creative practices. This chapter focuses on the framing aspects of the Hunterian Hackathon (HuH), Coding da Vinci Westphalia-Ruhr (CdV West), and the Remix Workshop (ReW) to analyse the impact of the events' organisers, themes, and formats on engagement. Comparing an institutional project with a community approach and a research workshop revealed different participatory logics underpinning co-creative events and their thematic emphases on discomfort (HuH), openness (CdV West), and remix (ReW).

The literature review (see section 2.3.1) and the processes at The Hunterian (described in section 4.3.2) introduced discomfort as a feeling that people might have when confronted with colonial legacies of collections, power inequalities tangible in museum displays, or challenging museum objects. In reviewing relevant literature, openness was identified as a value and aim that drives digitisation of collections and publication with licences allowing reuse and unites a community movement of cultural heritage practitioners (see section 2.3.2).

Remixing was conceptualised as a literacy that enables participation in culture – a cultural practice and personal skill required to make use of open collections (see section 3.4). Addressing these themes in co-creative events created productive friction and revealed new facets that complemented institutional, activist, and academic perspectives of the organisers. This chapter aims to understand what shaped the co-creative formats to contextualise the following analysis chapters and point to practical recommendations for cultural heritage practitioners.

5.1 Hunterian Hackathon

The event took place on a Tuesday afternoon, on 14 May 2019 in the gallery space of The Hunterian. It brought together university lecturers, students, and museum staff in mixed groups to critically discuss objects on display bringing about discomfort. Thirty-two people joined the three-hour event, including the hackathon's steering group and myself as practice researcher and participant observer. The event was part of the Global History Hackathon series, which a group of researchers started that year aiming to open up different collections and archives across Glasgow for studying global history in a more playful, hands-on, and de-hierarchised way (Clark et al. October 2019).

5.1.1 Institutional framing

In my position as both practice researcher and PhD student, supervised by two museum practitioners, I was in touch with the museum for six months before the hackathon finally took place. During this time, I came to know an institution that was very interested in critical discussions about participation on a theoretical level – e.g., organising a debate event on 'Decolonising The Hunterian'[18] – but that moved slowly towards a participatory project on the ground. I experienced a lack of connection between tangible actions and written statements about '[e]ngaging audiences through building and sharing knowledge' (The Hunterian n.d.b) in the 2015–2020 strategic plan. The key strategic theme for the

[18] See 'Decolonising The Hunterian' event: https://www.gla.ac.uk/hunterian/visit/events/headline_668825_en.html, accessed 23 November 2021.

development of the museum aimed to '[i]ncrease engagement with our collections, physically, intellectually and remotely. Continue experimental public programme and diversify our audience profile' (The Hunterian n.d.b).

In the two years since the HuH took place and the writing of this thesis, the museum has developed its programmes and initiatives further (Yeaman and Museums Galleries Scotland 2020), but, at the time of the collaboration, I noted the challenge of bridging the gap between institutional aspiration and concrete changes in museum practice. This is a common phenomenon in relation to concepts such as engagement and diversity, which other researchers such as Ahmed (2012) have studied in depth. In an interview after the event, a Hunterian staff member self-critically reflected on the lack of institutional experience with engagement and participation:

> We are not very good at this. I think sometimes the Hunterian is ten to fifteen years behind other places. Part of that has been to do with our structures, our projects and programmes and also the nature of the position the university takes within the city and the fact that Glasgow Museums is on the doorstep. So, there's no drive to do that because there is a huge museum service there that already does that but I think that we would benefit from something like that as well (HuH 6).

In addition to criticising their own programming and structures, this Hunterian staff member also referred to the university context in which the museum is embedded in terms of mind space and actual space, and the relationship with Glasgow Museums and the Open Museum,[19] renowned for their participatory outreach programmes (Simon 2010, 175). In different conversations with staff members, these contextual factors were mentioned, helping to enable understanding of the gap between interest in and experience of participatory projects. Within this institutional framing it became clear that one focal point of the HuH was testing participation, dealing with expectations around participation, and learning what the term would practically mean for professionals within this specific museum institution.

[19] See Open Museum website: https://www.glasgowlife.org.uk/museums/venues/the-open-museum, accessed 23 November 2021.

In its 2015–2020 strategic plan, The Hunterian defined the audiences they wanted to engage and collaborate with mostly within the broader context of research focusing on education and knowledge exchange (The Hunterian n.d.b). In line with this strategy and the museums' close connections with the University of Glasgow, the HuH mostly focused on participants within the university community. Following Graham's (2016, 257–258) recommendation to start with those already close to the institution and those already interested in participation, we reached out to other museum staff, university students, lecturers, and participants with a special interest in the topics of animal studies and critical museology.

Like any museum, The Hunterian is made up of people with very different ideas about what a museum is and should do. The critical intervention we conceptualised not only conveyed different interests of the organisers, but was a chance for the whole museum team to enact and discuss their role as museum practitioners engaging with the public. In this way the institutional framing of HuH dominated the goal of the event: the institution wanted to test participation, learn to listen to participants, and potentially initiate a change in their own practices.

5.1.2 Reflecting discomfort

Curating Discomfort was a participatory project idea that the Hunterian team worked on during our collaboration for HuH and for which the museum received funding from Museums Galleries Scotland during that time. In the project application (The Hunterian 2019), they stated that:

> This project will address pressing issues emerging for contemporary museums, most notably the need to find new, inclusive ways to open the interpretation of contested collections to a wider diversity of voices. A series of museum interventions, community conversations and digital initiatives will seek to replace traditional institutional authority in the development of interpretative strategies around questions including public health, social and gender equalities, and colonial histories. This experiment in 'Curatorial Discomfort' will enable The Hunterian to question thoroughly what our collections can mean for audiences, establish new models and narratives, new collaborations with partner institutions, and re-shape the role of curators within a major university museum.

What comes through in the later application is a clearly stated need to address these questions, 'through institutionally and curatorially "discomforting" processes in which even outputs and outcomes are shaped through community engagement with the collections' (ibid.). Based on this institutional critique, a self-reflective process was envisaged during which the museum would organise participatory interventions to address discomfort related to museum collections and reflect on their own practices.

This issue is not unique to The Hunterian as there are many ways in which the institutional history of museums might trigger discomfort, or, as Geismar (2018, 2) puts it:

> The legacy of the nineteenth-century object lesson continues to inflect our understanding of how museums 'work' today. Discussions about the right of museums to 'own' culture, to speak on behalf of people and their culture(s) and to represent others often start with the nineteenth century. For it was during this time that the legacies of imperialism, colonialism and class hegemonies, the normative standards for citizenship and consumer identities were consolidated across the (museum) world.

The Hunterian's collections, like many other museum collections, contain traces of colonial, imperial, and unequal relationships. The museum team identified the HuH as an opportunity for a critical intervention that would initiate discussions about discomfort and involve the museum team in uncomfortable but deemed useful discussions. In this way, the museum team had three main reasons for organising the event: to raise awareness of collection-related issues that needed to be addressed, such as human and animal remains on display; to learn from non-museum participants what they perceived as uncomfortable in the museum gallery; and to test a new format for critical interventions. During the hackathon, the museum introduced the topic and asked participants to single out objects giving rise to feelings of discomfort on display. Although the idea was to focus on the museum's interpretation of contested collections, the topic triggered a critical tension that influenced the dynamic in some of the mixed groups. Some discussions were experienced as challenging because of the emotional tensions that became manifest between people with different opinions – demarcations that sometimes ran between museum staff and non-

museum participants, and sometimes cut across them. Section 6.1 further examines how they engaged with each other and navigated difficult emotions.

Although the topic of discomfort was set by the museum team, it resonated with participants and provided a critical lens on the institutional framing of museum displays and objects. Participants related and experienced discomfort on different levels in relation to how the museum collected and curated objects, how the museum attached knowledge to objects on display (and in the collection), and how the museum staff steered the group work. While discussion of digital reuse emphasises the positive potential of opening up cultural heritage collections, discomfort is an overlooked topic. As this co-creative event revealed, however, participants also have a wide range of unpleasant feelings when engaging with collections. A critical examination of collections and their institutional framing therefore adds a crucial layer to the debate on digital reuse. Building on the substantial work of critical heritage and museology researchers and practitioners who aim to decolonise museum collections in both digital and analogue form, it has become clear that neither collections nor knowledge systems, or their infrastructural manifestation in the form of databases, are neutral (Turner 2020; Barringer and Flynn 1998b; Srinivasan et al. 2010). Rather, digital collections, like physical ones, are built upon biases and can contain and mediate aspects of problematic museum practices that need to be recognised, reflected upon, and made transparent. Similarly, Odumosu (2020, 290) calls for greater awareness of the ‘breaches (in trust) and colonial hauntings’ that he traces back in the photograph of a crying child of the Afro-diasporic community and describes a general ‘discomfort of unmediated access to, and batch scanning of, cultural memory’. While the example of digitising ethnographic photographs represents a specific case of colonial legacy that makes the requirement for careful approaches strikingly clear, other collections and other perspectives bring less obvious uncomfortable feelings to the fore.

The HuH showed this variety in the wide range of participant discomfort towards very different objects. For example, one team of six people felt uncomfortable when presented with animal deformities, a display about contact with First Nations in Canada written completely from a Western position, a medical

preparation of a gravid uterus, and an Egyptian mummy (see appendix E.1.1). Connecting these objects, the group started to discuss the overarching theme of 'life and death' in relation to questions of knowledge hierarchies in museums and noted three topics to work on: lifecycles (sanitisation of death), gender (who is a specimen), and language matters (othering, what is said/unsaid).

They pointed to a lack of information and voices in the display other than that of the museum as expert and thus debated 'how do you make the museum more of a democracy for everyone's views to be involved?' (HuH pitch 1). In their process of choosing and discussing objects it became evident some participants perceived not only objects but also the ways in which the museum framed them in terms of language and communication with audiences as problematic.

As envisaged in the museum's project application, this challenged the museum team to address their current ways of interpreting objects and writing object labels, not just the historical legacies of the collection. The Curator of Discomfort, who was appointed more than a year after the HuH took place, wrote in an introductory blog post on the museum's website that: 'Discomfort is necessary for genuine change' (Yeaman and The Hunterian n.d.). Although exchange and collaboration with audiences and participants is crucial for this process, they cannot bring about institutional change, rather – it is the task of those working within institutions to reflect on their museum practices in relation to discomforting feedback. The analysis in section 6.1 shines a light on the ripple effect of this event on the museum team.

5.1.3 Hackathon as critical intervention

The HuH event took the form of a hackathon, publicly addressing the issue of discomfort and emphasising the museum's interest in creative solutions. The idea for the event to become a hackathon was also based on the collaboration with the group of Global History Hackers with whom I joined. Within this context, we moved away from the digital connotation of hackathons and in turn foregrounded the social effects (Taylor et al. 2017) and creative problem-solving in group work. We also used the hackathon approach to fast ideation, encouraging participants to developing tangible ideas and pitching them in short

presentations at the end. In this way, the HuH and the other Global History Hackathons in Glasgow mostly built on the agile working modes encapsulated in hackathons and tested them within the learning and teaching environment of universities (Clark et al. 2019).

This approach was premised on what Cramer (2014, 18) describes as ‘a post-digital hacker attitude of taking systems apart and using them in ways which subvert the original intention of the design’. It draws on definitions of hacking discussed in the literature review – as a mode of DIY creativity that deconstructs, combines, and reuses all kinds of media (Moura de Araújo 2018, 16; Steinmetz 2015, 140–141). Although the HuH did not aim to literally take the exhibition apart, the topic of discomfort it selected implied a critical deconstruction of the museum’s narration. As a critical intervention, the hackathon had various functions: the museum publicly acknowledged the need for self-critical reflection and aimed to explore engagement with objects or elements of the display that might be subversive, telling different stories and thus challenging the dominant narration. These goals were only partly met as the hackathon failed to produce tangible solutions on one hand, but succeeded in enabling the co-articulation of issues and collaboration between museum staff and non-museum participants on the other.

Most of the group moderators described the first phase of the workshop (see figure 12), involving the selection and discussion of uncomfortable objects within the group, as most vivid and creative, stating that it ‘went exceptionally well, members were lively, full of ideas, while the second part after coffee felt a little flat’ (HuH 2).

Figure 12: Group work at HuH. UoG photographic unit.

The second part was guided by the question of how to address these issues. To support ideas and document them, I sketched a template for each group to fill in. Some perceived this as rather restrictive and, in combination with the big question, many groups lost their drive – as one moderator recalled:

> when we had debated all the ideas and when we had to, we had to choose which one we want to work out, once we had identified all the problems and all the issues, then I asked them: 'Okay, now comes the moment to be creative' – and I framed it in this way: 'Now, the director […] comes to you and tells you: okay, I want to, I want you to do whatever you want to do. There's no restrictions and bad fits. You can play not just in with exhibitions, try to be more creative, not just exhibitions, think big! What are your ideas?' And that's when people just went blank, completely blank [laughs] and at that was, when I was just trying to spark ideas. Because there was a (...) you know, like, big stop in the conversation, the conversation was lively and they had so many ideas and so many debates and critiques and perspectives and blah blah blah, but then when it comes to the point of 'okay, what do we do?' it went... [silent] (HuH 8).

This longer quote illustrates the change in creative energy when the task changed – it is a long way from criticising the status quo to developing alternative approaches. While the group work supported collaborative

articulation of issues, finding creative solutions proved to be much more challenging for various reasons, including dominant institutional framing, short timeframe, difficult topic, lack of creative materials and methods, and no clear perspective for contributions.

Rooted in the museum's Curating Discomfort project and the Global History Hackathon initiative, the benefits for museum practitioners and global history researchers were clear, while for other participants it was less clear how they would benefit from contributing ideas. In the online survey, one participant stated that they would have liked more time for '[e]stablishing the objective of the Hackathon – I needed to know what the outcome of my input would be to ensure it aligned with my organisation's values' (HuH survey 1).

The participant mentioned their affiliation with another organisation to point to possible conflicts of interest. Participants within the university context might have seen more value in contributing to the self-critical process of the university museum. However, all participants would have benefited from a clearer outline of the objectives before deciding to share perspectives and create ideas together. Thus, a clear goal could make such a co-creative event more transparent for all involved participants.

Although materials for taking notes were provided, in the form of sticky notes, paper, posters, pens, whiteboards, and a template, more creative scaffolding would have been necessary to lead the groups from discussing to creating content (see figure 13). A specific creative method, creative materials such as print-outs of the objects, and a proper workshop space could provide this scaffolding. However, such events would also require more time from participants, which could again represent a barrier to participation.

Figure 13: Group work in exhibition space. UoG photographic unit.

The topic of discomfort was challenging, emotional, and complex, especially in combination with the mixed group collaboration. The changes it can engender also concern museum practices, meaning that museum staff had a double role as exposed experts and participants. Future interventions could aim for collaborations with other specific expert groups able to meet museum practitioners at eye level. As one survey respondent noted, 'some participants were visibly "uncomfortable" with the responses being shared' (HuH survey 2). To circumvent this uncomfortable feeling in the group work, interventions that provide safe spaces for the critical voices of participants without museum staff present could be another way forward in future events.

However, some non-museum participants enjoyed working together with museum staff and a student noted that the museum team was very candid and open about the collection – 'even the director' (HuH fieldnotes). This supports the finding that the hackathon also functioned as a public statement on the part of the museum to take an active position towards uncomfortable institutional topics. Another student outlined contact with museum professionals as one of their main motivations for joining the hackathon in the first place (HuH 10) and

the overall feedback in the online survey stressed the positive impact of sharing different perspectives. One respondent wrote:

> I found it really useful to be with a team of people from varied backgrounds. This included those who worked in the museum sector, both behind the scenes and front of house, which I do not have experience with. Our answers were guided by our existing knowledge, which added (positive) layers of complexity to thinking about the task (HuH survey 3).

The collaboration led to new connections between objects and discussions 'on the purpose of museums and their position of authority' (HuH survey 4).

In this way, the hackathon effect of bringing people from different backgrounds together worked well for the majority of participants within the context of the university environment. Their collaboration in mixed groups catalysed relevant discussions relating to the core of the museum. However, a longer timeframe or a second event in a different workspace with more creative support could have led to more tangible outcomes. This co-creative event mostly shed light on the institutions that frame engagement with collections. Although it is crucial to bring more focus to institutional roles and responsibilities in debates on digital reuse, organising events from this perspective runs the risk of foregrounding museum interests and the needs of museum practitioners. Interestingly, the self-critical approach of Curating Discomfort requires a fine balance between focus on the museum and the public outcomes of the process. Utilising Morse's (2021) distinction between contributory logic and logic of care in community engagement, detailed in section 3.2.3, a contributory logic underpinned the HuH as it was centred on questioning, reflecting, and, as part of a longer process, even changing the museum. In contrast, it was not clear how participants from outside the institution would benefit from criticising professional practices of collecting and exhibiting museum objects. In conclusion, one important improvement would be to establish objectives for and with different participants and thereby develop a mutual goal.

5.2 Coding da Vinci Westphalia-Ruhr

CdV West spanned an eight-week period and consisted of two organised face-to-face events and a self-organised sprint phase in between. The kick-off took place on the weekend of 12–13 October 2019 in the Zollern Colliery – LWL Industriemuseum (industrial heritage museum), close to Dortmund, and the awards ceremony was scheduled on Friday 6 December 2019 in the cultural centre Dortmunder U in the city of Dortmund. Around seventy people attended the kick-off weekend and around fifty returned for the awards ceremony. The participants encompassed organisers, funders, interested members of the public, and participants split into two groups: representatives of GLAM institutions who provided digital collections as material and hacking participants who used these datasets for creative projects.

5.2.1 Community approach

Coding da Vinci (CdV) is an ongoing event series and CdV West was framed in this context on many levels, including event structure, organisers, and community. Many participants referred to this bigger context in interviews after the event and this part of the analysis therefore examines the broader CdV context, while Chapters 6 and 7 focus more on CdV West.

CdV West was the eighth event within the renowned cultural hackathon series CdV. The hackathon series was founded by a group of Open GLAM practitioners in 2014 who equally represented GLAM-oriented and public-facing institutions and organisations such as the German Digital Library, digis Berlin, Wikimedia Germany, and the OKF. This ‘secret of success’, as one founding member put it in an interview (Bartholmei and Mucha 2019), led to a growing number of regional hackathon events and initiated a network of institutions, groups, and people supporting the cultural hackathon with data, infrastructure, time, and participation.

At CdV West, this network was even the subject of one project in which a participant developed a knowledge graph to visualise the impact of CdV.[20] This showed how data, institutions, and participants have developed mutual ties and interrelations over time. While the initial idea of CdV was to involve the different communities represented by each of the founding members and use their networks to reach out to participants for the hackathon events, CdV has become its own community that meets regularly at each hackathon event. The high number of returning participants who join the hackathon events in different roles, as organisers, data providers, and members of hacker teams, supports this observation.

They form part of the wider Open GLAM community and follow their mission, which Terras (2015a, 738) described as,

> to help cultural institutions open up their collections, including workshops, position papers, the provision of documentation surrounding licensing and formats which are particularly geared to the cultural and heritage sector and the creation and support of online and offline forums for professionals to discuss experiences and potential of opening up collections.

Cultural hackathons represent one concrete way of reaching this aim of targeting professionals. It is therefore unsurprising that CdV West mobilised twice as many GLAM practitioners from regional archives, libraries, and museums to share digitised collections than participants to hack them.

However, as the Open GLAM idea not only involves cultural heritage practitioners but also participants who are willing to spend their spare time and develop creative applications of collections, the community also depends on these participants. Indeed, Open GLAM activists often advocate for the

[20] See project description: https://codingdavinci.de/projekte/visualizingdavinci, accessed 23 November 2021.

perspectives of active users, hackers, and creatives. Thus, ideally, this diverse group should also be an essential part of the Open GLAM community.

Figure 14: Empty seats at CdV West. Mucha.

In this way CdV West was organised from within the CdV community to bring together representatives of GLAM institutions and tech-savvy participants to ‘evangelise’ around the Open GLAM principles, target new GLAM partners, and grow the existing CdV community. In contrast to the HuH, CdV West was not dominated by one institutional framework but rather shaped by these community interests.

5.2.2 Anchoring openness

Openness is a key term when it comes to reuse of digital collections: digitisation is a process that opens the collections for online visitors, while open licences form the, albeit much debated, legal framework for reuse, and the movement pushing for their implementation is called Open GLAM in reference to other open access communities (Tzouganatou 2021). The literature review has introduced the concept of openness in detail and pointed to the shortcomings of understanding it only as a blueprint for licensing digitised collections while maintaining the curatorial authority (Axelsson 2019). The analysis of discomfort in the previous event showed the impact of institutional framing on the meaning

and use of collections and indicated that openness also needs to be applied to rethinking professional practices of collecting, documenting, and digitising collections. However, CdV West and CdV have a stronger focus on the technical aspects of digitising collections and making them legally accessible for reuse. In line with the Open GLAM community, openness of cultural heritage data is the overarching value that CdV aims to convey by repeatedly organising hackathon events.

In order to understand this organisational practice better, Swidler's (2001) concept of 'anchoring practice' provides a useful lens. She defines anchoring practices as benefiting from antagonistic social relationships to 'enact constitutive rules that define fundamental social entities' (ibid., 95–96) and further states that:

> the establishment of new social practices appears not so much to require the time or repetition that habits require, but rather the visible, public enactment of new patterns so that 'everyone can see' that everyone else has seen that things have changed.

In this sense, CdV hackathons, such as CdV West, can be understood as a public enactment of digitally opening up collections and letting other people reuse these digitised collections. Drawing on this notion of anchoring practice reveals how the CdV organisers champion openness: within the hackathon context, Open GLAM principles function as a constitutive rule – in order to participate in a hackathon, GLAMs have to create and provide datasets with open CC licences. Further, open datasets are shared with people for reuse in a public event that showcases their creativity and consolidates the usefulness and relevance of open data. In this sense, the recurring hackathons are 'repeated ritual confirmations' (Swidler 2001, 98) – practices that anchor openness within the community. CdV addresses the parties involved in a dichotomic way: GLAM practitioners represent data providers and the people who reuse the data are called hackers. Within this social relationship, providing and using are clearly separated practices, which can be read as an attempt to grant more openness to users and less control to data providers. However, these opposing positions also represent an effective way 'to structure related discourses and patterns of activity' by defining the 'basic entities or agents in the relevant domain of social action'

(ibid., 95). In other words, the hackathon roles outline the stakeholders envisaged to negotiate openness in the field of cultural heritage and, through their participation, they begin to form a community of practice. Within this community, datasets provided are openly licensed and all prototypes developed throughout the process are given back to the community with the possibility of reusing them and enhancing codes and ideas. In this sense, the CdV website has become a growing repository of open datasets, examples, codes, and ideas.

In addition, CdV pursues an openness in the creative process without defining concrete tasks for participants besides using the data presented. At CdV West, this incorporated twenty-five datasets from diverse cultural heritage collections, and it is up to the hacker teams to come up with ideas, structure their creative process, and develop prototypes. The online survey after the event showed that the majority of participants preferred this open process (see appendix C.2). Furthermore, the founders of CdV and some participants insist on open access for all services used in the organisation of the event and one participant remarked that this was not adhered to in CdV West, where they used Eventbrite as a ticketing solution (CdV 2). This aspect was therefore sidelined by some stakeholders, who see the main focus of CdV hackathons as illustrating the value of openness in enabling reuse of digital collections and of the open creativity that the hackathon format grants the community.

5.2.3 Hackathon as community event

While CdV West's focus on hands-on work with data tied in with the most common form of tech-oriented hackathons, its stretched timeline of eight weeks differed greatly from the usual twenty-four or forty-eight hours. As a result of this structure, the hacking part of the event was almost 'outsourced' to self-organised hacker teams, and the social experience of bringing different community members together and publicly anchoring openness was foregrounded in two face-to-face elements – kick-off and awards ceremony. Researchers have emphasised the social function of hackathons in facilitating networking and encounters of different people (Taylor et al. 2017; Arrigoni et al. 2020). However, some participants saw CdV West as exemplifying a growing social gap between the needs of hacking participants and the interests of

cultural heritage practitioners who locally organised and joined the event. One hacking participant, who had organised a CdV hackathon before, even withdrew their participation because of increasing frustration. During the kick-off they noted that specific details were missing, such as ‘Mate’ drinks (a characteristic energy drink in hacker communities) and a thorough technical check of the power sockets. More importantly, the participant stressed that the organisers did not reach out to hackers to gain their expertise, seemingly gaining their knowledge of the ‘hacker community only from TV’ (CdV 2). This observed distance between social worlds represents one explanation for why the organisers’ solid outreach efforts before the event, such as contacting universities with creative digital courses, joining developer meet-ups, and organising shuttle buses to the fairly remote event venue, did not have the desired result. Another barrier to participation was the organiser’s decision to schedule the awards ceremony on a Friday, which made it impossible for full-time working participants joining outside their working hours to attend the event. In turn, it prioritised the needs of GLAM practitioners and organisers not to work at the weekend.

Other hacking participants, on the other hand, empathised more with the organisers, stating that the whole CdV was going through a learning and development process and ongoing evaluations and noting that conversations at the events and afterwards would enable understanding of ‘what the people want’ (CdV 6). Overall, most participants supported the general community aims of CdV, appreciated the organisational efforts of the local team, and stressed that these types of hackathons are needed (CdV 3, 9, 10, 11, 12, 13). With a nuanced perspective on the participation gap, two participants also conjectured that the digital connotation of hacking in the CdV context might drive away potential participants who would be more interested in the creative aspect of reusing collections (CdV 5, 6).

This indicated that CdV West tended to be more a sectoral event for GLAMs interested in digitisation and the existing CdV community than an event for and with new creative hacking participants. It therefore succeeded in networking the GLAM community in the region of Westphalia-Ruhr with a participatory logic of

care that was not extended in the same way to local hacking participants. In future events, outreach to these groups and early communication with them could help to bridge the gap between the interests of organisers, GLAMs, and hacking participants. In addition, the hackathon structure itself could benefit from further development. CdV hackathons are currently organised around the datasets and the kick-off weekend and awards ceremony offer social interfaces to present, test, discuss, and play with the data. The substantial publicity of these events attracts and convinces GLAM institutions to share their collections. This has led to a growing number of open cultural datasets on CdV's website – one of the most tangible co-created outcomes of the cultural hackathon. Here, a contributory logic shines through that turns the hackathon events into opportunities to collect more open data and promote this as evidence of the success of the Open GLAM movement. However, balancing this effort with an equally strong focus on the creative and collaborative process could show more care for and strengthen the position of hacking participants throughout the event. While leaving this process open to the hacker teams grants maximal creative freedom and independence, it also makes their work, practices, and needs invisible to their GLAM counterparts, undermining the aim of creating awareness and understanding of each other's perspectives. Highlighting and structurally supporting the creative and collaborative process might also represent an additional motivation to participate. This could take different forms and directions, such as offering more structure for less digital-savvy participants or closer collaboration and follow-up options with institutions for more professional participants. Taken together, extending the logic of care to the hacking participants improves the participatory relationship.

Since the hackathon, the CdV head office has recognised this need and implemented certain steps: at the CdV West awards ceremony, the organisers announced the launch of a stipend programme to support hacker teams to develop their prototypes further – an important signal to hacking community members that their perspectives will be valued more in future. At the beginning of 2021, the head office started a bottom-up process to refine the CdV concept and strategy. In two online workshops, around forty participants joined to brainstorm and discuss the purpose and future of CdV. Regular hacking

participants, former local organisers, GLAM practitioners, founding members from Wikipedia and the OKF, head office staff, interested community members, and researchers, including me, expressed very different ideas on what CdV could be and for whom. Ideas ranged from focusing on the digital literacy of GLAM institutions to strengthening the social impact and sustainability of the prototypes. The discussions illustrated the paradox of a growing community that organises the hackathon for and of itself. On one hand, CdV offers community members an opportunity to meet and strengthen their feelings of belonging, while, on the other, members can feel estranged by the institutional layers and diverging interests of the growing CdV network. A combination of both contributory logic and logic of care shaped CdV West: while the communal goals of Open GLAM motivated all participants to contribute datasets and prototypes, the participatory logic of care for the growing community was not evenly distributed between the needs of organisers, GLAM practitioners, and hacking participants. Recent developments relating to discussing and reflecting CdV with the community mark a turn towards the logic of care that will be required to keep the growing community together.

5.3 Remix Workshop

The ReW took place in the ethnological museum MEK in Berlin-Dahlem on Saturday 29 February 2020. Amongst the thirteen people who joined the day-long event were three facilitators: fellow POEM researcher Susanne Boersma, a volunteer, and me. Young participants aged between eighteen and thirty-five years old who studied or lived in Berlin were invited to make collages and stop-motion films based on the MEK's permanent exhibition. Building on manifold connotations of remixing, the event focused on how analogue and digital remixing practices supported engagement with museum objects. The workshop was part of a five-month research secondment at the MEK and was collaboratively organised with Susanne Boersma.

5.3.1 Participant-centred research

Complementing the previous framing of institutional and community interests, this event was mostly framed by the POEM research context. As practice

researcher, I developed the idea during the POEM secondment at a POEM partner institution in collaboration with another POEM fellow under the umbrella of the POEM research focus: participatory memory practices. In this context, we were both interested in participants' perspectives on participatory museum projects. Building on our separate previous research we wanted to organise an event for participants that would focus on their needs and interests. We therefore tried to decrease the influence of the museum and institutional framing as much as possible. Instead, we aimed to create an opportunity to learn from participants and explore the research topic with them. Focusing on participants, we also pondered collaborating with a community organisation or school to bring in their perspective early in the process. However, despite reaching out to several Berlin-based organisations, we did not find a partner for the pilot event. Thus, we decided to organise the ReW on our own and explored a range of different invitation strategies to address young and international audiences, handing out flyers at the nearby campus (see appendix E.3.1), sharing stop-motion films on Facebook (see figure 15), and sending invitation mails via different mailing lists.

Figure 15: Part of ReW invitation GiF. Mucha.

Susanne Boersma reflected on this invitational process of trying 'to reach out to different groups in different ways using [existing] networks' as one of the most interesting elements in organising the participatory workshop (ReW 6).

As practice researchers at the MEK we benefited from their infrastructure and the support of the museum team. At the same time, though, we were not pressured to create outcomes that would only contribute to the museum or institutional development. Thus, we concentrated on setting up an event that would make it interesting and rewarding for participants to spend their Saturday with us in the museum. In exchange for their time and creativity we offered drinks, food, and the opportunity to learn how to make stop-motion films. However, the museum space and the double role of researcher and workshop facilitator impacted our relationship with the participants more than I had anticipated. While we did not invite any members of the museum team to ensure that this event would be centred on participants' perspectives, the fact that it took place within a museum space and focused on museum objects added an institutional framing. In addition, from the perspective of participants, the difference between practice researcher in the museum and museum practitioner exploring a new format may not have been clear. This was compounded by our feeling of being restrained between facilitating the event, interacting with the participants, and at the same time observing the event. In a debrief meeting I reflected that:

> I also didn't want to influence them in a way [...] because this was also a research thing, so if this would have been only a workshop in the museum, I would have behaved differently.

My research interest did impact the way in which I facilitated the event: because I saw the ReW as a possible route to gaining insights into participant practices, I did not want to change their approaches. This overlooked the fact that we had invited participants to a workshop about remix literacies – a setting in which they rightfully expected supportive facilitators, mediation of knowledge and hands-on learning. The pilot workshop made me realise the complicated role of practice researcher and the participatory dynamic it entails: our research interests represented yet another organisational framing that shaped collaboration with participants.

5.3.2 Practising remix

Reuse of digital collections is often equated with creative remixes. The literature review outlined these as characteristic elements of digital culture (Stalder 2018; Lessig 2008). However, while digital media offers a wide range of free tools offering combining, editing, and manipulating content, practical and creative skills are needed to use these tools and materials. Thus, Stedman (2012, 120), who studied remix literacies in fan communities, proposed a move from digital to remix literacy: 'from analyses of the affordances of digital tools, to analyses of the methods actually used to compose'. Teaching students hands-on remix practices also leverages discussions around 'identity and composition practice that inevitably surface in the remix' (ibid.). These questions of identity or personal connection with cultural heritage and the practical skills that enable people to express their connection in the form of remixes are pivotal for understanding reuse of digital collections. Based on the experiences of HuH and CdV West, the need for more creative workshop spaces and support for participants' practices became evident. We therefore chose to tackle the topic of remixing in this third co-creative event to explore both methods to mediate remix practices and participants' remixing processes.

The remix topic and focus on creative methods also foregrounded learning outcomes for participants, meaning that the museum collection became more a tool or material for this purpose. Following Csikszentmihalyi and Hermanson's (1995, 73) recommendation, we tried to emphasise the links between objects, experiences, and the visitor's own life to motivate participants to come to the museum. Utilising Lindström and Ståhl's (2016) concept of inviting participants around a shared 'area of curiosity', we also understood remix as a broader topic connecting daily life in a very diverse city such as Berlin with the objects in the MEK exhibition 'Cultural Contacts'.

However, throughout the workshop and in the follow-up survey and interviews, it became evident that participants were less motivated by the topic of remix as such and more interested in the specific practices of collaging and stop-motion animation and their application to museum objects. This suggests that our concept of remix offered more of an academic lens for our research interests

than representing an area of curiosity that resonated with participants' daily lives. Nevertheless, the concrete practices we described in the invitation did motivate participants. While some strongly identified with these practices, stating in the survey, 'I love collaging' (ReW survey 1) or 'I am a stop-motion animator' (ReW survey 2), others wanted to learn how to use the tool (ReW survey 3) – in this case the free-to-download app, Stop Motion Studio.[21] Two participants highlighted their interest in the workshop method of translating and bridging different media, materials, and techniques (ReW survey 4,5) (see appendix C.3). Taken together, their feedback confirmed the interest in building remix literacies in the form of practical exploration of tools, connecting them with museum collections. Although the topic of remix alone might not have motivated people to join the event, the overall idea of opening cultural meaning to museum visitors and diversifying the interpretation of museum objects made sense to them.

Exploring different remix practices together, we also learnt how differently participants assessed their levels of creativity. Some participants did not perceive themselves as creative – contrasting themselves with other participants, whom they perceived as 'very artistically creative' (ReW 3), while others were more confident because they had previous experience with making stop-motion films or collages. To support each participant, we tried to cater to their needs: for people who did not feel artistically creative we helped with providing visual material that made it easier to tell the story – e.g., changing the size of images and printing them out. For people who knew how to make a stop-motion film, we gave a 'creative impetus' (ReW 5) through the task of choosing an object and guiding their interests – e.g., looking at an object together and sharing some interesting details about it.

[21] See Stop Motion Studio website: https://www.stopmotionstudio.com/, accessed 23 November 2021.

Figure 16: Facilitator in conversation with participant. ReW volunteer.

These needs reveal the complexity of creative engagement with collections, challenging participants in relation to ideas and implementation – aspects that will be further examined in Chapter 7.

A higher level of museum experience through working, studying, or regular visiting also made participants more aware of the usefulness of cultural objects. One participant explained that they would often visit museums for inspiration and ideas, documenting statue poses and patterns (ReW 4). They called this their usual museum visiting 'praxis' – a statement indicating a familiarity with using museum spaces for their own creative purposes. From this 'user' perspective, the museum space, objects, and collections became a pool of inspiration and ideas. Another participant noted that, throughout the workshop, it was hard to choose only one object because they could relate to most objects (ReW 2). Thus, remix literacies arguably fostered an active relationship with museum objects, emphasising their usefulness for participants' own creative processes. In other words, remix literacies turned museum visitors into active users. Although most ReW participants were familiar with museums and creative practices, sharing these literacies with other audience groups might also open to them this active perspective on cultural objects.

As a result of the Covid-19 pandemic, a second round of workshops organised in collaboration with a school could not be fully conducted. However, the kick-off, which we managed to do just a few days before the lockdown, indicated the

potential of this method. The collaboration brought in school students aged around eighteen, with less museum experience. They found it much harder to choose museum objects. However, the remixing methods appeared to motivate them to engage with the exhibition and relate to the objects. Thus, the workshop not only suggested some practices able to support changing relationships with culture, it also indicated the importance of co-creative events as spaces for learning.

5.3.3 Spaces for learning and co-articulation

In contrast to HuH and CdV West, this co-creative event was planned as a workshop, not as a hackathon, to enable a stronger focus on the individual creative needs of participants. While hackathons aim to bring together people with different skills, roles, and perspectives to work in small teams, the workshop format offered each participant the space to express their personal perspectives. In order to foster this process, we guided participants through pre-defined interpretation steps leading from the original object in the exhibition to a digital video on the participants' mobile phones (see detailed description in methodology section 4.4.3). Participants first chose objects from the exhibition that resonated with them, before using print-out images of these objects and other crafting materials to make a collage and, in a third phase, taking pictures of these materials and editing them into stop-motion animations. As outlined, the workshop focused on the remix skills required to reuse digital collections, while at the same time considering that remixing is not an exclusively digital activity but rather a continuous cultural process cutting across the digital–analogue divide (Cramer 2014; Lessig 2008, 82). The workshop therefore offered tools and practices for translating between analogue and digital, thereby suggesting a hybrid concept that highlighted the continuum of mediation processes in the museum rather than the differences.

As the workshop was open to everyone who wanted to join, participants had different levels of experience of creative processes. Sanders and Stappers (2008, 14) differentiate between four levels of creativity in co-design processes: doing, adapting, making, and creating. To balance these levels, facilitators need to adapt to participants by leading, guiding, providing scaffolding and offering 'a

clean slate'. Throughout the workshop, the facilitators – Susanne Boersma, a volunteer, and me – tried to support the participants' creative process with a collaborative discussion in the morning and more individual support in the afternoon. However, we underestimated the need for provision of structure and guidance to the group in general and the feedback survey showed that participants would have preferred more support and guidance in creating the collage and using the stop-motion app correctly (see appendix C.3). The workshop invitation raised expectations that participants would obtain a new skill and learn how to use objects creatively in a step-by-step way. Clearer instructions, more explanations, and more group work would have improved participant experience and learning outcomes. A longer process to spread the choice of object, topic discussion, and creation of the stop-motion film over several meetings would have allowed more time for introducing different practices.

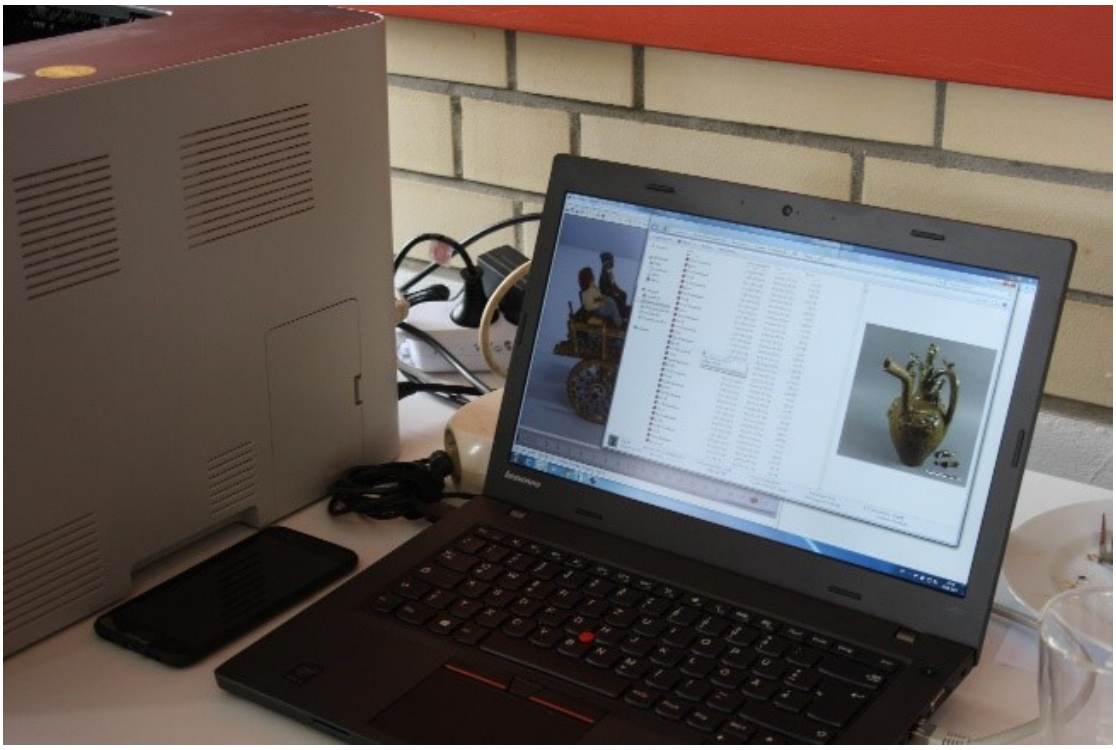


Figure 17: Collection management system. ReW volunteer.

The participants' learning experience might also have been increased through stronger group work elements to enable peer-learning and exchange of knowledge about museum objects and creative practices. This is confirmed in the observation that, as at the HuH, participants and facilitators found the group discussions most interesting: standing together in front of objects participants

had chosen and sharing ideas and associations in words and on written sticky notes was perceived by one facilitator as particularly valuable, inspiring, and collaborative. In the second part of the workshop, we all sat together at big group tables but everyone worked on their own projects. Participants still felt that it was an inspiring and supportive atmosphere (ReW 3) but some missed collaboration in the form of structured group work such as interaction and reflection with others (ReW 2). Overall, more group work and discussion between participants and facilitators would improve the workshop concept. One participant also noted that they would have expected more specialised museum input, which the involvement of museum staff might have provided (ReW 4). In some cases, we brought in museum perspectives in one-to-one conversation. However, inviting in briefed museum practitioners for an open exchange – for example, during the lunch break could be an optional offer for future workshops.

However, after reflecting on the partly contributory logic and conflicting dynamics of GLAM practitioners and participants at HuH and CdV West, we wanted to give more space to participants. This 'safe space' also proved productive for participants to voice critical aspects. This worked out in a form which, following Lindström and Ståhl (2016), can be understood as 'inventive co-articulation' of issues through engaging within the composition of space, materials, and participants. Particularly during the first phase of choosing and discussing objects in the museum space, interesting issues such as racism, stereotyping, and speciesism were raised, which fed into the creative process. In one case, the group pointed out the racist depiction of a black person in the displayed paper theatre set based on Jules Verne's novel *Around the World in Eighty Days*. Later, the participant who originally chose this object debated ideas of how to work with the critical tension but ultimately was unsure how to integrate it into the remix and chose a different object because it was easier for them to work with (ReW 2). More collaboration and exchange through group work might have supported the co-articulation of this issue and could have led to creative engagement with a difficult but socially relevant topic. Another participant did not initially choose an object and only picked one after we rephrased the task, stressing that 'it can also be an object you would like to

challenge' (ReW fieldnotes). The participant's reaction revealed the prevalent positive expectation towards reuse and confirmed the need to also anticipate uncomfortable feelings in engaging with collections. After we had rephrased the task, they chose a beautiful coat from the 1920s era, which, to them, exemplified the exploitative relationship between humans and animals. Based on the luxury object they created a collage (see figure 18 and appendix E.3.2 for full collage) that sharply criticised capitalism, exploitation, and speciesism, stating that:

> I believe abuse and discrimination begins from the everyday choices that we make. Speciesism is the assumption of human superiority leading to the exploitation of animals. The moment we start seeing another species/race/etc as less than us, the moment we allow discrimination to begin.
>
> Ironically this coat survived a war based upon nationalism and is designed for the wealthy classes (ReW collage).

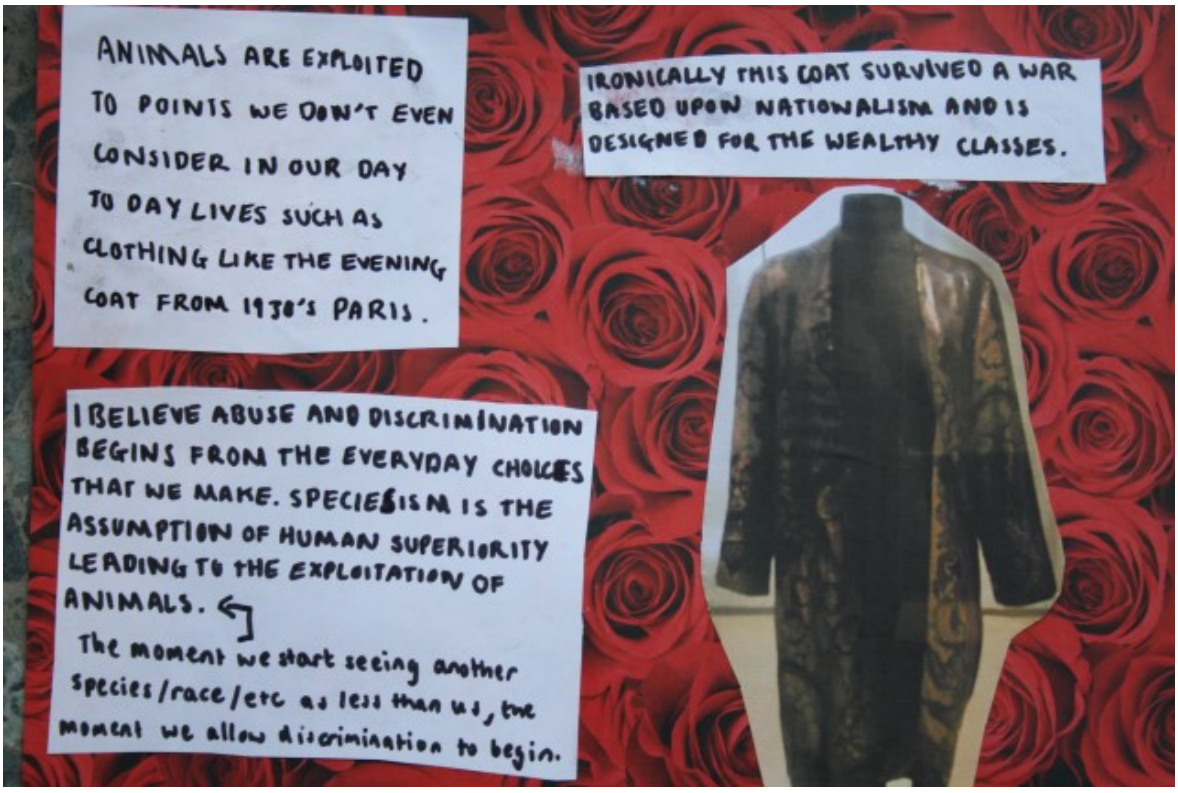


Figure 18: Backside of collage. ReW participant.

Offering a space for participants to share critical perspectives thus not only required the absence of the museum team but also meant rephrasing positive connotations of engaging with objects. The workshop enabled the co-articulation

of issues through the group discussion, use of creative materials, and the collage-making and stop-motion animation.

Susanne Boersma and I approached the participatory workshop from a logic of care, which highlighted the interests of participants. From this perspective we experienced the intensive relational work that this participatory logic requires. In our double roles as practice researchers, at times the need for support exceeded our capacities and, moreover, additional experts for teaching creative techniques would improve participants' learning outcomes. As acquiring practical know-how for their own creative processes was one of the main motivations of the participants, just providing tools, such as a story-board template and a stop-motion app, was not enough. The ReW showed that practical know-how is vital for making objects and collections useful for participants and to connect with objects or voice criticism. Formats like the ReW can help to share these cultural participation practices with a wider group of people. Particularly within learning contexts, such as schools and universities, the ReW could lay a foundation to bring more people into contact with their own creativity through cultural input.

5.4 Conclusion

The three cases shone a light on the organisational formations that shaped the participatory engagement with collections in this research: institutional framing (museum), community approach (Open GLAM), and participant-centred research (POEM). Within these contexts, each event explored a different theme and showed how participants experienced and related them to objects and format. In the HuH, the institutional framing was central and discomfort was rooted in the difficult history of the museum and its practices of collecting, curating and attaching knowledge to objects, but this also emerged during the group work in the hackathon. Drawing on the Open GLAM community approach, openness was the constitutive rule and aim of CdV West – proof of concept that works not only to demonstrate the value of openness in enabling reuse of digital collections but also for organising the event and the creative process. In the ReW, individual reuse practices were paramount, following the notion of remix as a cultural practice that relates daily life to cultural heritage. However, more than the

academic term itself, the need for building remix literacies in the form of practical exploration of digital tools was expressed. The co-creative events were also important to foreground the hybrid nature of reusing collections, as these focused on translation or remediation practices, staged social and material performances of the digital, addressed topics beyond digital media, and transferred the digital origins of hacking to postdigital deconstruction acts.

While all of the conducted and observed events fall into the broad definition of co-creation as collective acts of creativity, none epitomise the narrower understanding of museum co-creation as a long-term process of collaboration between different stakeholders who together produce an output (Simon 2010, 187). In line with participatory literature, which stresses the fluid nature of participation and focus on the dynamic engagement process, the findings demonstrate the need for a new understanding of the term co-creative event, which acknowledges differences in intensity and impact, pointing to the shorter timeframe but also indicating the opportunity to start collaborative and creative processes. The hackathon and workshop formats were successful in their social function of bringing groups of different people together, enabling discussions between them in relation to objects and collections, and allowing semi-public co-articulation of discomfort and potential. The hackathon format also implied a subversive aspect of reuse, which asked the organisers to let go of their authority or standardised ways of how to do things. However, thinking outside the box was not possible within the museum when working in close collaboration with museum practitioners at the HuH, while at the other end, the outsourcing of the creative process at CdV West completely detached the GLAMs from this process. Overall, the hands-on approach of hackathons and workshops, understanding the latter in their basic meaning as spaces where people work with their hands, are important frameworks for co-creation. As practice-oriented environments for crafting and experimentation they support tangible knowledge production by providing materials, furniture, and support.

The events also showed that participatory projects are strongly impacted by their organisational frameworks and the individual interests of organisers, community members, GLAM practitioners, researchers, and volunteering

participants. Different logics, which Morse coins as logic of contribution and logic of care, are intertwined in these co-creative events, and table 12 summarises these participatory dynamics. Underlined aspects are further analysed in following analysis chapters.

	Institutional framing	Community approach	Research workshop
Organiser's interests	Critically reflecting on objects	Digitally opening up collections	Creatively remediating objects
Theme	Discomfort	Openness	Remixing
Format	Hackathon: semi-public deconstruction, critical intervention, collaboration	Hackathon: public enactment, ritual confirmation, community meetings	Workshop: semi-public learning, practical exploration, participatory event
Engagement	+ reflective process of museum practitioners + collaboration between museum practitioners and other participants + co-articulation of issues through discussion - no tangible outcomes - no clear objectives for participants - emotionally challenging topic	+ practical perspective on reusing openly licensed digital collections + collaboration between GLAM practitioners and hacking participants + growing open GLAM community - gap between community members - not enough care for participants' needs	+ practical perspective on remediating museum objects + safe space for participants + co-articulation of issues through discussion and creative practice - not enough group work - not enough guidance for learning practices
Participation	contributory logic	contributory logic, logic of care	logic of care

Table 12: Organisational and participatory framing of co-creative events

Two different relationships emerged during these participatory events, which are central for this research. These will therefore be examined further. Chapter 6 brings HuH and CdV West together to study the collaborative engagement between participants and GLAM practitioners. Chapter 7 combines data from the

ReW and CdV West to better understand the creative engagement between participants and collections.

Chapter 6 Collaborative practices of GLAM practitioners and participants

While the previous chapter analysed organisational and participatory framings that formed and defined co-creative events, this chapter focuses on collaboration between GLAM practitioners and participants during the two hackathon events Hunterian Hackathon (HuH) and Coding da Vinci Westphalia-Ruhr (CdV West). I use the terms GLAM practitioners and participants throughout this chapter to emphasise the structural differences between participants who joined as part of their jobs in cultural heritage institutions (GLAM practitioners) and volunteers with a range of different backgrounds and motivations to join (participants).

Research into co-creation and participation in museums has shown that collaborating across different knowledge domains and expert roles is challenging and can lead to conflicts, undermining the creation and integration of outcomes (Holdgaard and Klastrup 2014; Facer and Enright 2016; Runnel and Pruulmann-Vengerfeldt 2014). In particular, asking for external expertise to complement the cultural heritage perspective has problematised demarcations between ‘professionals’ and ‘amateurs’ in participatory formats and researchers have indicated a need to rethink the power relations between GLAM practitioners and participants (Eveleigh 2014; Rey 2017; Lepik and Pruulmann-Vengerfeldt 2014). This relates to the hackathons examined – HuH and CdV West – which, through addressing discomfort and openness of collections in a critical and activist way, put pressure on involved GLAM practitioners to reflect on and potentially change some of their practices. In collaboration with participants, this led to processes of negotiating knowledge, expertise, and roles.

These processes will be analysed drawing on Onciul’s (2015) concept of the engagement zone, which she defines as a physical and conceptual space created through engagement, in which ‘insider/outsider boundaries blur’ and ‘knowledge can be temporarily and/or permanently interpreted and translated’ (ibid., 83). Furthermore, she describes the engagement zone as the ‘location of power flux and negotiation’, and an ‘unmapped and unpredictable terrain’ of ‘semi-private semi-public space’, which is powerful but also ephemeral (ibid.). The concept

offers a useful lens through which to analyse collaboration with an emphasis on the dynamic and fluid nature of social relationships, highlighting the active roles of the involved GLAM practitioners and participants who, through their engagement with each other created affective, social, uncertain, and safe spaces. Comparing the HuH and CdV West demonstrates that individual motivations, affective practices, professional backgrounds and expertise, and social ties impacted knowledge exchange and collaboration in these spaces. This shines a light on communicative practices in group work, which aimed to bridge different knowledge domains, event roles, and interests.

6.1 Emotions, expertise, and changing roles of GLAM practitioners

HuH used an emotional approach to discuss meanings and uses of objects. The organisers pre-defined six groups in which museum practitioners, Global History Hackers, other university researchers, and students were put together in teams of four to six to critically discuss objects and museum practices. The group work elicited tensions around uncomfortable museum practices, which, in the longer collaboration with the museum team, led to valuable discussions and reflections about the institutional role. Three group processes give insights into different communicative strategies and ways of engaging across differences. The debriefing with the museum team indicates the uncertainty, challenges, and also the potential of facing discomfort through engagement with participants. The comparison with the role of GLAM practitioners at CdV West demonstrates the importance of reconceptualising the role of ‘professionals’ for opening up collections.

6.1.1 From dialogue to discomfort

Focusing on the inherently emotional nature of discomfort, three group processes from Teams Blue, Orange and Yellow showed how different group members created different engagement zones.

Team Blue consisted of six members: one global history researcher, two museum curators, one history of medicine student, one student of international relations

and one graduate in museum studies. During the first round of sharing and discussing the objects they chose, one student mentioned that pinned insects would 'creep them out' – they associated the practice with cruelty and violence. By coincidence, the curator of entomology was also part of this group and reacted to their feeling by explaining why the practice is carried out in the way that it is. A conversation between the two followed, which the group moderator later described as circling around the way in which entomology is 'portrayed in the media and how it's popularised and stereotyped and very often wrongly interpreted' (HuH 2). From the perspective of the moderator, the group work offered a space for dialogue between a representative from outside the field and a professional from within the museum. Together they reflected, one-to-one, on how entomology is communicated and what role a museum like the Hunterian could have at this intersection between the discipline and the public. The participant's negative feelings of cruelty and violence were counterbalanced by the presence of the practitioner, who was able to explain the reasons behind certain conservation techniques. In addition, they created a smaller space through the informal one-to-one communication, which was less exposed to the group, thus offering more leeway to cater to each other's points of view. Here, the professional knowledge of the curator helped to explain why insects were conserved and displayed in this way, but without questioning the feelings of the participant. Their emotional reaction to the object opened up access to dialogue across differences. The group thought that such dialogue about uncomfortable topics in relation to the collection should be more often initiated by the museum, but in a careful way, providing guidance and support for engagement in the conversation. As they emphasised in their idea pitch, this would be crucial because of 'the issue of dealing with hard to talk about subjects, such as death and culturalisation and colonialisation' (HuH pitch 1).

The challenge in talking about difficult topics became evident in a heated discussion encountered by Team Orange. They brought together three Hunterian employees, working in curation, education, and front of house, and two PhD students in eco-poetry and feminist museum studies. The moderator, who was one of the museum practitioners, later described the group as split by a gap in age between more senior and younger members, although most people had the

same ‘kind of mentality’ (HuH 8). Only one person expressed different ideas, which the moderator found particularly valuable and important for the discussion, but which was probably difficult for the person in question. This became most visible when the group discussed the Gravid Uterus, a wet specimen on display in the medical collection and object that many found uncomfortable. One of the main critiques expressed in the participants’ sticky notes (see appendix E.1.2) addressed the missing framing and context of the object, which the museum only described as a ‘uterus in the sixth month, opened, showing the membranes and the enclosed foetus’. Participants thought that this display lacked explanation of the circumstances involved in acquiring bodies for medical preparation and demonstrated ‘apathy on the part of the museum. Not only did they miss background information, but the participants also felt that the neutral position of the institution was at odds with the loaded object on display.

This relates to a broader critique of the museum’s neutrality in critical heritage studies (Winter 2013; Adair and Levin 2020), which Wetherell et al. (2018, 8) trace back to the focus on the educational role of museums, resulting in assumed professional neutrality and a ‘flat affect of expert interpretations of the past that played down the more febrile emotional response’. They argue that this turn to ‘neutrality’ is itself emotionally situated, constituting a political position that quietly legitimises assumptions about professionalism and expertise. Most importantly, though, it masks the affective qualities of heritage and this mechanism was identified and called out during the HuH. However, the emotional response was not limited to interactions with the object but naturally influenced the engagement zone and the momentum of institutional critiques, culminating in an ‘intense moment’ (HuH 8). One museum member later summarised the group experience as follows:

> Reproduction was one of the key things we talked a lot about and different responses, emotional responses came out, but that didn’t necessarily mean it was negative to the way something was displayed, it was just that it sparked emotional responses for a variety of different reasons (HuH 7).

The museum worker pointed to the fact that, although the starting point was the gravid uterus, what triggered the discussion was the moderator's poster note – 'Saving the woman/Killing the baby' (see figure 19 and appendix E.1.2 for full notes).

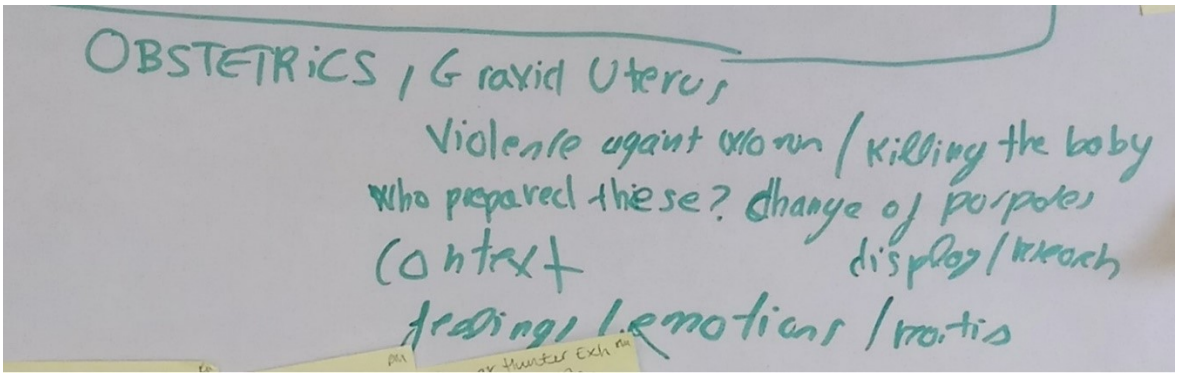


Figure 19: Team Orange poster. HuH participants.

A combination of the overarching apathetic or neutral positionality of the museum that the participants perceived in the displays, one particularly dominant museum worker in the group, and the observed similar mindedness of the other participants, led to an emotionally heated debate that confronted political positions, including pro-life and pro-choice stances. Here, the engagement zone turned into an arena for affective practice, which emerged between object, institutional framing, participants, and practitioners, and revealed current power relations and political issues. Wetherell et al. (2018, 16) define affective practice 'as an activity where emotion is a principal focus', suggesting this as a pragmatic lens through which to understand what affects and emotions do 'not only in defining the heritage meanings constructed by practice, but also what their consequences are for contemporary aspirations and needs' (ibid., 10). In this sense, the intense moment that took place in this group can be also traced back to two different affective heritage practices – one aiming to destabilise and the other aiming to uphold comforting narratives (Ibid., 16).

The way in which the museum project Curating Discomfort and the steering group involved in organising the HuH outlined discomfort precisely targeted the negotiation of destabilising and comforting narratives. However, the ways in which the practitioners and participants in Team Orange engaged with each other created a conflictual space with uncertain roles and objectives. Thus, the

topic was perceived as too emotional and, after the coffee break, the group avoided the topic. As Smith (2010) has argued, avoidance is one main strategy used by museum visitors in dealing with feelings of discomfort in exhibitions on difficult heritage. A similar effect was observed in the disengagement of the group – in their final pitch, they only touched on the subject of the gravid uterus and instead presented an idea organised around the blue buck and the aim of tackling extinction. Discussing the animal remains of a blue buck and the general challenge of extinction was arguably a safer and more agreeable, and, in turn, a less emotional, contested, and personal terrain. The opportunity to rethink the museum's 'neutral' position, enabling affective practices on the part of practitioners and participants to reframe objects of discomfort, was not used.

Team Yellow, the smallest team, with only three members, presented one communicative practice with potential to bridge the gap between different affective practices. The team comprised one global history researcher, one PhD student in information studies and one student of political science. They did not collaborate with any museum practitioner in their group and asked the whole plenary in their final pitch:

> So, how much would you pay for a cyclops pig? And would a cyclops pig be worth more or less than the heart of an elderly honeymooner who married a young maid and then died on their wedding night? These were some of the questions that got us thinking about the value and the cost of becoming a specimen. So, we were thinking about medical preparations, we were interested by the use of language and particularly agency and cold delivered exciting specimen (HuH pitch 2).

The rhetorical move of addressing the audience directly and introducing subjective stories put everyone in the shoes of a curator or collector and confronted them with uncomfortable questions. The pitch also evoked the paradox of the 'cold' scientific, professional, neutral museum practice and the excitement and value of an object. As Mason et al. (2018) suggest, empathetic and affective strategies in the form of subjective interpretation are often used to engage museum visitors with sensitive and difficult topics in exhibitions. This group chose a similar approach to direct attention to the 'practical aspects of collecting' and the 'backside of the museum' (HuH 9). Through simple questions,

they highlighted the contradictions of ‘making’ collections and asked for ‘radical transparency around how objects were acquired, by whom, from whom and at what cost’ (see poster in appendix E.1.3). This combination of empathy and transparency might represent a way for museum practitioners and participants to engage in discomforting conversations in the future.

As the findings of HuH showed, collaborations of museum practitioners and participants created engagement zones that emphasised affective practices, thereby illustrating the relevance and serendipity of emotional responses for relating to objects and opening dialogues between people. However, affective practices also challenged the professional and sometimes ‘neutral’ position of the museum. Collaboration between practitioners and participants led to one-to-one dialogues and heated group debates as strategies to cope with feelings of discomfort. A tendency to avoid difficult topics hindered the productivity of critical voices and led to disengagement, while empathy and transparency addressed uncomfortable practices and fostered engagement zones in which professional knowledge and affective practices can meet.

6.1.2 ‘How we do things’

After the HuH, it became evident that, for the museum team, a reflection of their own roles and practices as museum practitioners was required for them to engage with the critical and emotional responses of the participants. The mixed groups triggered uncertainty among the practitioners relating to how they should engage within such an affective space and, in the debrief staff meeting after the event, they shared different strategies in dealing with emotional responses and institutional critiques. Explaining ‘how we do things’ became a focal point of the discussion, around which they expressed different feelings and positions towards their own practices and interactions with participants.

One member of the documentation team responded to the participants’ critique by pointing to standardised working practices. They struggled with the feeling that it was hard not to become defensive when confronted with critical questions and described their approach as follows:

> I wasn't defensive but had to do sort of explaining so, they wouldn't have understood why it was like that, just so for instance, we were hiding some things for not putting things on labels, and I was just saying: this is our style, it's just, nobody is hiding anything it's – cause we didn't have the donors on – that we were hiding the donors, and I said, it's just, is our style. So, there was a lot of explaining to be done (HuH 5).

To be suspected of hiding facts felt challenging because it reframed practitioners' everyday working practices in the context of decolonisation as discriminatory practices. This dynamic could be overwhelming as it required emotional work, which they were not prepared for. They shared this experience during the reflection meeting with other museum colleagues. In this context, the practitioner quoted above also referred to a shared institutional understanding. Arguing 'this is our style' of writing object labels, the practitioner pointed to conventions and standards within the institution. As Turner (2020, 8) has observed in her research on cataloguing culture, standardised practices often support institutional claims to information authority and oppose critical inquiries of these practices. This type of explanation thus risks preventing reflection, innovation and improvement, when defending standards and justifying professional authority, instead of taking the opportunity to gain a fresh perspective on professional practice.

However, explanations linked to transparency can also be useful approaches to exposing museum practice and the associated museum authority. One curator stressed that it would have been a missed opportunity not to explain the daily practices and challenges involved in museum work. Based on 'curatorial responsibility', they 'couldn't help but explain stuff' (HuH 3). This museum worker felt responsible for explaining how they do things, not to justify their practices, but to reveal in which ways knowledge is produced in museums. In their view, the assumption that museums actively hide information because they have 'planned it all out' showed existing gaps in understanding professional collection practices:

> the big conclusion from this is: how poor people's understanding of what collection management, collection and data management might look like and this is our opportunity not to tell them, well, what the

> objects mean, but to tell them about how we store it, how we have labelled it, how we have a lack of information about it (HuH 3).

Consequently, the practitioner saw the intervention as a chance to propel the museum's mission to 'explain, demystifying the museum by telling how much data work we've got' (HuH 3). Their words revealed a self-critical position that emphasised the distance the museum needs to cover both in terms of internal cataloguing and digitisation and in relation to external communication and opening up. Their explanatory aim was to raise awareness of issues in museum practice that were even more invisible to people not working in the field.

A third aspect was introduced by a colleague working in upper management, suggesting differentiating between facts and the meanings of objects:

> I think, it's very important to establish as a ground rule for this kind of things is that actually what things are – that's our expertise – and what you want to try out is what things mean to be. Which, you know, our opinions are one amongst others (HuH 1).

This ground rule for participatory interventions attempted to draw a line between different practices: defining what things are is part of documentation and curation practices undertaken by museum professionals, while trying out what things mean can be done by everyone. Put differently, experts produce factual knowledge, while meaning-making is subjective and thus open to all. In this way, the staff member labelled the practice of interpretation as a playground for participation but did not challenge the expert core of museum work. On one hand, this statement provided a clear position for museum practitioners in the engagement zone, supporting them in further participatory projects. On the other, it manifests their powerful professional position, holding on to the information authority of the institution and controlling the impact of other voices. Opposing 'our expertise' and 'our opinions' does not specifically aim to bring other voices to the centre of the institution, but draws a clear line between inside experts and outside perspectives.

In the context of digital collections, Cameron (2010, 86) reframes this conflict as a balancing act for museum practitioners:

> They need to provide authoritative information but also acknowledge the fragmentary, arbitrary, and plural nature of object interpretation. This process also needs to recognize shifts in relationships between museums and users and to allow greater interpretive freedom as a documentary practice.

The analysis showed how the HuH engagement zones became balancing acts between providing expert knowledge and openness to the plurality of object interpretation. Being challenged in their daily working practices meant that museum practitioners displayed different reactions: the collection manager highlighted conventions and standards, the curator illustrated responsibilities and gaps, and the manager introduced ground rules to differentiate between expertise and opinion. While some turned to the stability of standards and factual knowledge, others reflected on the need for greater transparency. The discussion showed how differently museum practitioners positioned themselves and defined their roles in facing uncomfortable feedback and negotiations with participants.

Within the academic participatory discourse, Carpentier (2014) labels this shifting of roles as a requirement for reframing the modernist subject positioning of the cultural professional in the context of emerging post-structuralist and post-modern approaches to knowledge. In an analogy of the death of the author (Barthes 1977), he challenges the modernist concept of the cultural professional as defined by expertise, ethical behaviour, institutional embeddedness, and deployment of management and power. Facing criticism from participants in an affective engagement zone had a similar effect: it questioned the construction of the professional by changing the rules of interpretation from expert knowledge to affective practice, opening up the interpretation to other participants.

6.1.3 Redrawing the boundaries

Eveleigh (see section 2.4.1) takes a slightly different approach to the same question of how to balance different roles and forms of knowledge in participatory relationships. In particular, the focus on participatory formats as a combination of organisers' and participants' roles makes her research on crowdsourcing useful for this analysis. Eveleigh (2014, 223) examines the

transformative potential of user participation on professional roles and concludes that professionals can ‘defend the professional boundary’, ‘seek to redraw it’ or ‘dissolve it’. Based on her framework, the different relationships between GLAM practitioners and participants in HuH and CdV West can be compared.

The institutional framing and critical focus of HuH led to difficult engagement zones, in which affective participant practices conflicted with the ‘neutral’ position of the exhibition and the self-concept of professionals. Confronted with critical user opinions, museum staff responded by explaining, defending, and reinforcing the role of the museum professional. The event formally dissolved differences between participants and practitioners and put them all in the position of critical hackers following their sharing of feelings of discomfort, suggesting an alternative to the museum’s expert voice. However, because the topic related to core elements of professional museum practice and the museum team was not sufficiently prepared for reflecting on their own roles in this engagement zone, reacting to other participants’ emotional responses was challenging. Their responses differed individually – some defended the boundary, referring to professional standards and expertise, while others sought to redraw it, making their practices more transparent.

In contrast, the Open GLAM framework of CdV West prepared the GLAM practitioners to let go of their professional authority and redraw the boundary between institutions and users of digitised collections. As the majority of these users shared a cultural affiliation with the GLAM practitioners at CdV West, the boundary was mostly apparent in different roles during the event: providing data or hacking data. In Eveleigh’s (ibid., 221–222) framework, CdV West can be understood as a collaborative community event, where the GLAM practitioners who provided data ‘actively seek to embrace uncertainty in the environment, as a catalyst towards new ways of working, scanning the horizon for newly emergent opportunities’. She suggests that practitioners need to learn how to share knowledge openly before entering this ‘equitable’ participatory relationship, but, once this transformative step is taken, they can gain valuable input. This model of equality resembles an ideal that is hard to reach within the

structural differences and organisational framework in participatory projects. However, the Open GLAM umbrella at least provided a supportive framework for sharing cultural data openly and opening the mindset of data providers, which was also mirrored in a small survey on their expectations: the majority of responses expressed the expectation of gaining new perspectives on digital collections (6/10), followed by outreach to data users (3/10) and interest in creative use of data (1/10) (see appendix C.2).

However, at CdV West, it was the task of the hacking participants to initiate collaboration by choosing a dataset and approaching data providers. Thus, a change in perspective to analyse participants' motivations and interests offers further insights into the collaborative dynamics at CdV West.

6.2 Knowledge, social space, and participants' motivations

The kick-off weekend at CdV West was pivotal for constituting an engagement zone through exchange of data, information, stories, and contact between participants. It was a neutral space, in the sense that both GLAM data providers and hacking participants met outside their usual spaces. Although participants tended to choose collections prior to the event, the kick-off was seen as an opportunity to get to know the GLAM practitioners and institutions behind the data and understand their motivations. Exploring whether 'they really want to do digitisation, because they fully support it' or whether they joined because 'it just sounds good to participate in something that's called hackathon these days' was central to their decision to collaborate (CdV 6). Throughout fluid conversations in the venue, during lunch, outside having cigarette breaks, and based on idea pitches on the stage, GLAM practitioners providing data and hacking participants formed groups that were not pre-defined by the organisers but emerged around participants' interests and motivations in collaborating with GLAM institutions and using GLAM data. Before analysing their interactions, a

deeper look into the participants' profiles and motivations[22] is key to understanding the engagement zones created.

6.2.1 'Carsharing' motivations of participants

Building on Falk's (2016) museum visitor experience type, coined 'professional/hobbyist', Moura de Araújo (2018, 25) characterised previous CdV hacking participants as focused, goal-oriented and interested in GLAM content through their passion or career. In an online survey with 108 participants from various cultural heritage hackathons, he further examined the profiles of cultural hackers and found that they often show professional maturity and sometimes work within the cultural heritage sector. This resonates with the study of CdV West where findings indicate that hacking participants often shared their GLAM affiliation with those who provided data. The main difference between data providers and data users was that most of the data providers joined as part of their job, while hacking participants joined on a voluntary basis. Of the thirteen hacking participants I interviewed, six were employed in a GLAM institution (notably all but one in libraries), four were self-employed, offering digital services for the cultural sector and beyond, one was working as a software developer, one was enrolled in computational studies, and one worked in international youth education. Seven had joined other CdV hackathons in various roles, two had been in touch with CdV before, and four had previously participated in other tech-oriented hackathons. In terms of stakeholders in co-creative processes, the group of hacking participants should be understood less as end-users and more as experienced users, mediators, and collaboration partners. In combination with the fact that CdV West attracted many more data providers than hacking participants, which led to some frustration on both sides, this participant profiling raised questions regarding outreach and benefits of this format.

In the analysis of the interviews with these participants and event fieldnotes, I identified traces of professional/hobbyist motivations. However, these diverged

[22] Parts of the following section 6.2.1 were previously published in the conference proceedings of RISE IMET 2021. A pre-print version can be accessed here: https://eprints.gla.ac.uk/250846/, accessed 24 February 2022.

somewhat into two groups: two hacking teams highlighted their professional identities, while three teams foregrounded their hobbyist approach. Two teams did not fall into either category as they had mixed motivations and backgrounds.

However, from these different points of departure, they all agreed on the same crucial benefit of CdV West, which one participant described as a 'carsharing phenomenon' (CdV 2). They understood the hackathon as a situation in which a limited amount of time is spent with a surprising mix of people from different backgrounds they would not have met otherwise, and will probably never meet again. During this time, participants might get in touch with places and topics they would not have encountered otherwise. Although not everything the people present do is participants' cup of tea, it is good to get out of one's individual bubble for a moment and be exposed to other people and opinions (CdV 2). This metaphor struck me as on point, resonating with most characteristics of Onciul's (2015, 83) engagement zone, such as the temporal space, the unmapped and unpredictable terrain, the translation of knowledge, the blurring of insider/outsider boundaries, the semi-private/semi-public space, and the impermanent and fragile state. Anyone who has ever undertaken carsharing has also probably experienced power negotiations about rate and drop-off location. In short, carsharing is a helpful metaphor for thinking about the structures of engagement based on the social interactions that take place within the limits of a car and the travel time from A to B. It suggests a journey to a shared destination using a familiar means of transportation but with an unknown group of passengers, shifting the emphasis to the process of getting to know one other, communicating, and bridging gaps. Overall, the carsharing metaphor foregrounds the social aspect of CdV West from which professional and hobbyist participants benefited in different ways.

Two hacking teams working on developing digital services as freelancers or start-ups highlighted the professional perspective. In the interview with one of these teams, consisting of four young game designers specialising in 3D modelling, they expressed their frustration with the cultural sector. Prior to the hackathon they experienced disappointing collaborations with museums that took a somewhat conservative stance towards technology. In turn, they hoped that a hackathon

would attract more technology-interested institutions and provide a fruitful environment to pave the way for paid contracts in the future. Although their participation was on a voluntary basis, they used this opportunity to showcase their professional expertise. One team member commented with a sarcastic undertone: ‘Sounds unromantic, but that’s just how it is’ (CdV 12). Framing their approach as ‘unromantic’, the participant marked a difference between their pragmatism and what they perceived as romantic Open GLAM community ideals.

While this hacker’s strategic reasons might not be those first promoted by the CdV framework, they were shared by other hacking teams that wanted to ‘build a project portfolio’ (CdV 1) and thought the event ‘a good networking opportunity’ (CdV fieldnotes). Networking, strategic partnerships and building a project portfolio subsequently functioned as crucial factors for choosing a dataset and institution to work with during the hackathon. A regional museum with two engaged young practitioners was selected and addressed as a potential customer. Besides the obvious local connection, one participant explained that this choice related to their technical expertise, which matched the dataset and enabled them to create added value (CdV 11). In choosing a dataset that helped them to showcase their skills and services, they were able to position themselves as professional agents in the field. The output was intended to be of high quality and function as a portfolio project. This awareness about professional resources and expertise was shared by another agency-based hacking team, which chose not to use one dataset because they simply lacked the skills to process it (CdV fieldnotes). This professional aspiration was also tangible in the way in which these teams described their working process as a design-thinking approach with iterative cycles.

Here, the carsharing opportunity of CdV West was seen as useful for work-related networking and the creation of portfolio projects – extrinsic motivations focused on output and the future directions of collaboration with GLAM institutions. The opportunity also relates to the stronger emphasis on competition, networking, and value-creation business models of the hackathon format in computing and engineering in the private sector, as outlined in the

literature review – see section 3.3.3 (Briscoe and Mulligan May 2014; Trainer et al. 2016).

However, across different fields, fun is also one of the main motivators for people to participate in hackathons (Ferreira and Farias 2018). At CdV West, fun was particularly important for participants who joined the event in their spare time, as part of their hobbies. Three teams foregrounded their hobbyist approach to participation, although most also have a professional relationship with the topic and work in GLAM institutions. However, to them, the hackathon balanced their work and represented a diversion from their job, while the creative practice of coding was seen as an inherently rewarding activity. This approach is rooted in the joy of doing something that does not follow the rules of a paid contract but instead serves as a hobby – signposting intrinsic motivations. Members of three interviewed teams described their individual fun and enjoyment during the hackathon as a motivation for joining. Comparing coding to baking, one interviewee explained the different constructive and creative aspects making coding a fun activity, stating: 'that's just a whole complex of activities which come together and it is really the combination which brings the joy' (CdV 9). In the words of this participant, it is evident that the collaboration with GLAM institutions is upstaged by the engagement with the data. However, at a hackathon, this hobby can be shared with other participants and the event offered a reason for them to spend time and do something together, which would not be possible during their working lives (CdV 5).

Another participant described hackathon projects as relaxing because they could let their creativity flow and produce anything that came to mind. In contrast to their daily job, the output would not need to be overly serious but could be wacky. Similarly, the opportunity to produce 'meaningful nonsense' (CdV 2) and play around without any constraints using interesting and valuable content was their main motivation for participating. At the same time, they felt the freedom to follow their own interests and ideas, and the production of new meaning with old cultural content represented a way to enhance their hobbies.

Consequently, for some hacking participants, close collaboration with GLAM institutions was less important than engagement within the hacking team. The

social carsharing aspect represented an incentive to start their creative projects, meet the community, exchange information with GLAM data providers, and gain recognition at the awards ceremony.

6.2.2 Knowledge exchange in fluid engagement zones

Although CdV is conceptualised as a meeting point of two knowledge domains – culture and technology – exchange across these different domains has not always succeeded. However, this exchange is important for co-creating prototypes, which is understood in this research as a form of tangible knowledge production. On one hand, the socio-affective motivations of hacking participants indicated that getting to know GLAM practitioners and other hacking participants in the fluid mode of carsharing was more important than creating knowledge together. On the other, GLAM practitioners differed widely in their institutional roles and thus offered different points of contact: digital collection managers were keen to discuss anything related to the digital qualities of the datasets, while educators and curators were looking to share anything they knew about the collection and content, and communication staff tended to provide organisational support for the hacking process. The following scenes from the kick-off weekend show how fluid engagement was impacted by digital literacies, professional authority, and collaborative experience.

In many cases, exported datasets were examined for the first time through the hands and eyes of people outside the institution and this process revealed the importance of shared digital skills: one participant collated names of mines with geodata, thereby identifying an error in attributions of names, dates, and places in a list of mine accidents. Together with the digital collection manager who created the dataset, they tried to locate the error and, through direct communication at the kick-off and a shared routine in working with datasets, a quick solution was found. In contrast, a different participant remembered that they had approached an institution via social media to point out some errors in their metadata and the experience was disappointing: the curator was overworked and staff turnover made the communication difficult, so that they concluded that GLAMs were not ready for feedback to improve their content even if it was given freely (CdV 1).

These different experiences indicated that the face-to-face hackathon enabled direct communication between data users and providers and digital literacies within cultural heritage institutions improved exchanges with participants, fostered understanding, and supported the reintegration of participants' efforts back in institutional structures. Rather than complementing expertise, a shared knowledge base was fundamental to collaborative corrections of metadata. Thus, the digital skills gap in GLAM institutions (Department for Digital, Culture, Media & Sport March 2018; Malde et al. 2019) was a barrier to engagement for some data providers: while some happily chatted about collection data, offering to generate or export more data, others felt more passive in their roles of data provider 'waiting to be approached by the coders to present their ideas' (CdV fieldnotes). Actively establishing a collaboration, thus, also depended on practitioners' digital confidence.

Another underlying aspect noted by Marttila and Botero (2021, 109) is that 'micro-contributions' to infrastructure that participants develop as part of their creative process 'are not often recognized and utilized by official institutions with centralized expertise'. Although GLAM institutions might therefore be equipped with digital literacies, the quality of knowledge produced by people outside of institutions is often questioned. This relates to the previously discussed issue of professional authority in relation to other expertise. However, at CdV West, rather than deconstructing the concept of professional expertise altogether, the hacking participants tried to locate the specific expertise of the participating GLAM practitioners in their conversations. For example, in one group, the hacking participant tried to divide roles and responsibilities, saying 'then you're the expert for contextual knowledge', but the GLAM practitioner refused. The individual worked in communications and did not have the necessary archival expertise. However, they agreed to forward any questions to the contact person within their institution (CdV fieldnotes). In other cases, this contact person was present and shared all information on the spot. The conversation between the archivist at the Archive of the Socialist Youth Movement and one hacking participant illustrated this:

> Archivist: What else do you need? What is missing?

> Participant: More background literature… e.g., how did the children get there?
>
> Archivist: With a special train, but not for everyone, I will check that again.
>
> Participant: And how is it actually organised, well how was daily life organised in the children's republic, there must have been a set of rules for sure and this is what we need to develop an understanding for. So, how much decision power did the children actually have (e.g., when they had to get up probably had been set…)?
>
> Archivist: Yes, well, it really was very visionary back then, but of course, some things had been set (CdV fieldnotes).

Here, the participant asked for additional historical context to better understand the data and interpret collections, objects, and stories. The conversation showed the participant's sensitivity to cultural context and interest in the knowledge of an archive expert to frame their creative reuse of the data. However, it also illustrates that knowledge exchange often followed a model of consultation rather than one of collaborative knowledge creation: participants asked GLAM practitioners for more information about the chosen datasets, but how to use this information was mostly negotiated without GLAMs.

Figure 20: Brainstorming at CdV West. Grunwald, CC BY 3.0.

In groups where GLAM practitioners and hacking participants started to brainstorm together and outline ideas for their collaborations, another aspect became apparent: those with experience in group work and moderation – independent of whether they were GLAM practitioners or hacking participants – fostered knowledge exchange in the engagement zone. In a group with trainee curators and senior digital developers, the more experienced members took the lead and used their working routine in service tasks such as moderating, consulting, and arranging the next steps of the collaboration. They were the ones asking about authenticity in digital reconstruction and thereby showing awareness of a regular concern in the cultural heritage domain (CdV fieldnotes). In turn, a senior curator in conversation with two younger hacking participants interested in AI and Google Glass suggested various ways to connect their technical approach with the cultural background, such as leading the group to the exhibition hall, getting in touch with objects, and making them aware of the necessity to write 'silent' instead of 'dead' objects in the project description (CdV fieldnotes). These scenes pointed to the need to understand the language and concerns of others to enable the sharing of information in one direction and actually start up exchanges. Mason and Vavoula (2021, 12–13), building on Carlile (2004), argue that knowledge in digital cultural heritage design is created 'at the boundaries between disciplinary socio-cultural contexts' and depends 'on the length of knowledge distance between the disciplines and partners involved'. In line with their findings, the long distance between different stakeholders and domains – e.g., museum curators and software developers – made knowledge creation at CdV West difficult. In turn, a 'shared lexicon' or analogue concepts that only needed to be translated – e.g., in a collaboration between a digital collections manager and data scientist – made it easier to create knowledge collaboratively.

The CdV West kick-off weekend provided short-term points of contact between GLAM practitioners and hacking participants, resembling carsharing in that they were not structured, and were fluid, uncertain, time-limited, and heavily influenced by those participating and their motivations, interests, and expertise. In this setting, knowledge exchange was arbitrary and dependent on combinations of shared cultural interest, digital literacies, group moderation

skills, and knowledge distance between GLAM practitioners and hacking participants. This indicates that knowledge exchange and co-creation across different stakeholder groups can be improved using facilitation strategies such as translating knowledge, finding similarities, and providing a shared lexicon. Based on these findings, the kick-off weekend did less to contribute to knowledge co-creation than expected. Combining Onciul's engagement zones with Lodato and DiSalvo's (2016, 554) observation of proto-publics that form around issues in hackathons, I therefore suggest that GLAM practitioners and hacking participants formed proto-engagement zones around collections at the kick-off. Intensive collaboration and creative engagement then took place in smaller teams or even between individual participants and datasets throughout the outsourced self-organised hacking sprints. As these groups created other forms of engagement zones, the following section analyses how the hacking participants formed teams and structured their collaborations with each other.

6.2.3 Co-creating knowledge in hacker teams

As Facer and Enright (2016, 4) have noted, creating knowledge collaboratively requires a range of different expert roles such as catalyser, integrator, designer, broker, facilitator, project manager, diplomat, scholar, conscience, data gatherer, nurturer, and loudhailer. Importantly, in participatory projects, these roles would be taken by those on both sides, including community and institutional partners. However, during CdV West, collaboration between GLAM institutions and the hacking teams focused more on social exchange than knowledge creation. Co-creation of prototypes, which is understood in this research as a form of tangible knowledge production, mostly took place in hacker teams without the engagement of GLAM practitioners. Insights into their group dynamics reveal the different expert roles they applied, the impact of social ties on understanding each other, and safe spaces to support knowledge production.

The majority of participants joined CdV West with an existing set team, a group of colleagues they worked with, a fellow student they went to university with, or a friend to whom they were connected – for these participants, the hackathon offered possibilities to do something together outside their usual social

environment. This indicates that the carsharing proto-engagement with a group of ‘strangers’ mostly applied to collaborations with GLAM practitioners who provided data, while, for hacking, collaborations based on previous social connection were preferred.

The interview data showed that stronger social ties within teams strengthened collaboration in various ways. With this in mind, the idea pitches at the kick-off weekend were more of a ritual, giving more of an overview of where groups were than offering an effective way of connecting people and ideas. Only a few participants entered the stage looking for other team members – a dynamic compounded by the small number of hacking participants. One hacker who wanted to work with datasets provided by a bikini museum and an art museum ended their idea pitch as follows:

> I am looking for people who want to join me. I am a designer and programmer myself, I can do it all alone, but I don’t want to do it alone. So, I am looking forward to everyone who feels like participating (CdV pitch 1).

This honest call led to the formation of a new team made up of very different people and motivations: one self-proclaimed ‘techie’ and hackathon fan from the south of Germany who wanted to build a web crawler for university, one developer who read about the hackathon in the newspaper and worked in the region, and a designer from Berlin who had followed CdV and other open cultural initiatives and had a feminist perspective. When I joined the group during the team formation process, they were in the middle of a gender discussion around female and male breasts in public and it became apparent that they had different objectives in this project: although their ideas were rooted in the same datasets, creating awareness of gender inequality and developing a web crawler were divergent goals. The third team member, who did not have a strong project vision and mostly listened to their discussions on the first day, took on the role of moderator and was later asked by the others to do the ‘leading’. In this role, the participant tried to clarify the next steps, made sure that the group members had all data provided by the institution and attempted to merge both ideas into one coherent concept. However, the ‘techie’ was critical about this approach, stating that, ‘you are talking about the content but I want tech’

(CdV fieldnotes). Responding to this, the moderator explained that: 'You want to implement an image search and categorise the results in different countries. This [feminist discussion] adds a social layer to it' (CdV fieldnotes).

As neither side was convinced, though, the designer continued to bring in stories about oppressed women around the world and the 'techie' questioned the practical purpose and usefulness of the whole project. Creating awareness did not resonate with the 'techie', who sought a tangible and useful case study and business model. The team members did not share the same values and what was important to one was, at times, irrelevant to others: instead of benefitting from their complementary skillsets, the group members commented disparagingly on each other's interests. For example, an ambitious design suggestion received the comment that 'one can also overdo things' (CdV fieldnotes). In the team interview, the participants reflected upon this challenge, analysing 'difficulties to pass different threads on to each other' (CdV 7), but they also mentioned the fun they had and the space they gave each other, because it was clearly a voluntary project representing a side interest and no one had been pressured to spend too much time on it in their spare time.

In turn, another participant remembered a kick-off weekend at a different CdV hackathon where they had a 'flying start' based on a 'bonding experience' (CdV 1). Together with three other people who they had not met before, the participant spent not only the intended afternoon slot but the whole evening there, leaving the venue at 10pm and walking through the empty streets with balloons. Retrospectively, they realised that this initiated a team spirit to keep on working together throughout the sprint phase, when they were no longer in a shared space:

> we know how the other person jokes, what they think is funny, what they don't think is funny, how you can get back together if something does not work out… get to know the person (CdV 1).

The participant described a familiarity with other team members on a communicative and emotional level and emphasised the use of understandings of different senses of humour to bridge low motivational points in the process. The connection they found with the team during the kick-off was nothing the

organisers had intended but more of a coincidence, leading to a feeling of knowing the team members well enough to endure asynchronous working phases.

These stronger social ties are an advantage possessed by friends and colleagues when they join a hacker team. Their collaborations tie in with their existing relationships and often build on mutual appreciation of different approaches, tangible in the ways in which they comment on each other's roles in the group interviews. In conversation with a team of three participants who worked together and had joined a previous CdV hackathon, one started off by saying:

> [the other group member] is a very creative part for example and this influences me a lot. I don't know, well, we are not applying [collaborative] methods or anything. I think this was just being in the flow, in the team, in the team flow (CdV 3).

The two other members agreed but added that every member was important for the team, counterbalancing the suggestion that one person led and the others followed and were influenced. Instead, they attested to each other's valued qualities, such as creativity, productivity, deep engagement, making things tangible, and finalising details, and they acknowledged these compliments in their own words, concluding that, 'It becomes a total artwork, because everyone in this process has a task that is relevant' (CdV 2). This incorporates having ideas, having the skills to implement them, and having the ability to finalise everything.

In addition to team spirit and team flow, socially connected teams created safe spaces in which their members could voice any idea or critique. Across different teams, the possibility of openly communicating with each other, without feeling restrained and prevented from sharing any absurd thought, was crucial for the creative process. Trusting each other made it easier to find new ways to decide which way to proceed.

In terms of practical recommendations for collaboration, one team referred to design thinking methods and described cycles of communication in which brainstorming, division of work and implementation were iterated a few times to develop projects further. Other teams explained that 'co-working, i.e., working

in the same place' (CdV 5) was helpful in enabling quick exchange of ideas and thoughts over a cup of coffee or sketching things on the whiteboard together.

In all, more social and spatial closeness between the team members created an atmosphere of understanding, direct communication, and safety, in which they could better develop ideas together. In turn, lack of this connection made it more difficult for teams to co-create and keep up motivation during the sprint phase. This corresponds with the concept of short and long knowledge distances (Mason and Vavoula 2021), indicating that everything that brings participants closer supports the co-creative process. Teams with stronger social connections translated their different characteristics – such as being creative, productive, and pragmatic – into complementing roles. In bringing their different personalities together, their knowledge production flourished. For organisers of co-creative events, this points to emphasis on the participation of existing teams or offering support to connect newly formed teams in terms of working space, social space, and knowledge space. However, not all social processes can be planned and the impromptu aspect of carsharing should also not be levered out by micro-management.

6.3 Conclusion

This chapter examined collaborative practices in two hackathons – one that was organised around affective practice and emotions and the other highlighting knowledge exchange. While HuH used an emotional approach to access objects of discomfort and mixed groups to remove differences between GLAM practitioners and participants, CdV West conceptualised the two groups as equal experts in two different knowledge domains – culture and technology. The focus on uncomfortable feelings and institutional challenges triggered reflection on the role of the museum professional and, for some, a return to standardised practice and factual knowledge. The knowledge emphasis of CdV West contrasted with the affective and social motivations of participants in joining the event. It also showed that knowledge exchange was arbitrary and that collaboration across different fields of expertise was more likely the closer practitioners and participants were in terms of knowledge, social, and working distance. Conflicts and difficult emotions within groups led to disengagement.

The balancing and self-reflective act of sharing professional knowledge and enabling empathetic relationships between GLAM practitioners and participants was crucial to enable collaboration. Overall, the less structured, more fluid and uncertain, time-limited carsharing mode of engagement that hackathons provide is not ideal for creation of new knowledge or changing the professional practices of institutions. Rather it is a social and affective space fostering proto-engagement zones, which can represent starting points for further discussions and co-creation.

Chapter 7 Creative practices with digitised collections

The previous analysis chapters outlined the organisational frameworks of co-creative events and the engagement zones created by GLAM practitioners and participants through different forms of collaboration during these events. This final part of the analysis examines how reuse and remix practices connected people with cultural objects and collections in two different contexts – the self-organised hackathon sprints during Coding da Vinci Westphalia-Ruhr (CdV West) and the guided process of the Remix Workshop (ReW). Both events focused on creative engagement, with cultural heritage collections based on digital tools supporting translation processes: the ReW used the Stop Motion Studio app to create digital interpretations of museum objects on display, while CdV West used datasets of digitised collections for creative reuse. In this chapter, the participants' approaches to different translation and connection practices from digital to analogue and from personal context to objects' affordances, are further analysed to understand the necessary combination of skills, methods, and creativity to reuse cultural heritage.

The practice theory perspective is crucial for this analysis as it challenges the object/subject dualism prevalent in other cultural theories. Thinking about the meaning and use of museum objects, dualism is prone to highlight either the subject's (Knell 2012) or the object's agency (Gell 2012) in interpretation processes and might ignore the interplay between them. In contrast, practice theory offers a lens through which to analyse the relationship between object and subject by focusing on practice: using an object, the user's practical knowledge and the affordances of objects merge into a practice. This practice is the central concern of this chapter, and will be approached from different sides: through the practical sense of participants, the affordances of data and objects, and the hackathon and workshop contexts. Practical sense is defined here as a concept consisting of three elements: interpretative understanding, methodical knowledge, and a motivational–emotional sense (Reckwitz 2003, 292). In other words, sense-making, know-how, and motivational and emotional responses together form practical sense, with which users relate to objects.

Building on snapshots from different user–object relationships at the ReW and CdV West, the ways in which participants chose and connected with collections are first studied. Dervin's (1998) concept of sense-making offers a fruitful metaphorical framework to analyse this relationship, premised on the idea that user behaviour is not fixed but rather situational, contextualised by the fact that human beings move through time and space where they face gaps and build bridges across them. As the creative practice in both ReW and CdV West focused on translation processes such as remixing and reusing, Bolter and Grusin's (1999) theory of remediation provides another established lens through which to scrutinise the role of different media and practices.

In the second part of the chapter, the practices of hacking participants at CdV West are examined to understand practical know-how in relation to the affordances of digitised collections. As Gibson (1986) and subsequent researchers (Norman 1988; Reckwitz 2003) who refined his original definition have argued, affordances are understood as counterparts to practical sense, defining objects based on possibilities for use or, in other words, action capacities enabled for specific users. The analysis is inspired by affordances-in-practice research (Costa 2018; Bareither 2019) considering the relations between media practice, practical sense, and situational context.

Although all three theoretical frameworks – sense-making, remediation, and affordances-in-practice – are established concepts in media studies and have successfully expanded to other fields of research, within museum studies they are less prevalent. This is a particular omission when it comes to the study of digitisation in the museum as these frameworks are salient for context-sensitive, relational, and situational analysis, reconnecting the digital to other forms of media, media practice, and mediation traditions in museums (Geismar 2018; Bolter and Grusin 1999). This research therefore offers a fresh look, reframing digital creative reuse as only one step in a long chain of remediation processes between ideas, objects, and media. Engagement with theoretical frameworks thus provides a postdigital perspective that acknowledges hybrid media practices and focuses on reuse as specific translation process requiring skilful

performance, which creates meaning and value of digital cultural heritage collections (Crossick and Kaszynska 2016; Hooper-Greenhill 2011).

7.1 Sense-making between objects on display and datasets online

In both contexts, the ReW and CdV West, participants were asked to choose the objects or collections they wanted to use for creating new digital interpretations. The processes of going through an exhibition with objects or browsing datasets on a computer differed widely, but the ways in which participants related to objects showed many similarities. They looked for aspects that resonated with them and which they wanted to share with others. Media qualities and content offered various points of contact that made objects and collections useful and meaningful for participants. Digitised collections have the tendency to flatten media aspects, rendering different materialities and spatial qualities into data (Geismar 2013, 257). However, high quality digital data can also offer opportunities for interaction which three-dimensional objects in a glass case are lacking. The analysis draws on the full spectrum of media, ranging from objects on display, to paper and print-outs, to digital datasets, not judging one form over others but showing the potential of different media. The following scenes from ReW and CdV West explore different sense-making processes, enabling better understanding of what initiates connections between users and these media.

7.1.1 Sense-making through remediation

The ReW invited participants to approach museum objects as materials for making collages and stop-motion films. Going through the exhibition with this purpose in mind, participants followed their associations with what they saw – for example, a dress that reminded them of a prom ball, a puppet theatre that resonated with their engagement in a drama group, or a wax votive that resembled elements of their favourite stop-motion film (ReW fieldnotes). The creative task we had set for the workshop framed their perspective from the beginning – they sought a medium to work with and transport their ideas. In

order to find objects that would be useful for this task, they were harnessing personal memories, emotions, and ideas for building connections.

Some participants used memories of childhood or youth to connect with an object on display and remembering thus functioned as a gateway to opening the object for their imagination. In this way one participant chose object D (33 O) 726/1991,109-115[23] – scrap pictures of Sandmännchen (see figure 21) – based on their memory of using scrap pictures.

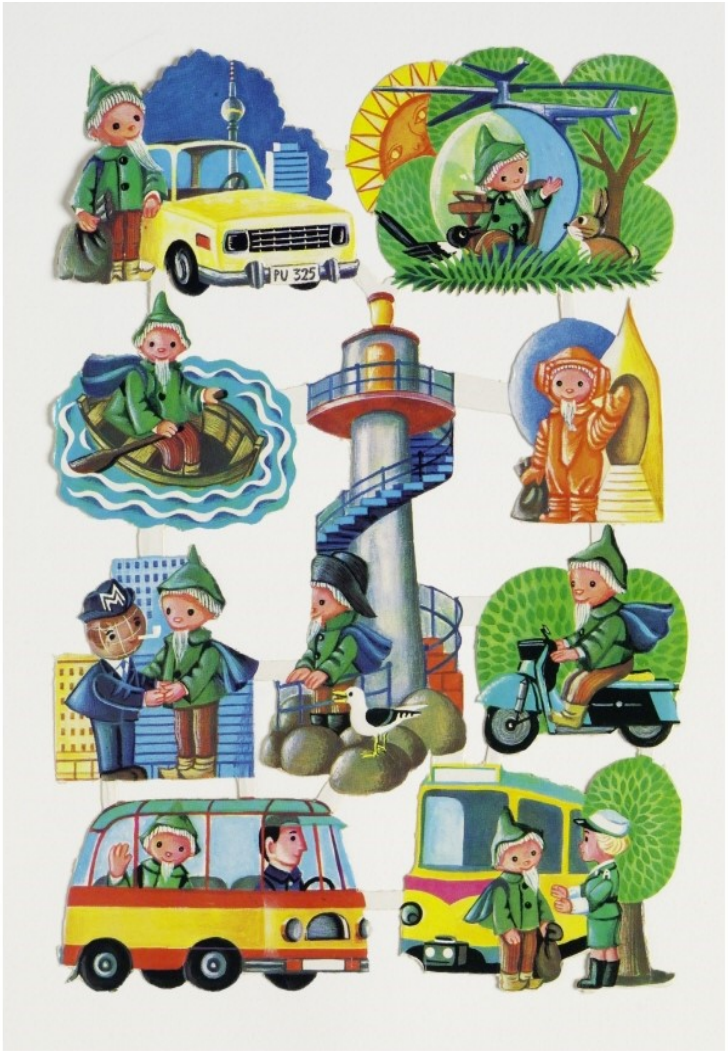


Figure 21: Sandmännchen. MEK, SMB, Franz-Scarciglia, CC BY-NC-SA.

[23] See object in online collection: http://www.smb-digital.de/eMuseumPlus?service=direct/1/ResultLightboxView/result.t1.collection_lightbox.$TspTitleImageLink.link&sp=10&sp=Scollection&sp=SfieldValue&sp=0&sp=4&sp=3&sp=Slightbox_3x4&sp=0&sp=Sdetail&sp=0&sp=F&sp=T&sp=1, accessed 26 November 2021.

Sandmännchen is a well-known German cartoon that was broadcast in both East and West Germany and the exhibition displayed one page with scrap pictures of the GDR Sandmännchen. The participant recognised the cartoon character, but their main interest was caught by the medium itself – the scrap pictures. In a group discussion, they shared a childhood memory: with their pen pal they used scrap pictures to write collaborative short stories. This appropriation of the medium as a creative impulse for inventing stories connotes a fond memory and became the 'central theme' for their project (ReW 3). Returning to this memory, the media aspect of the object dominated their interpretation as figure 22 shows:

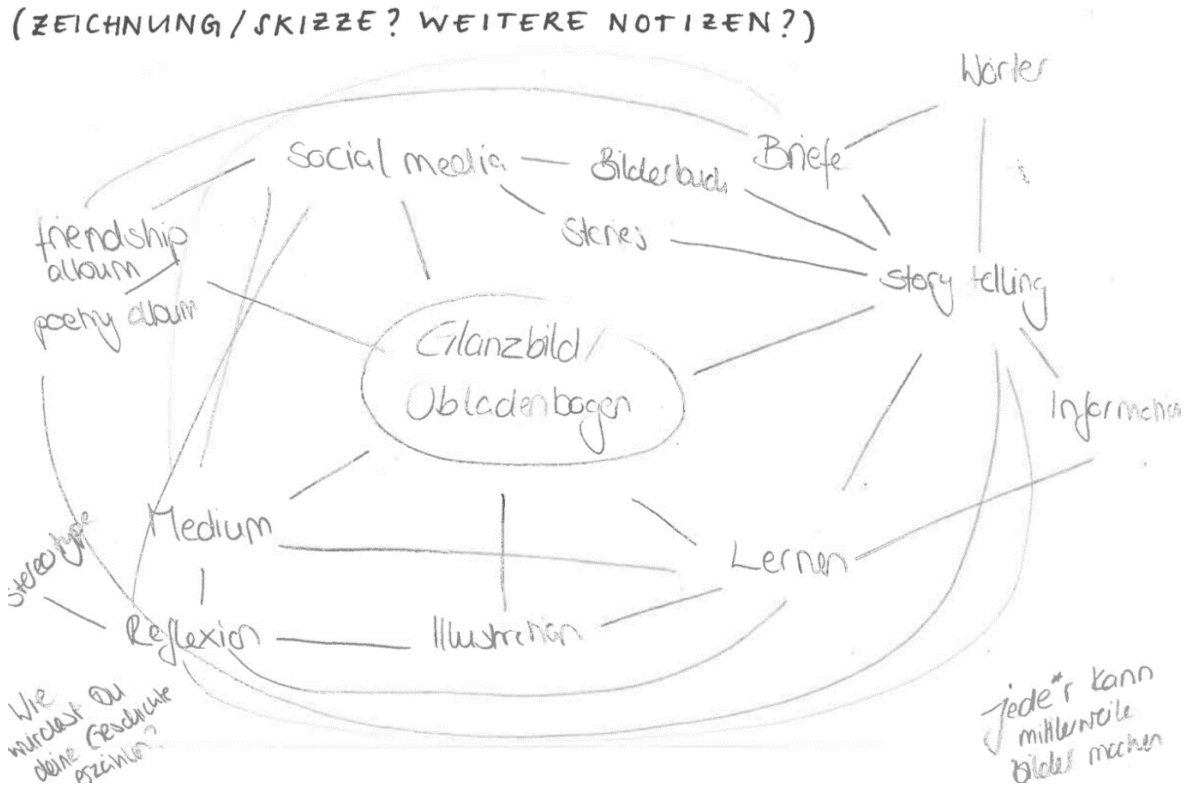


Figure 22: Mind map with reuse ideas. ReW participant.

Various forms of media appear in the mind map: social media, storybook, poetry album, letters, images, illustration, words, and stories. The note on the side claims, 'Today, everyone can make images' and a question asks, 'How would you tell your story?' Both thoughts convey the idea of an active cultural participant who, as a result of technological advancements, is enabled to create (digital) images and share their own stories (online). The memory of using scrap pictures to co-create stories and the indirect form of communicating with a pen pal merged into one idea that highlighted the objects' communicative affordances.

In the words of the participant, scrap pictures were easy to use ‘without having to be particularly creative or imaginative’ because they were ‘already a means of communication and you can continue to do that, it is a form of story medium’ (ReW 3). Perceptions of the object as affording communication and storytelling for everyone enabled the reuse of the digitised object and also resonated with the historical role of scrap pictures. The museum’s catalogue article defines these as ‘products for cultural consumption’ with a leading role in establishing ‘new forms of self-expression’ through cultural methods such as collage and cut out (Bernasconi 2011, 43). The pictures were produced for the European middle class in the nineteenth and twentieth centuries to decorate furniture, friendship books, and albums (ibid., 45). Remembering and using the object, the participant reactivated the object’s media qualities and drew a continuum between historical and contemporary forms of self-expression. Digital images of the scrap pictures made it possible to ‘free’ the object from its glass case and animate the Sandmännchen character to literally speak to visitors. Using the idea of imaginary correspondence with a pen friend, the viewer is addressed as ‘My dear friend’ and learns some handwritten details about Sandmännchen such as: ‘A little fun fact, GDR and BRD had their own version of Sandman, but the GDR-Sandman is the only version which survived and is still on television!’ (see figure 23). However, the stop-motion film clearly focuses on the written letter as personal correspondence, ending with the suggestion of switching the mode of communication from watching the film to starting a conversation on social media.

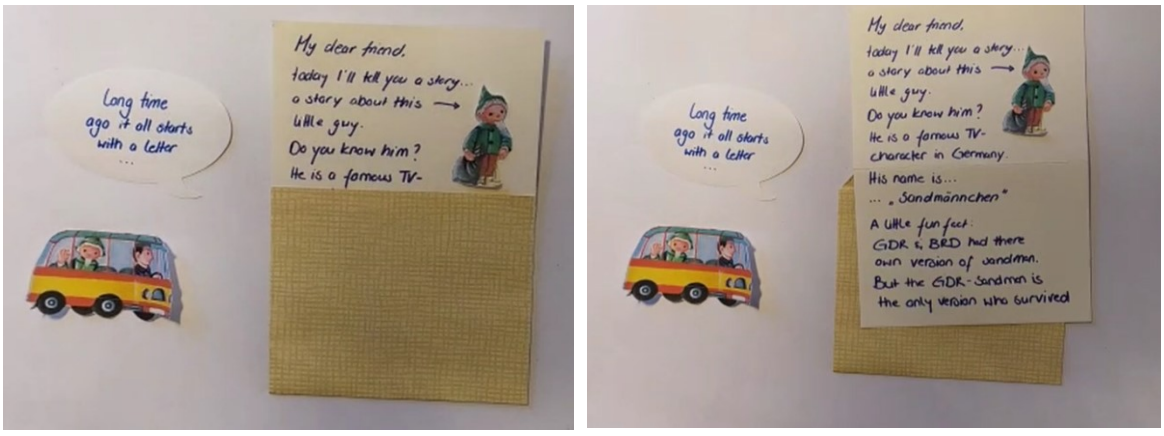


Figure 23: Stop-motion film Sandmännchen by ReW participant.

Inspired by the memory of creative letter writing, the participant used the film to propose a dialogue between visitor and object that is anchored in today's media framework instead of the exhibition context. From this point of view, the similarities between historical scrap pictures and, for instance, internet memes become more apparent and provide a bridge between media use of the nineteenth-century European middle class and the envisaged social media user in 2021.

This perspective also indicated the crucial role of remediation in making sense of 'old' and 'new' media. Remediation is the defining character of all media, argue Bolter and Grusin (1999) in their influential work *Remediation: Understanding New Media*, which locates digital media on a continuum with film, photography, and painting. A medium 'appropriates the techniques, forms, and social significance of other media and attempts to rival or refashion them in the name of the real' (ibid., 65). In this sense, digital media is not entirely different from other media, but rather provides a new set of relational possibilities for 'reformulating, reformatting, recycling, returning and even remembering other media' (Garde-Hansen et al. 2009, 14). While the above example traced the process of remembering media use and remediating this memory digitally, the following example explores the interweaving of analogue objects and digital remediation practice.

One student of film and media studies joined the ReW because of an interest in the idea of remixing old and new media using stop-motion film. Influenced by their studies at the time and their research interest in tourism, the participant saw the objects through the lens of media theory and was attracted by touristic representations of German and French regions. They chose two objects: the board game Rheinreise (see figure 24, Journey to the Rhine, 1900–1914)[24] and

[24] See object in online collection: http://www.smb-digital.de/eMuseumPlus?service=ExternalInterface&module=collection&objectId=1498986&viewType=detailView, accessed 26 November 2021.

scrap pictures of French regions taken from a tourist map (end of the nineteenth century)[25].

Figure 24: Board game Rheinreise. MEK, SMB, CC BY-NC-SA.

The participant associated them with the emergence of the tourism sector in the nineteenth century, which made the aristocratic 'Grand Tour' of the eighteenth century affordable for the emerging upper middle class. Based on the film *Arrival of a Train* by the Lumière brothers, a milestone in media history, they

[25] See object in online collection: http://www.smb-digital.de/eMuseumPlus?service=ExternalInterface&module=collection&objectId=1611554&viewType=detailView, accessed 26 November 2021.

explained the interwoven development of media and travelling which they wanted to illustrate in the stop-motion film (ReW 4). The participant clearly used the objects to reflect their interest and background knowledge. This approach has been observed in other studies – for instance, Wrigglesworth and Watts (2017, 146) noted that participants used object images as a 'prop through which they could arrange and talk about their interest and knowledge about the subject'.

The ReW went beyond arranging and talking to rearranging and reframing the topic in a stop-motion film, which challenged the participant to bring together their rich associations and knowledge. Following Bolter and Grusin (1999, 67), different characteristics of a medium, such as format and material, content, economic and social function 'are so tightly bound that they can never be entirely separated'. The participant's ideas mirror this plurality caused by the hybrid character of media: the economic function of both objects as products of a new industry, the social function of travelling, the content of images communicating regional and national identities, the format and materiality of the board game and scrap picture. The participant created a stop-motion film, which highlights and remediates some of these qualities – namely social function, content, and format. The film is called *The Grand Tour* and its main actor is a carriage, which travels through different regions. However, it does not move – the only things that move are the regional images the viewer can see through the window of the carriage. The clattering noise of horseshoes on the streets accompanies this illusion of travelling. While the participant told a story of historical travelling using the content to create the landscape rolling by (see figure 25), the game aspect was translated into the look and feel of today's smartphone games, called 'endless runner games'. This genre, widely known from Chrome's offline mode Dino Game, is characterised by the stillness of the player's avatar and the fast-moving landscape with obstacles which the player needs to jump over or duck under (ReW 4).

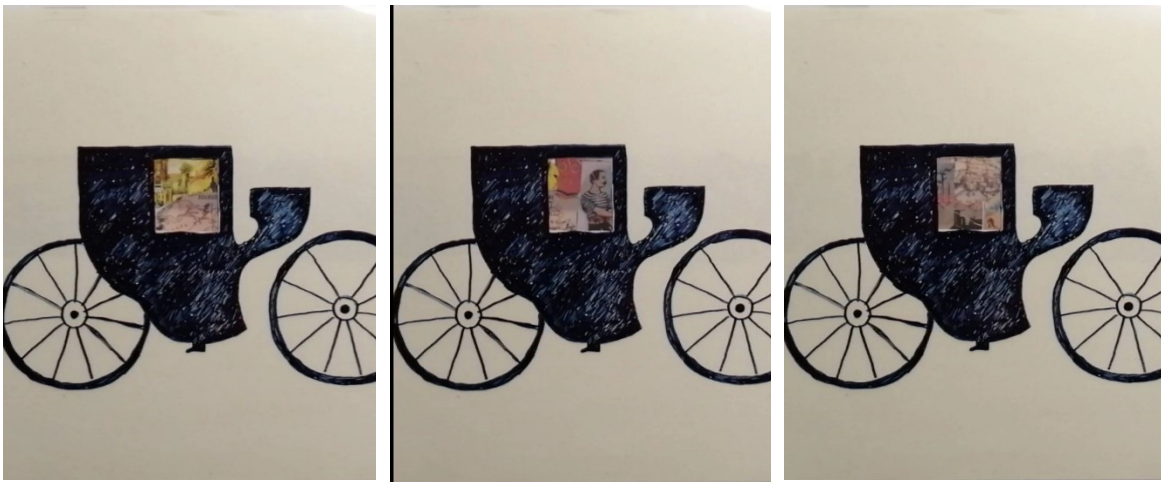


Figure 25: Stop-motion film The Grand Tour by ReW participant.

Inspired by the reverse mechanism, the film combined a digital game aesthetic with modern images of touristic regions through the medium of stop-motion, a technique which the participant deemed particularly useful for this process:

> You take some artefacts from the museum but you transport them into a digital space in a very physical and haptic way – even stop-motion is a very haptic medium, if you look at it, because you work a lot with paper, with strings, which also transport this texture through the film, but this texture or this experience of texture remains (ReW 4).

Their description illustrates the process of hands-on sense-making as a way to transport the experience of rearranging materials and ideas based on a museum object. The stop-motion technique bridges the gap between the object that cannot be touched, hands-on printed object images, and other materials, as well as the digital remediation (see figure 26). Here, the function of remediation as relational media interpretation becomes tangible, as Bolter and Grusin (ibid., 55) state: 'Our culture conceives of each medium or constellation of media as it responds to, redeploys, competes with, and reforms other media.'

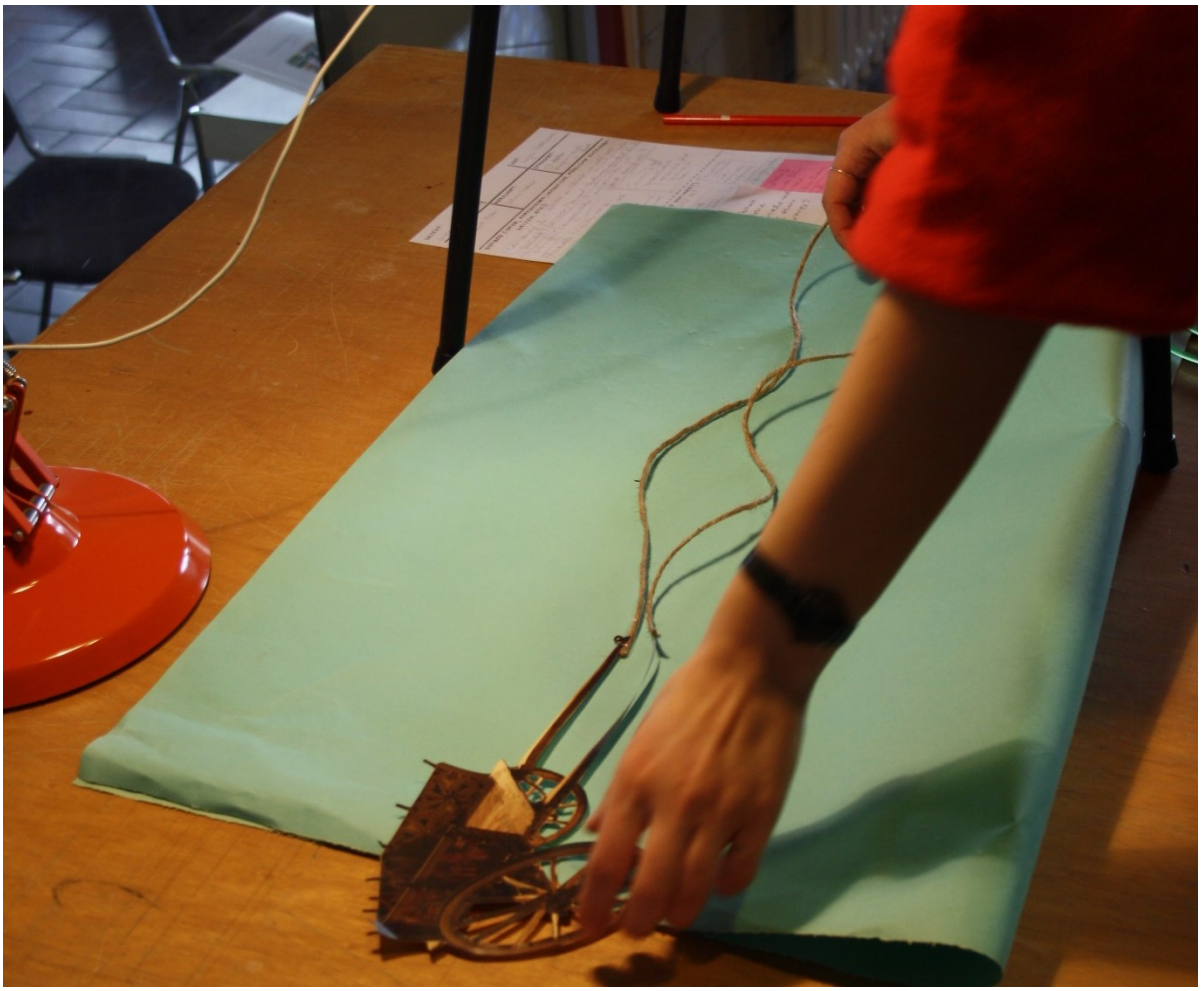


Figure 26: Participant making stop-motion film. ReW volunteer.

Understanding creative practice as remediation opens new perspectives on the use and reuse of digital objects. Remediation practices, such as stop-motion animation, allow users to interpret media, the analogue object, through the lens of other media, such as the image and digital film. Thus, reuse can support engagement with objects on the level of content, social function, format and material media qualities. As the examples showed, these elements are entangled and, through creating a new stop-motion film with the smartphone app, users engage with these qualities: they decide how they relate to the topic and what they want to tell, and they highlight some media aspects and leave out others, translating their ideas in today's media framework and embedding objects within their interpretation. They engage with digital technology and the represented object through their creative act of remediation and thus turn the awkward digital object – a combination of museum logic and the digital

condition – into a medium reflecting their memories, knowledge, and experience with other media.

7.1.2 'Like a mirror of the same object…'

The participants at the ReW created tangible interpretations of culture, which referred to both the cultural object and the person who remixed it. Thus, sense-making is a process in which the personal context of the visitor, user, and participant resonates with the object on display or online. Wrigglesworth and Watts (2017, 144) found that the participants in their study used photographs to reflect a personal perspective:

> On its own, a photograph can be regarded as a representation of fact but when engaged by a visitor it becomes a mirror in which their own experiences, knowledge and feelings are reflected.

They further conclude that emotional responses were used when no previous knowledge was available. As is already apparent, both personal memories and deeper knowledge can become fruitful resources to access an object and relate to it. The participants explored different types of sense-making bridges, which relate to the list of sense-making capacities that Foreman-Wernet and Dervin (2016, 414) provide: 'ideas/cognitions/thoughts;' 'attitudes/beliefs/values;' 'feelings/emotions/intuitions;' 'memories/stories/narratives'. Drawing on these personal resources to make sense of an object creates a relationship that can become visible and relatable for others through creative practice. The stop-motion film tells as much about the reused object as about the participants, sometimes even more, and this is what participants found most valuable and potentially interesting for other visitors. One reflected in the interview:

> So, I think it's a great way to have a more personal, a little bit like a call for a more personal interpretation and see that 'okay, here were X people around Berlin or around the globe or wherever, and they had the time and the motivation and the possibility to take the museum object out of context and then put it back and then with that act still create a little bit like an own museum, like a mirror of the same object but a more personal one (ReW 2).

Notably, the participant emphasised the privilege of being a participant – having time and motivation that allowed them to reuse objects, involving taking them

out of the museum context, relating them to their personal context, and putting the new remix, mirroring both contexts back into the museum space. Using an object in this way is an act of personal reinterpretation, allowing other visitors to gain insight into subjective relationships with the object. Another participant stated: 'This is so much more exciting, to see such a creative interpretation of the content than just the object itself' (ReW 1). Two other participants, who expressed a strong interest 'to see how other people are thinking and how the museum can be a place for reinterpretation' (ReW 2) also supported this perspective. Participating in the remediation practices at play in museums, participants were able to explore what Stalder (2018, 76) calls 'methods of inscribing oneself into the world'. Making sense of objects through remixing practices they negotiated meanings and identity through choosing, referring, connecting, and altering content (Stedman 2012). Beyond their personal learning and thinking process during the workshop, though, participants also created remediations in the form of stop-motion films and collages, which conveyed their perspectives and might become tangible objects for others to engage with.

Although CdV West foregrounded the potential of digitised collections and focused on sharing and using datasets, the next section demonstrates that hacking participants went through a similar first-step process of searching for meaning and personal connection.

7.1.3 Constructivist learning experiences

In contrast to the ReW, at CdV West, participants did not go through an exhibition to choose objects but downloaded datasets of digitised collections and went through image, video, sound, and text files. This form of engagement with collections lacks the spatial and narrative context of an exhibition and in turn gives users more interpretative freedom. While the ReW invited participants to take the object out of the museum context and create their own version of it, the datasets at CdV West provided objects that were already decontextualised. This perhaps made it easier to think outside the constraints of the institutional framing but at the same time is also more demanding for users as they have to come up with personal meaning and context. In this way, the sense-making processes at CdV West were an essential first step in the creative process of

participants. While acknowledging the different practices participants at ReW and CdV West later applied for using collections, the following section shows many similarities in their sense-making practices. Thus, examining these practices across different forms of object mediation (on display or online) added to understandings of the crucial moment of this step for engagement with cultural collections.

Many participants in CdV West recalled that they browsed through the data before the hackathon started, at home with their team or on their own. Sitting in front of the computer, watching, reading, and listening, their sense-making process began – a process that started with personal, emotional, and sensory experiences.

As in the case of the HuH, affective practices can hinder or enable engagement. The open process of CdV West, which did not define specific topics for engaging with collections, did grant participants more freedom in developing different types of sense-making bridges. Facing this interpretative freedom, one preferred practice of participants was to follow emotional responses. In particular, the previously mentioned collection, which documented the socialist 'children's republics' in 1920s Germany,[26] triggered affective connections and two hacking teams chose the dataset based on this experience. Going through black-and-white photographs, film clips, posters, learning material, and a card game, they discovered a part of German history they had not known before. From today's perspective, these historical events appeared almost unreal and provided knowledge they wanted to spread: the utopian character of these camps was seen as inspiring alternative to the overprotective parenting of today, revealing an early example of participatory and emancipatory education. Knowing what happened after this short epoch of democracy in Germany, this added a dark layer to these historical documents. However, their engagement with these topics went beyond a cognitive interest. In different instances, they expressed emotional and almost physical responses to historical objects, such as the posters with peace movement slogans. '[C]onsidering this was between the

[26] See dataset on CdV website: https://codingdavinci.de/daten/aajb-fotosammlung-zu-kinderrepubliken, accessed 26 November 2021.

world wars', one participant said they felt 'a cold shiver' when looking at them (CdV 4). Another participant said that the possibility of looking back on these events through media that emerged during that time – such as film and photography – was 'very exciting' (CdV 6). Looking at media that documented events 100 years ago triggered emotional responses that connected participants with digital objects. At this stage, their use was limited to browsing datasets – they had not started to work with the data yet. However, this first response was perceived as crucial and leveraged their further engagement with cultural data.

Another participant, who chose a digitised collection of photographs, watercolour paintings, and drawings made by the artist August Macke during a journey to Tunis recalled their approach to datasets[27] in an almost haptic way. They described, on one hand, a dynamic relationship that unfolded between their sensory practice with the object – 'to feel, to look' – and their personal response on the other side – 'does it speak to me, can I reconnect it with stuff I have done, which I like?' (CdV 1). This connection was the springboard for them to take their first interest to a deeper level of research and to discover more details and contexts. Using tools such as Google Street View to digitally visit the places documented in the art works allowed them to see 'where someone was standing with a camera in 1914' (CdV 1). Comparing the historical photograph with the Google Street View image, which showed 'only garbage, a plastic chair, a coke automat' was perceived as 'culturally dramatic, sad, but meaningful' (CdV 1). Here, the emotional effect of this finding, not the content in itself, turned the data into a meaningful story they wanted to share. The participant's research, comparing the historical site with contemporary images using different layers of remediation, including digitised historical photographs and satellite photos in Google Street View, created a meaningful experience. This example also shows how one individual bridged the gap between cultural heritage and their own interest: feeling/looking at the object, reconnecting with personal experience and background, gathering more context, experiencing emotions through their findings, and wanting to tell the story. This process indicated an

[27] See dataset on CdV website: https://codingdavinci.de/daten/august-mackes-tunisreise-1914, accessed 26 November 2021.

intertwined connection between use of media and tensions between the past and the present.

In a third case, the experience with the medium itself, a dataset of audio recordings that documented the sounds of industrial machines,[28] appeared to outweigh the need for contextual information. One participant explained that they enjoyed listening to these sound files:

> to simply listen to this rhythm of the machines and this hissing, whistling, clacking, without knowing what it is and also without really looking at the pictures. Just listening to these non-musical but repetitive rhythms as a pure sensory experience and that's what I found interesting about it (CdV 9).

Intrigued by the 'pure sensory experience' of noise, they wanted to work with the auditory material without explaining or adding context. Data and the perception of it became the main interest of their project. This provided an endless randomised stream of repetitive rhythms taken from industrial heritage machines, transformed into an app, which reminds the listener of white noise playlists on YouTube or Spotify. Here, we see confirmation that these sounds can prove useful on their own, detached from their cultural heritage origins. In this case it appears that experiencing the collection as a decontextualised dataset outside the institutional framework supported the unusual approach this hacker took in focusing on sensory engagement with data.

For some participants, this challenge of making sense was also perceived as a valuable constructivist process in itself, as one hacker observed:

> everyone has the same data as basis but each one sees somehow different things of what you can do with it. And this, I think, is exciting on the one side, but on the other side it also encapsulates the process of learning, which I find very important (CdV 2).

The participant valued both the plurality of interpretations afforded by reusing cultural data and the process of interpretation that takes place during the hackathon. They benefited from engagement with collections through

[28] See dataset on CdV website: https://codingdavinci.de/daten/sound-archiv-work-soundssounds-changes, accessed 26 November 2021.

experiencing a learning process of sense-making. Another participant described this as follows:

> Typically, everyone who knows the city will go to the place where they live, where they always go to work, where they sat once on the Elbe [riverside] and this is then your own story, your own biography, which you bring into the data and then you yourself come to the realisation and then it seeps in (penetrates), if you yourself can come to realise. And that's a point which hardly or only rarely exists in museum's online portals (CdV 1).

In light of participants' experiences from ReW and CdV West, what becomes palpable is that those who made a personal, emotional, or sensory connection with objects and collections were inspired by this process of sense-making and found a meaning they wanted to share. Although each participant had different reasons for engaging with a specific dataset or object, their engagement shared similar characteristics: looking, feeling, listening – various forms of perceiving content and mediums on a sensory level strongly affected participants and provided a connection to their memories, backgrounds, knowledge, and emotions. They enjoyed the freedom of interpretation, which was more strongly supported by working with datasets at CdV West than at the ReW, where participants had 'to take the object out of the context' (ReW 2) themselves. Their processes can be understood as constructivist sense-making through use of various media practices. The digitised collections and objects on display became meaningful to them because they constructed a relationship between their context and the objects' affordances, and the created outputs mirrored this connection.

7.2 Reusing practices with digitised collections

The cultural hackathon format, which has been used since around 2010, is a relatively new framework for inspiring reuse of digitised collections, and provides a rich environment in which to study self-directed creative practice. In his doctoral dissertation on CdV, Moura de Araújo (2018, 170) highlighted the importance and impact of cultural content on this type of hackathon and suggests that hacking in this context might be understood as constructive heritage interpretation – a practice of reflexively 'constructing narratives' with

other people and dynamic media. This relates to the previous analysis of sense-making as a first step in reusing digitised collections. However, while he mentions the relevance of content and identifies the interpretative work of hacking participants, he does not examine this process further and focuses instead on software solutions. However, I think it is fundamental to explore practical know-how in relation to the affordances of digitised collections to fully understand the translation process of reusing open collections.

GLAM practitioners in CdV West expected innovation and inspiration in what can be done once collections are digitised and opened for reuse, but they only met the participants at the beginning and the end of the hackathon. Thus, participant creativity was measured against the outcome, while creative processes, which involved a range of challenges, practical skills, and methods for inspiration and innovation were rather ignored. This can lead to a lack of understanding of creative user perspectives and potentially explains the gap that still exists between many GLAM institutions and envisaged user communities. The following analysis aims to shed light on this crucial process to learn from hacking participants and make their approaches available to less experienced users and GLAM professionals.

7.2.1 Practical know-how

As demonstrated, hacking participants experienced cultural data on a sensory and emotional level, leading to a meaning functioning as a motivation to work with the datasets. Working with this data, their practical skills leverage another connection – a ‘practical sense’ or ‘know-how’ (Reckwitz 2003, 289; Bareither 2020, 7–8). Bourdieu (1990, 66), who introduced this concept to bridge the dualism between object and subject, describes practical sense as ‘a quasi-bodily involvement in the world which presupposes no representation either of the body or of the world, still less of their relationship’. He understands practical sense as an embodied, relational, and implicit form of knowledge, which guides the actions and reactions of people in the world, developed as a counterpart to pure rational reasoning or deterministic positions and critically arguing for the logic of practice in engaging with the world. I ground the following analysis on the premise that practice impacts sense-making through routine and creative

experiences. Within the hackathon, hands-on practice is a central mode of working and is discussed as a hobby, skillset or gap to be applied or acquired.

Practical engagement enabled participants to dwell on and expand their experiences with cultural data. In the words of one hacking participant:

> At the same time, you can sensorily experience these data again and again, you can look at them, you work with the images or sounds. On the other side you have this constructive effect and the creative effect – constructive in the sense of programming, creative in the sense of interface and how you put these data into new contexts. That's just a whole complex of activities which come together and it is really the combination which brings the joy (CdV 9).

This participant connects the experience of data with their own creative and constructive practices and the resulting practice-based relationship brings joy. In combination with initial sense-making as a reason to further engage with the datasets, practical engagement brings another motivation into play – doing these activities and skilfully performing them brings fun, which motivated this participant to spend time on the activity. However, to fully enjoy these intertwined steps of perceiving, creating, and constructing requires the know-how or skills to listen and look intensively, programme functionalities, design interfaces, and remediate content. Most hacking teams divided these tasks across the team, using their different skillsets. Nevertheless, even as part of a supportive team process, some participants can experience frustration in reaching the limits of their skills and thus their abilities to create something. One participant with background in youth education, who regularly collaborated with an experienced software developer expressed this as follows:

> This time the creative share also was significantly higher than during the last times, well at least for me, because I could create more things myself. Last time there was a bit of image editing, we tweeted a lot, created somehow memes, such things on the side… (CdV 5).

Greater involvement in generating content increased feelings of creativity in contrast to previous experiences where the participant was 'only' doing things on the side. This time, the participant contributed short stop-motion animations, which formed an integral part of the storytelling website their team member

had programmed. In order to make their ideas tangible and to feel part of a 'constructive effect', they learned how to make stop-motion films.

The balance between coming up with ideas for using the data and implementing these with the necessary technical skills was arguably pivotal for creating a project. However, digitisation of cultural objects and collections makes knowledge of software and programming necessary and, as demonstrated, lack of these skills could lead to feelings of deficit or frustration. This does not mean that all hacking participants had mastered the technology they applied – they instead displayed a rather open attitude towards trying out new practices and learning from each other or the wider CdV community. Their practical sense was based on familiarity with some kind of software or coding language and their approaches ranged from finding pragmatic ways to match practical skills with the data provided to more experimental ways of exploring data by learning a new skill. For some participants – mostly hobbyists, the positive experience of doing or learning the practice was crucial at this stage of practical engagement with collections. For example, one participant chose architecture images they thought were 'fun to work with'. They described the process later as follows:

> I opened Photoshop and then it was really fun. Yes and, of course, it took a few hours, but I was so full of joy when I went to bed, this was really nice, yes, a nice experience… (CdV 7).

In contrast, another team with professional interests, consisting of four game designers, specifically 3D artists, was more pragmatic about their approach:

> You have data from the original site, you have data from the current site, how do you get them together? With the help of VR, because that's what we do (CdV 12).

It is clear that their practical sense – their 3D modelling practice – is the missing link between two datasets. Being part of a team that joined CdV West for professional motivations, they did not need a personal meaningful connection with the datasets. Instead, they used their professional practice to make sense of cultural data and, because this happened to be virtual reality (VR), they

connected the historical and contemporary images of Westphalian farmhouses[29] in a VR environment. Cultural data was used to showcase their professional skills and gain recognition and perhaps future paid contracts for their start-up agency.

In other cases, using software was secondary to practices of discovering knowledge in the data and making this experienceable for others. As one participant noted, once they chose a dataset consisting of historical bicycle tour books,[30] their first practical engagement was to actually drive along the routes of these old tours with their own bikes. Rather than starting to programme, they re-enacted historical instructions to experience their relevance for today – their embodied engagement of cycling translated data into experience. Here the duality of data and content qualities shines through, indicating that the content sparked the idea of cycling and the practice was not a direct reaction to the data. This suggests that the broad range of practices hackers applied had different objectives: while some focused on data quality, others were more interested in data content. The latter was often related to the goal of learning from history and mediating it to today's society – in the words of the participant:

> it is also always a question what do you make of these old data? You don't just look at them because they are 100 years old, but you look at them, in order to see what had been already discussed 100 years ago and what you can adopt from that (CdV 6).

The project then aimed to mediate this learning to audiences who might connect with their historical counterparts, such as cycling enthusiasts, around Leipzig between 1880 and 1930, or, returning to the example of 'children's republics', sharing ideas on empowerment and self-organisation with today's youth, as one participant indicated:

> You don't have to be 18 to be able to decide for yourself what you want to do. […] I think this is a kind of knowledge which has been lost a bit and I would have liked to make this accessible (CdV 2).

[29] See dataset on CdV website: https://codingdavinci.de/daten/originalstandorte-originelle-standorte-das-nicht-sichtbare-sichtbar-machen, accessed 26 November 2021.

[30] See dataset on CdV website: https://codingdavinci.de/daten/das-fahrrad-technik-und-touren, accessed 26 November 2021.

This approach led participants to choose a fitting tool for reaching their project goals – for example, making this ‘experienceable in a playful way’ (CdV 2), which often implied learning how to work with the most suitable software.

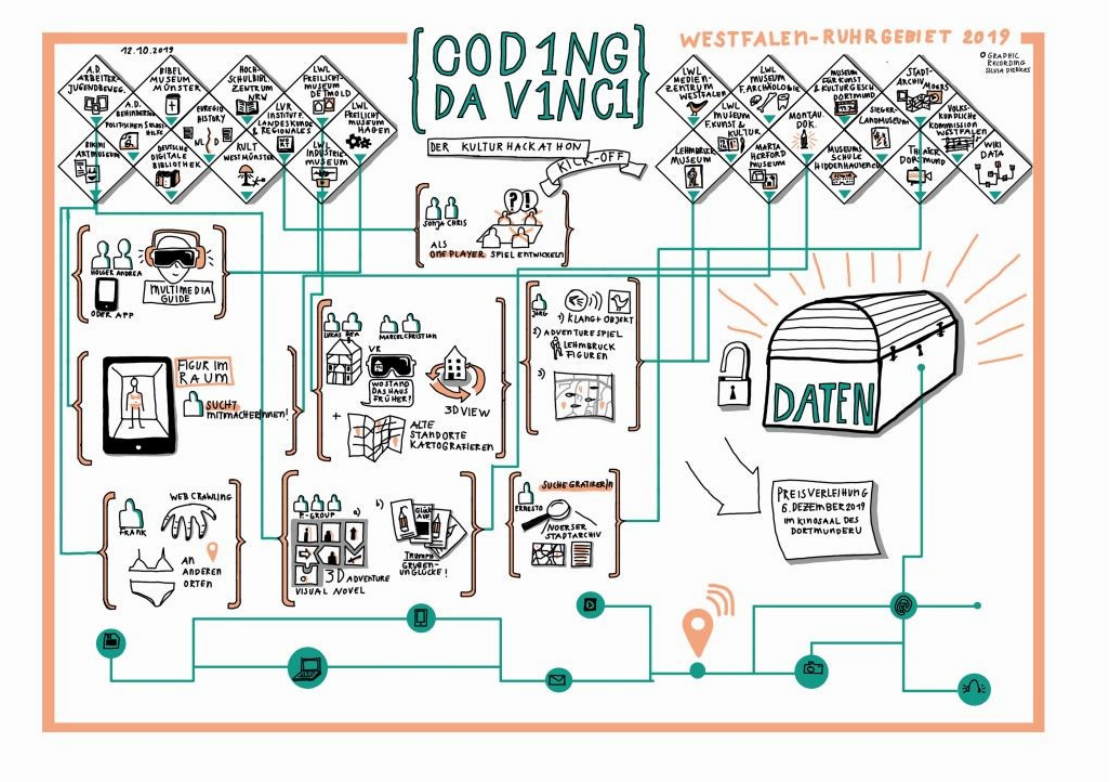


Figure 27: CdV West graphic recording. Dierkes, CC BY 4.0.

This section showed that, in addition to the initial emotional and sensory connection with collections, participants were motivated by the fun they had while implementing their ideas. The know-how to use various tools or positive attitudes towards learning how to use new tools were crucial creative and constructive skills for translating ideas into tangible prototypes. Professionally motivated participants described a more pragmatic and output-oriented approach to practice than hobbyist participants, who stressed the fun of doing the activity itself. In summary, participants demonstrated a wide variety of practices used to process cultural data, such as listening, looking, feeling, cycling, re-enacting, recontextualising, programming, coding, designing, image editing, using Photoshop, using Blender, 3D modelling, using VR, using Twitter, making memes, creating content, and stop-motion animation. Focused on data quality and/or historical content, these practices were deemed fun and useful to make sense of cultural data, create something new with historical information, and reframe it from today’s perspective for a possible future audience.

7.2.2 Creative processes of using digitised collections

In addition to practical sense in working with cultural data, participants at CdV West also structured their creative process independently and applied various methods for developing the prototypes. Learning from their self-directed processes, three phases became visible: beginning, middle, and end (see figure 28 and appendix E.2 for selection of process sketches).

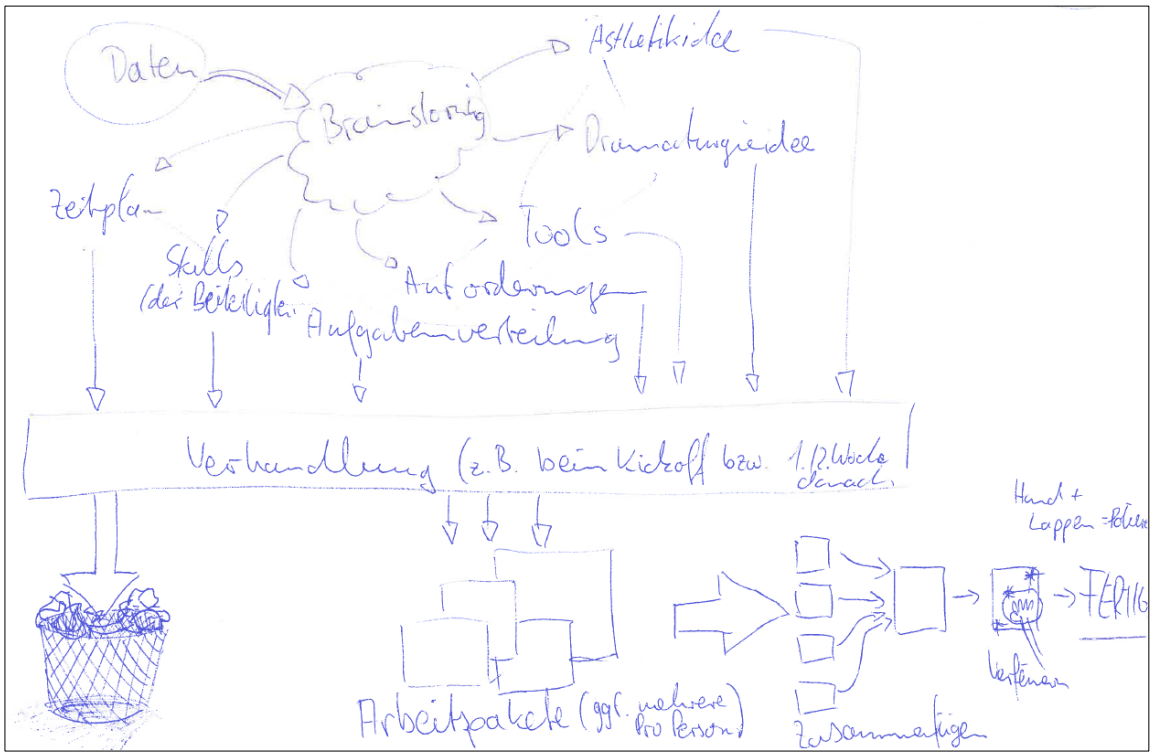


Figure 28: Creative process at CdV. Interview participant.

As beginnings two different starting points became visible in their process sketches: engagement with data and engagement with people. As described, many participants browsed the data before they joined the hackathon event and their experience with different images, sounds, videos, and texts sparked an initial motivation or meaningful connection. Datasets were illustrated in the form of pages or packets and some participants specified them further – e.g., by marking some datasets as of high quality or differentiating between data, images, and sounds. One participant noted ‘prior knowledge’ on the same level as the data. For those who started the creative process with the social gathering at the kick-off event, a range of people were drawn together surrounded by arrows, question marks or speech bubbles. Here, exchanges with other people,

described above as ‘carsharing’, formed the starting point of their creative journey.

Both the data and the social event are perceived as overwhelming input – an energising ‘boost’ consisting of ‘umpteen gigabytes of data;’ and the kick-off event as ‘two days where you’re exposed to a constant stream of all types of data’ (CdV 6). The hackathon event frames the process and the social gatherings, kick-off weekend and awards ceremony are therefore crucial factors behind motivation to create something. In some drawings they were emphasised as high points in a graph and participants recalled them as intense and energising, relating to both the collaborative starting point of the kick-off and the competitive aspect of the awards ceremony – the final presentation event – which was associated with ‘euphoria’ (CdV 5).

In the middle, participants described two distinct steps that transformed data into a prototype: having idea(s) and implementing them. Coming up with ideas is a central part of creativity and Csikszentmihalyi (1996, 368)notes three aspects of ‘divergent thinking’ supporting this process:

> fluency, or the knack for coming up with a great number of responses; flexibility, or the tendency to produce ideas that are different from each other; and originality, which refers to the relative rarity of the ideas produced.

As seen in the analysis, an emotional or sensory connection sparked ideas and some illustrations used a spark, light bulbs and lightning to symbolise the idea. Team flow or spirit as described in section 6.2.3 was an important element in this phase – sharing ideas, trusting each other, and feeling safe to speak out increased team fluency, flexibility, and originality. In one case the first step was called the ‘problem/content’, which relates to design thinking approaches that highlight the definition of a problem as the first step to solve a problem. For other participants, practical cornerstones, such as the technology they work with or want to try out, limited their possibilities. While all participants agreed that this phase was very important for the further development of the project, it can feel at times very theoretical – as one participant observed: ‘In the

beginning is this creative process which is absolutely necessary and which is very important, but nothing comes out of it, production-wise' (CdV 8).

Across different illustrations the icon of a bin showed up at different stages, sometimes symbolising the idea of the economy reducing the many possibilities to a feasible solution, and sometimes appearing later in the process to state that different methods were pursued but, in the end, only one was successful. Again, referring to Csikszentmihalyi (ibid., 367), this is a recommended way of finding creative results by trying different practical methods and comparing results.

Turning now to the implementation phase, the creative chaos of the beginning of the process often dissolved into clear working packages or iterative working routines. As already outlined, clear working steps and enjoyment of the activity in itself led to positive flow experiences for some participants: 'it is an infinite cycle this code writing, it practically goes on forever until you reach the deadline' (CdV 9). Others applied iteration cycles as methods to increase the usefulness and meaningfulness of their projects (CdV 10) – an approach recommended by design thinking practitioners (Cross 2006, 7; Brown and Katz 2011). Some have also noted that, throughout the implementation, new ideas popped up, perhaps when things did not work out as planned, leading to a return to a brainstorming stage (CdV 3). This resonates with another of Csikszentmihalyi's (1996, 367) suggestions: 'Solving problems creatively involves continuous experimentation and revision. The longer you can keep options open, the more likely it is that the solution will be original and appropriate.'

At the end of the process, finally, the deadline is near. This last piece of the process, the final stretch, was often perceived as stressful and emotional. In some cases, the final touch or moment of perfection was illustrated to mark the transition from process to product: the different elements were put together, details were refined, and the product was 'polished' to shine at the awards ceremony (CdV 2). Only two participants thought beyond the end of the event with one tentatively stating 'further developing' and one mentioning 'post-CdV depression'. These comments resonate with the observed difficulty of making hackathon processes sustainable beyond the event confines.

7.2.3 Affordances and challenges of open cultural data

Participants who reused digitised collections connected with and made use of different layers of cultural data: while the data quality was crucial for some, others focused on the cultural content, or the type of digital media that suited their professional practices. The previous sections aimed to show that these different possibilities for using an object – so-called affordances – depend on the various motivations and practices of users in relation to the object's qualities (Reckwitz 2003, 285). Thus, every user might see different possibilities in digitised collections – a challenge that hacking participants enjoyed – and which becomes tangible through the practical know-how involved in implementing ideas.

As the examples set out have illustrated, cultural data afforded a relationship between present and past, perceived from the specific standpoint of the participants, who remediated forgotten knowledge or stories in the form of digital copies of, for example, 1920s peace posters or bike tour books, making historical content accessible and allowing participants to relate it with today's context. While this process of connecting was also possible during the ReW inside the museum gallery, browsing datasets on a personal device offers a more decontextualised access to cultural content. The context of the collecting institution, mediator and gatekeeper of the relationship between culture and user for the last 100 years, became less relevant and, instead, their role as documentation and digitisation station came to the fore. However, in this role, GLAMs also directly impact the affordances of digitised collection data, deciding on the quantity and quality of data. One participant emphasised that high quantity and quality increased their interest in working with data. In contrast, the opposite demotivated them to care:

> High quality means that they [data] are of high standard in relation to their image resolution or sound quality. Sadly, it is often the case that data are not provided in their full resolution but released by the data providing institution deliberately in lesser quality and this minimises, at least for me, their attraction massively. With these things I don't like to engage in principle because already the knowledge that you are not permitted to use the full content is demotivating and then I don't feel like caring for it anymore, to be honest (CdV 9).

In this way, institutional control over interpretation of cultural heritage is transferred to a mechanical process of digitisation and publication. On this basic level, higher quality, in the form of more pixels, frequencies, data, or frames, can be the simple affordance that enables or hinders their use and integration in digital creative workflows. From the perspective of someone who wants to reuse the material, this makes a significant difference:

> if you can zoom into the oil streak, then you simply have more material to work with, structure, and like with the sounds, they are of such good quality that you maybe can also find other layers in these works (CdV 9).

Here, the digital materiality is striking: high-quality cultural data enables deep engagement with cultural artefacts and close examination has potential to reveal other observations on the level of data material, including structures or patterns. These findings are based on the practical relationship between hacking participants and data. Only through processing data with a creative and constructive approach do these affordances come into play.

The hackathon participants' practical sense activated and actualised the digital characteristics of cultural data, which, following Manovich (2001), are defined as: numerical representation, modularity, automation, variability, and transcoding. As introduced in the literature review, these aspects make digitised cultural heritage appropriate for creative reuse. This point can be examined more closely through the examples of hacking practices in the previous section – digital objects and collections are programmable. As outlined, they can be modified with different software programmes, and their material qualities, in the form of pixel, resolution, and frequency, are perceived as independent modules or structures to work with. Automation outsources a growing part of the creative process to programmes and algorithms – a tendency that has gained massive impact through the introduction of artificial intelligence and machine learning in cultural heritage in recent years (Shabani et al. 2020; Pisoni et al. 2021). However, the main advantage of digital media highlighted in the hacking practices at CdV West was the variability of cultural data. Combining and customising interfaces and data was arguably one of the most central

affordances perceived by the participants. Twenty years ago, Manovich (2001, 44) speculated about this potential:

> If we apply this principle to culture at large, it would mean that every choice responsible for giving a cultural object a unique identity can potentially remain always open. Size, degree of detail, format, color, shape, interactive trajectory, trajectory through space, duration, rhythm, point of view, the presence or absence of particular characters, the development of plot – to name just a few dimensions of cultural objects in different media – can all be defined as variables, to be freely modified by a user.

Today, digitisation of cultural collections, sharing with open licences, and reuse, for example in cultural hackathons, has realised this idea of open variability. CdV West participants had a free choice to modify cultural objects to allow any type of emotional and sensory connection. They listened to rhythms instead of reading contextual information, zoomed in on images to dissolve content into material, combined artistic photographs and Google Street View, wrote new stories based on old events, and hoped that these approaches could be passed on to diverse audiences. Manovich also anticipated the challenges and responsibility of all these free choices for users, and the analysis confirmed the growing complexity of engagement with so many open variables, making reuse ultimately challenging.

CdV West, however, also showed that the theoretical openness of cultural data is limited by what is deemed good reuse. While inviting new perspectives on and uses of digitised collections can lead to innovative, surprising, and critical responses, there is also a fear that, once the institutional control of access is withdrawn, inappropriate interpretations might take place. Taking the question of one of the local organisers of CdV West: do cultural data simply have to 'withstand' multiple interpretations once they are openly licensed and published? (CdV fieldnotes). Here, the ethical and contextual responsibility, which GLAM institutions regard as an important aspect of mediating cultural heritage is problematised. In their mission statement, CdV explicitly addresses these fears and states that it aims to 'alleviate' them. However, at CdV West, a few reuse ideas of participants also triggered defensive responses on the part of GLAM practitioners, as the following examples show.

In one case, a hacking team wanted to combine datasets from two different museums but one of the institutions wanted to avoid any affiliation with the other institution. The museum practitioners argued that the context of this other institution did not resonate with their social mission and they would not want the collection to be associated with them. The hacking participants were surprised that the museum did not understand the terms under which they had provided data at the hackathon. They felt that the museum practitioners who turned their idea down were doing precisely the opposite of opening up – they still wanted to control how their objects would be used and in which contexts they would appear.

Another participant received strong reactions from the audience when pitching a project idea: based on a dataset that listed mine accidents, the participant in question wanted to develop a card game. People in the audience from the museum and beyond thought it irreverent to create a playful application based on death. The participant then had to justify and explain their proposal on stage and, in doing so, showed very good awareness for the topic of grief and of ethical considerations. Challenging the context of the data, they pointed to the global situation in which mine accidents continue to happen – e.g., in China.

Both incidents illustrated that the open variability of cultural data is limited by assumptions of ethical expectation and social responsibility. The engagement zones of hackathons created a space for negotiating these aspects from both sides – discomforting uses of institutions and participants – thus contributing overall to reducing the fears of GLAM institutions. However, the other research cases – the HuH and ReW – also gave evidence that the colonial, racist, discriminatory, and imperial legacies of collections require a responsible and more careful approach to opening up collections online. Here, Odumosu's (2020, 298) suggestion to develop 'an ethics of care for digitization' is an important reminder of how to approach the problem that 'digital artifacts of a sensitive and dehumanizing nature are vulnerable without contextualization'.

For other collections, however, an open and playful approach to the different contexts framing collections can support creative reuse. After all, the contexts

in which we engage with cultural collections are constantly changing – as one participant pointed out:

> One can ask themselves, if this is right and good, that you [put] the data in a completely different context, that by doing so you necessarily forget a part of the original point of the artist or purpose of these data. But you can ask yourself actually if this isn't… in whatever scale… a good, a natural process, data getting repeatedly new, freshly recontextualised. Certainly, there is also the opinion, that this isn't right, to recontextualise data and wrest them from their original meaning and intentions (CdV 9).

The participant subsequently added:

> You can also ask the other way round, is it even possible to understand these data in their original context today? […] Aren't they already in a different context? (CdV 9).

This shift in perspective enables a view of digitised collections as the latest step in a series of mediation practices: from creating, producing, and using an artefact, and the institutional context in which it was collected, exhibited and preserved, to the digital context in which it is now reused as cultural data. What becomes palpable in the words of the participant is the necessity to pick and choose from these different layers of meaning created in different contexts and the suggestion that this subjective re-contextualisation practice is always at play as a cultural constant.

7.3 Conclusion

The analysis has demonstrated that opening up the institutional context of interpretation and using collections offered participants at CdV West and ReW the possibility to construct meaning and create digital remediations. While CdV West provided openly licensed datasets for reuse as part of a self-directed process, the ReW offered a guided framework to remix museum objects in digital stop-motion films. However, both forms of creative engagement initiated individual sense-making processes through which participants built meaningful connections based on emotional, cognitive, and sensory responses to the collections. Throughout this process participants picked and chose from the various layers of content and media qualities making up digitised collections and

related them to their memories, practices, and motivations. Sense-making was perceived as a challenge with different connotations: while some participants valued the constructivist interpretation and learning process as inherently rewarding, others pointed to the time, motivation, and knowledge required.

This indicates that the first barrier to reusing digitised collections is not necessarily related to their digital characteristics but rather to the challenge of sense-making. While publishing datasets offers interpretative freedom, not everyone is attracted by the hackathon challenge of sense-making, meaning that providing engagement zones in which participants can be supported in this process might make digitised collections more relatable and accessible.

Furthermore, CdV West elicited the role of practical know-how in leveraging fun throughout the working process itself. Participants with a hobbyist motivation simply liked the creative, constructive, and collaborative practices of translating their ideas into prototypes. Based on their meaningful connection and practical engagement, they saw the main affordance of open cultural data in their open variability. Although open variability can be seen as a cultural constant that also impacted the remixing practices at the ReW, digital media propelled this quality of collections, reducing institutional control and increasing media layers for creative work such as data quality. Hacking participants identified different barriers to creativity, ranging from poor data quality, ethical concerns, and institutional restrictions to skill gaps.

At ReW, participants described the outcomes created as exciting mirrors of both the user and the object, pointing to the importance of these practices as ‘methods of inscribing oneself into the world’ (Stalder 2018, 76). Thus, participating in remediation practices can foster personal processes of sense-making in relation to culture, media, and creative expression. In reframing digital creative reuse as only one step in a long chain of remediation processes, the analysis showed that reuse is, at its core, a practical negotiation process of past, present, and future media contexts. Thus, creative reuse ties in with previous practices of media use and sense-making – a finding that, if emphasised, might help to attract more participants to join co-creative events rather than stressing digital affordances alone.

Chapter 8 Discussion

This chapter will reconnect with the research questions and the broader literature to discuss how co-creative events frame engagement with museum objects and digitised collections. The analysis presented in Chapters 5-7 has examined the co-creative events Hunterian Hackathon (HuH), Coding da Vinci Westphalia-Ruhr (CdV West), and Remix Workshop (ReW) to understand what reuse of digitised collections means for museum practitioners, the Open GLAM community, and individual participants. By carefully examining the organisational and participatory framing of these events (Chapter 5), the engagement zones and collaboration between GLAM practitioners and participants (Chapter 6), and the creative practices of participants (Chapter 7), three research questions were addressed:

1. What are the challenges and benefits of these co-creative events for different stakeholders – museum practitioners, Open GLAM community members, and active users?
2. How do museum practitioners, Open GLAM community members, and active users collaborate and what are the factors impacting such collaboration?
3. What is the role of digital reuse and creative practice in engaging active users with cultural heritage collections?

This enquiry identified three key components which directly impact the co-creative process: the crucial role of socio-affective spaces for engagement, the conflicting forms of knowledges and expert roles in these spaces, and the understanding of reuse as sense-making and remediation practice.

Socio-affective spaces form the foundation of engagement because they brought different people together and enabled semi-public co-articulation of issues around collections. In these spaces the negotiation of expert roles and forms of knowledge was pivotal for the agency of different stakeholders and the collaborations between them. Throughout the creative engagement with collections, practices of sense-making and remediation turned out to be central

for connecting and motivating participants. Each of these topics and their ramifications will now be discussed in more depth.

8.1 Socio-affective spaces for engagement

In this research, semi-public face-to-face events such as hackathons and workshops brought people together and enabled emotional, collaborative, and creative exchange between them. The events had different participatory dynamics depending on organisational framing, invitation strategy, objective, and structure. Reflecting on the challenges and benefits of these events for different stakeholders indicated that their social and affective qualities were central to restructuring relations between collections, GLAM institutions, and people.

The findings suggested that affective practices can oppose an assumed neutrality or objectivity of collections, address inherent biases in cataloguing and collecting practices, and make these a transparent part of reuse activities. Further, socio-affective spaces of engagement have the potential to speak to a wide range of people because they build on aptitudes that are not related to knowledge expertise. In the words of Perry (2019, 357): ‘everyone (specialist and non-specialist alike) has the aptitude to be inspired, to feel, to be emotively engaged’. In supporting this affective engagement, the studied spaces enabled new perspectives on digitised collections and museum objects that emphasise relational meaning-making over technical and canonical knowledge. Through the facets of three research cases the analysis brings to the fore various crucial aspects of socio-affective spaces, illustrating their complexity and potential.

The HuH was a semi-public self-critical deconstruction of museum practices, initiated by the institution indicating that museums are not neutral. However, following identification of discomforting objects on display, the discussions in mixed groups of participants from within and outside the museum revealed the apathy and assumed neutral position of the museum exhibit for some participants. The analysis pointed to the devaluation of affective practices in this museum space and showed that participants including museum practitioners were not prepared for emotionally difficult dialogues and heated debates. A

tendency to avoid difficult topics on one hand hindered the productivity of critical voices and led to disengagement. Empathy and transparency, on the other hand, proved to be more successful communication strategies. In the following of the HuH and in conjunction with other developments at the museum such as the appointment of a Curator of Discomfort in 2020, the museum's director used these communication strategies stating on The Hunterian's website that:

> Museums play an important and highly symbolic role for people in the way the past and the present are explained and identities represented. The way we do this is not, cannot be, and has never been neutral (Scholten and The Hunterian n.d.).

Considering and reflecting on the many ways in which museum practitioners influence engagement with collections helps to deconstruct the concept of neutrality and brings professional practices into dialogue with other social and affective practices. The HuH made strikingly clear that difficult legacies of collections combined with institutional inertia trigger discomfort for people both within and outside the institution. In order to address this, it is crucial to acknowledge that museums are not neutral. But beyond this statement, museums need to offer more spaces in which discomfort can be expressed and met with empathy and develop skills in facilitating these difficult dialogues.

In the broader context of this research, the HuH as an analogue hackathon example also illustrated that change in the relationships between GLAM institutions and active users does not depend only on the digital literacies of practitioners. Just as, if not more, crucial are the observed social and affective practices to make the digital work towards aims of collaboration, inclusion, or decolonisation. This relates to the reflections of Galani et al. (2019, 118), which highlight that practitioners' 'development of digital skills and literacies should specifically and consciously aim to combine technical competencies with social/dialogic ones.' Such literacies are important to facilitate discussions proven to be central elements for participants in this research. Both the HuH and the ReW included as part of their methodologies group discussions in front of object displays. The analysis revealed that the majority of participants perceived this social exchange as the most valuable part of the respective event.

Their discussions addressed different emotional associations with museum objects on display and thus supported the co-articulation of the discomfort and potential they saw in collections. Recent research, such as that carried out by the EU-funded EMOTIVE project,[31] which studied the relationship between emotive practices, cultural heritage, participation, and digital technology, consolidates this observation. Drawing from that research, Perry (2019) considers the risks of affirmative affective practices in participatory projects and describes digitality 'as an agent' rather than a key factor in emotive experiences, further stating:

> With such complexity in mind, I contend that it is direct human-to-human communication that has the most potential for transforming opinions, rewriting crisis narratives, and breaking down barriers between the past, present, and future (ibid., 363).

Thus, she recommends 'affective interventions' in interpretative and creative practices, but stresses in particular 'abilities to promote dialogue' and development of methods to deal with challenges catalysed by this process (ibid., 366–367).

In this research, the need to create and care for socio-affective spaces became tangible in various situations. At the CdV West, the social mode of carsharing dominated the kick-off event, which made it an appealing opportunity to network, gain new perspectives, and support the Open GLAM community. However, these fluid, serendipitous, and tentative social encounters differed from the self-organised social spaces in which the hacking teams successfully co-created knowledge: these were characterised by stronger social ties, shared working spaces, and short knowledge distances. In contrast, at HuH and ReW, social spaces were more strongly moderated with varying results: the HuH involved museum practitioners and university lecturers moderating group work, leading to both dialogues and debates of discomfort, while, at the ReW, the facilitators focused on individual support of participants and thus sidelined the collaborative and social aspects of learning. By analysing the impact of these aspects across the three different cases, the challenges of facilitating socio-

[31] See EMOTIVE project website: https://emotiveproject.eu/, accessed 17 November 2021.

affective spaces came to the fore. These highlighted that there is no single type of participatory event which will ensure a positive impact on the engagement with collections, but it is rather, the social and affective qualities which need to be catered to. Researchers who studied engagement sessions in museums make this quite clear, such as Munro (2014, 55) referring to non-digital activities at Glasgow Museums, stating that,

> emotion work is seen as inextricably linked to community engagement's potential impact: participants' raised self-esteem and self-confidence is understood to rely – in part – on the relationships fostered within sessions.

This emotion work is not only beneficial for participants but is also helpful for museum practitioners in enabling them to deal effectively with criticism.

Morse's (2021, 186) proposed logic of care confirms the importance of affective and embodied practices in museum outreach and engagement work. Creating a supportive atmosphere for engagement relies on 'distinct relational, material, and affective dimensions involving museum objects and creative activities'. Following her position and extending it to digital co-creative practices, I suggest that placing greater emphasis on this logic of care might help to accommodate different socio-affective expectations and needs in hackathons and workshops, thus making them more successful and inclusive for both participants and practitioners. This logic shifts attention from contribution and outcomes to the process of growing mutual relationships between participants and practitioners and also involves longer timeframes, as relationship-building is not a single effort but is repeated and co-created by all involved. The logic of care, as an affective practice in itself, might also be more sensitive to feelings of discomfort as it brings emotion back into the museum space in all its different variations: as a method of outreach to enable access to cultural heritage and to foster empathy across differences, but also as a form of 'inreach' to prepare GLAM practitioners for reflecting critically on their roles and practices.

8.2 Forms of knowing and expert roles

The hackathons studied, HuH and CdV West, addressed discomfort and openness in collections in a critical and activist way, putting pressure on the GLAM practitioners involved to reflect upon and potentially change some of their practices. These processes revealed the impact of knowledge and expertise on the agency of different stakeholders. While GLAM practitioners were caught up in a balancing act between providing expert knowledge and reflecting on their own roles, participants were invited to learn and contribute through practical know-how. The conflicts arising in the HuH and CdV West provoked reflections about different forms of knowledge and their embodiment in expert roles, enabling co-creative processes.

CdV West made a clear distinction between two different knowledge domains – culture and technology – which were then mapped onto the cultural practitioners and tech-savvy 'hackers'. The analysis showed that, on the ground, cultural and digital literacies were far more mixed across these lines and that shared interest or expertise actually facilitated knowledge exchange between them, also indicating that the knowledge produced – in the form of corrected metadata, background research, or prototypes – was sometimes not acknowledged by GLAM institutions. However, the dual concept of expertise relativised the hierarchical model of professionals and amateurs in participatory projects. Instead, it created different reference points that assigned both sides – data providers and data users – as experts. In contrast, the HuH did not differentiate the roles of practitioners or participants and put both in a socio-affective space of engagement, triggering intense negotiations about how to relate to and convey museum expertise. In the debrief meeting after the HuH, the museum practitioners discussed the differences between factual knowledge and the meaning of objects, thereby pointing to a knowledge hierarchy from objective and standardised information that museum practitioners can provide to subjective and affective feelings to which everyone has access. As became clear, the emotional confrontation with participants had an impact on how practitioners conceived of their own practice. They responded by defending, explaining, or reinforcing the boundaries between their expertise and the participants' perspectives. Comparing the roles of GLAM practitioners in the HuH

and CdV West showed that having a clear role throughout the event while at the same time being open to participants' perspectives fostered exchange and understanding.

This opening up to other forms of knowledge is paramount because all three events – the HuH, CdV West, and ReW, made clear that multiple forms of knowing, or knowledge practices, are at play when people engage with cultural heritage collections, including affective practices, implicit knowing how, and institutionalised standards. Often in participatory projects, these forms of knowing are translated into different expert roles: GLAM practitioners are invited to share their institutional perspectives, while participants are invited to contribute user and community perspectives. This approach tends to overlook the fact that these forms of expertise are not just different perspectives easily able to be exchanged. Rather, they imply different and sometimes conflicting definitions and directions of knowledge including factual knowledge and feelings about objects, know-how about conserving collections and know-how about using digitised collections, historical expertise, and creative experience, as well as contextual information about objects and social imagination of their future potential. The basic translation of forms of knowledge into expert roles is also prone to disregarding authority and presumed quality of institutional knowledge in contrast to what Fouseki and Vacharopoulou (2013, 2) term 'social knowledge', which GLAM professionals often perceive as 'fluid and changeable, subject to constant transformation and dispute'. In addition, institutional outreach to skilled experts in the context of co-creative events runs the risk of limiting participants to one role, asking them to speak for others, exploiting their knowledge to improve the institution, marginalising people, and excluding those not perceived as experts (Rey 2017; Graham 2016; Morse 2021; Onciul 2015).

Instead, I am drawing from the research findings to suggest that knowledge in collaborative and creative practices needs to be treated as pluralistic in terms of things to know and modes of knowing. Including more emotional, social, and creative forms of knowing in museum practitioners' work would strengthen the interlinking between forms of knowing and support reflections on expert

definition, institutional framing, and knowledge hierarchy in participatory projects.

This requires individuals and institutions to open up to and balance different forms of knowing, a process which touches on the core of many GLAM institutions, and museums in particular, as they have a long tradition in shaping knowledge and enabling different ways of knowing (Hooper-Greenhill 1992, 191). As Marttila and Botero argue (2021, 108), co-creative projects, such as workshops or hackathons, offer possibilities 'for rehearsing, enacting and negotiating together possible future scenarios'. In this sense, I believe that they can also support a learning process to tackle knowledge hierarchies underlying meaning-making with digital and non-digital objects in museums. Facts and feelings, expertise and experience, interpretation and creativity are valued differently in museums and co-creative processes involving various knowledge practices can make these hierarchies visible. Instead of adapting 'the form of interpretation, the knowledge and expertise' of participants' contributions to the needs of the museum (Morse 2021, 107–108), this research has shown the potential for co-creative projects to become collaborative explorations of forms of knowing. Graham and Vergunst refer to this process as collaborative inquiry and state that: '"heritage" is about relationships created through inquiry, between past, present and future, between people, and between people and things' (Graham and Vergunst 2019, 2). When knowledge is co-produced using such methods of collaborative inquiry, forms of knowing as yet underrepresented in museums can become more tangible and, through this public platform, have the possibility to gain more relevance in discussions (Jannelli et al. 2019). Numerous examples of this can be found in the co-created outcomes of CdV West and ReW: stop-motion films, collages, websites, apps, VR games, and mock-ups, alongside practical, affective, factual, and subjective forms of knowledge in a prototype. At the same time, in this research, GLAM practitioners rarely took part in creating these prototypes, which had ramifications for their sustainability. As Mason and Vavoula (2021, 13) have highlighted in their recent research into the digital cultural heritage design practices of museum professionals, 'hands-on involvement and social interaction in-practice are central to the creation and sharing of design knowledge'. Based

on their findings, co-creative engagement of practitioners is not only important for creating outcomes that are context-sensitive, but is crucial for experiencing and valuing other forms of knowing. Being more strongly involved in the co-creation of outcomes might positively impact the ways in which they are documented, exhibited, and shared with audiences. This remains still a major challenge, even though Srinivasan et al. (2010, 745) pointed this out more than ten years ago:

> what has yet to be developed is a clear strategy for handling the multiple ways of knowing about objects and documenting and presenting these in such a way that diverse museum audiences and stakeholders can understand and appreciate what is being presented.

One strategy to handle and communicate these multiple interpretations of digitised collections is presented by Hogsden and Poulter (2012) building on the contact zone metaphor (Clifford 1997). They suggest establishing digital contact networks as crucial condition for effectively supporting the affordances of digital objects and, based on that, enabling autonomous knowledge creation by different user groups. While the research findings support this need for facilitating social formations around objects, they also highlighted, in contrast, the importance of face-to-face events for getting in contact with other knowledge practices. Thus, instead of aiming at digital networks in which users independently create diverging interpretations, I suggest to focus on socio-affective spaces in which different stakeholders collaboratively explore uses and negotiate meanings. This way, collaborations can result in networks, communities, reflections, and learnings beneficial for involved participants because of the future-making action capacity of these experiences. This relates to Graham and Vergunst (2019, 13–14) who, building on action research, propose measuring outcome by asking ‘Is the collaboration productive of meaningful potential for those involved?’. Although this research did not fully embrace the change orientation of action research, it did identify the importance of learning skills and exploring practices for participants’ future projects and developments.

8.3 Sense-making and remediation practice

The findings showed that reusing cultural collections required participants to establish both a meaningful and useful connection, applying practices of sense-making and remediation. These practices tie in with constructivist models of meaning-making and the notion of object-based learning in museums (Paris 2002; Dahl and Stuedahl 2012; Roberts 1997; Hein 1998; Hooper-Greenhill 1992). Rowe (2002, 18) notes that a constructivist attitude towards 'the meanings people make as a result of the negotiation of different knowledges and ways of knowing' challenge the knowledge authority of the museum. In turn, building on Vygotskiĭ (1986), he emphasises the process of socially-distributed meaning-making in museums and concludes that:

> the goal of museum education is to invite visitors into the meaning-making experience, drawing on what they know and the alternative possible meanings museum objects afford and multiple ways of interacting with and around objects (Rowe 2002, 30).

Although Rowe's use of 'museum education' appears outdated in light of the current sector shift towards 'learning and engagement', constructivist learning approaches are widely applied in museum spaces. Gil-Fuentetaja and Economou (2019) also observed a trend in museum online collections towards constructivist models of learning and engagement in recent years. However, the potential of using digitised collections in socio-affective spaces for constructivist learning processes, as highlighted by this research, attracted far less attention. HuH, CdV West, and ReW addressed this gap by exploring the use of objects in various forms of mediation within workshop and museum spaces. Research participants collaboratively and individually engaged with multiple layers of object meanings and media through new forms of interaction such as hacking and remixing. The research therefore extended the understanding of constructivist and creative meaning-making processes with cultural heritage collections and proposed new exploratory hybrid formats involving digital and physical objects. These findings relate to Galani and Kidd's (2019, 5:2) argument for developing new 'reflexive and fluid' ways of approaching digital heritage experiences, indicating a 'new lexicon for talking about authenticity, learning, and feeling beyond and between

the strictures of “the digital” and “the material” within digital cultural heritage work’.

The findings show that participants’ sense-making processes were similar despite the different media contexts, although in one case they browsed through datasets on their computer and in another they looked at objects in an exhibition space, with participants describing similar emotional, cognitive, and sensory responses to the objects on display and to the digital ones. Their initial reactions inspired their imagination, motivated their engagement, and thus fostered meaningful connections between the digital and the analogue, and between the personal context and the objects’ affordances. However, the workshop format offered more support for this process than the hackathon one, which the participants perceived differently. While some participants at CdV West highlighted the creative freedom and constructivist learning experience as inherently rewarding, other participants at ReW also pointed to the time, motivation, and know-how required. This indicates that different levels of support and motivation are needed for sense-making signposting to a barrier for reuse that is not necessarily rooted in the digital format of the object. Focusing on the socio-affective spaces in which active users can be supported in their process of constructivist meaning-making across different media might be the first step to making cultural collections more relatable and accessible, and section 8.4 suggests six further conditions for this.

Within these spaces, the role of creative practices as catalysts for connecting people with collections cannot be undervalued and is also confirmed in other research such as that undertaken within the EU-funded project CoHERE.[32] Reflecting on digitally mediated dialogues in European heritage set up and/or studied throughout this project, Galani et al. (2019, 118) highlight the role of design practices in developing ‘digital imagination’ as,

> the capacity of heritage professionals, community groups, individuals and policy makers to imagine dialogic relationships, spaces, structures

[32] See CoHERE website: https://research.ncl.ac.uk/cohere/, accessed 18 November 2021.

> and processes with digital technology and not about, for or because of it.

Thus, in order to develop ideas on how to release the social potential that lies dormant in digitised collections, design practices, tools, and literacies are needed. Numerous examples at CdV West and ReW show that these skills shaped various participant practices, including cycling on historical bike tours, combining architectural images with bikini fun facts, or translating a board game into smartphone game aesthetics. Having practical know-how or an openness towards learning about new tools was key to using digitised collections for making oneself visible and heard in a mediated world and thereby contributing to the digital imagination.

Settings in which people can learn about these practices leverage meaningful experiences in the museum and also provide a meaningful experience of a person's own possibilities to express themselves, which can be applied to any context. This relates to Morse's observation of creative sessions with clients of mental health organisations, addiction recovery services, care homes, and National Health Service (NHS). In this context, the museum workers involved valued creative practices because 'productive acts of creating and making were seen as important for participants to access their own sense of potential' (Morse 2021, 149). Creative sessions were attempts to 'enable people to empower themselves to enhance or change their lives' (ibid., 145). In line with the logic of care, this shifts attention from GLAM's goals of making collections accessible to making them into a useful resource for personal and community development. In light of broader debates around cultural participation and cultural rights, facilitating constructivist learning processes can be understood as one of the main pillars supporting the United Nations' Universal Declaration of Human Rights. As advocate for cultural rights and museum director, Anderson (2012, 224) proposed five cultural rights which museums can support in their communities and among the public:

> (1) recognition of their own cultural identity; (2) engagement with other cultures; (3) participation in cultural activities; (4) opportunities for creativity; and (5) freedom of expression and critical judgement.

One requirement to meet these goals involves taking ‘effective action to support more public learning and creativity’ (ibid.). Similarly, offering more socio-affective spaces that focus on learning creative practices supports the public to engage with collections and enact their right of self-expression. In our mediated world this implies engagement across different media and literacies that support remix and remediation practices. Through the different facets of this research, it became evident that creative reuse ties in with existing social practices of media use and sense-making and represents a form of remediation (Bolter and Grusin 1999; Geismar 2018). Emphasising connections with previous media practices can help to integrate digitised collections in object-based learning programmes and make museum educators and other engagement staff more aware of the potential of this resource. At the same time, interweaving ‘old’ and ‘new’ media practices also has potential to address participants who might be put off by the technical focus of the current debate around digitised collections.

8.4 Co-creative engagement with digital collections

The study’s research findings provide support for the conceptual premise that engaging with cultural heritage collections does not depend only on the digital availability of collections but on a combination of different conditions which are crucial in turning them into meaningful content and media that can inspire a joyful activity.

This relates to the findings of participatory design researchers Marttila and Botero (2021, 108), who, in a similar study of workshops and hackathons, state that:

> The experiences confirmed the idea that also in digital cultural heritage only ‘setting things free’ is not enough and that supporting the learning processes of all (institutions and people) demand careful orchestration and alignment of motivations, practices and sometimes new tools.

In their ongoing research into creative reuse of cultural commons, they have stressed that ‘the process of evolving the practices, and sometimes even the values and changing attitudes’ of participants is paramount (Marttila and Botero

2017, 125–126). In the context of this research, this can be applied to different stakeholders: GLAM practitioners reflecting their professional role and knowledge practices, the Open GLAM community reconnecting with their creative experts, and users building creative practices. Marttila and Botero (ibid.) conceptualise these learning processes as crucial forms of 'infrastructuring': 'weaving together contexts, social practices and language, often from significantly different work and media practices' to build socio-technical infrastructures that support the cultural commons. In this way, the concept also offers a helpful lens through which to reframe participatory practices within 'the complex infrastructural assemblages of museums' as Tran et al. (2020) recently discussed.

Inspired by these perspectives, co-creative events such as the HuH, CdV West, and ReW can be understood as processes in which participants explore, negotiate, and create different infrastructures for engagement with collections. These infrastructuring processes aimed at participatory uses of museum objects on display and digitised collections and thus the analysis reveals conditions for engagement which cut across digital and physical characteristics of objects. The variety of three research facets highlighted complementary needs for building bridges between social and affective, knowledge and media, institutional, community, and personal practices. In this way, I propose a practice- and user-oriented shift in infrastructuring engagement with collections: from media qualities of collections to participant social practices. Figure 29 shows seven recommendations for GLAM practitioners, community members, workshop facilitators, practice researchers, museum educators, active users, and anyone interested in fostering this shift in creative engagement with cultural heritage collections. Based on this research, I recommend: creating social and affective space for people, reflecting on the institutional framing of collections, acknowledging discomforting feelings that might arise during engagement, pluralising forms of knowing and expert roles, exploring practice-oriented learning formats such as hackathons and workshops, connecting with ongoing media practices in museums and daily life, and following a participatory logic of care for people and collections. Taken together, these conditions can support the potential positive outcomes of creative engagement for active users, for

example, as a cultural right, fun activity, meaningful connection with culture, method of self-expression, building of networks and communities, and development of creative skills.

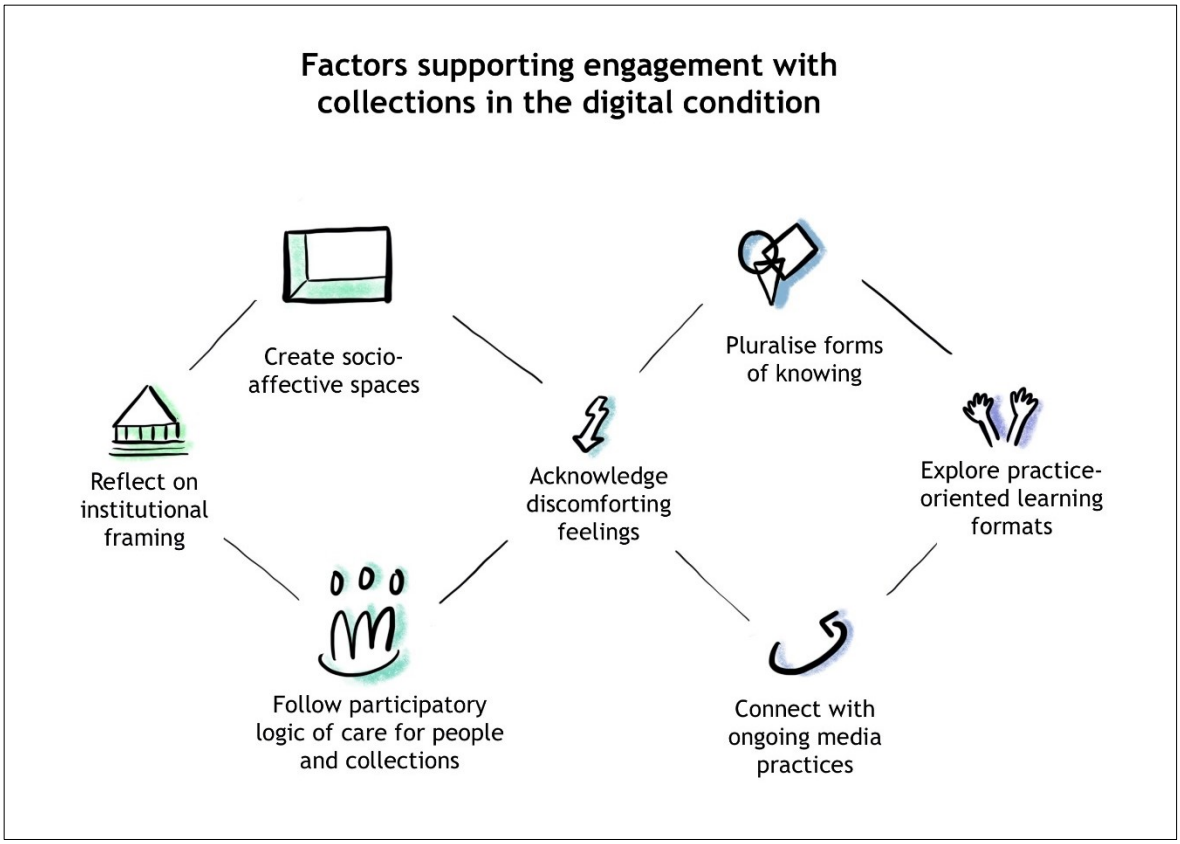


Figure 29: Recommendations for GLAM practitioners, Mucha, CC BY 4.0.

For those GLAM practitioners working towards opening up collections, the job of infrastructuring adds to their workload. However, these practices have always been an essential part of the broader concept of the commons that inspired the cultural commons and the Open GLAM movement. As de Angelis has pointed out in an interview, the practice of 'commoning' connects the shared resource and the people using it:

> In addition to these two elements – the pool of resources and the set of communities – the third and most important element in terms of conceptualizing the commons is the verb 'to common' – the social process that creates and reproduces the commons (Angelis and Stavrides 2010).

If GLAM practitioners understand collections as cultural commons, they also need to invest in the social processes of commoning or infrastructuring. This research has explored some ways of shifting the focus from the digitised

resource to the practices that connect people with collections, outlining recommendations for practitioners. In order to implement these, they need to rethink their roles within a network of stakeholders and embrace a caring responsibility that relates to both people and collections. This implies new collaborations within institutions to bring together engagement and outreach staff with digitisation practitioners, as well as collaborations beyond institutional confines to share the task of facilitating creative engagement within a network of ‘communers’. This network can include other GLAM institutions, the Open GLAM community, and many different active users – and digital tools can support this. However, as this research has shown only if there are enough spaces for social, affective, creative, and caring practices can a loose network turn into an active community of practice.

Chapter 9 Conclusion

Sharing is caring is a common phrase in the Open GLAM practitioner community.[33] While it is easily said, there is more to it than just a rhyming reminder of the need for open access policy. Understanding this dictum not only through the technological and legal conditions for sharing but also stressing the importance of the caring practices in this process could increase the social significance of digital cultural heritage in the future. The purpose of this study was to examine some of these social practices, focusing on co-creative engagement, and contribute to understandings of how they shape access and reuse. To study these social practices in depth I organised and observed participatory events such as hackathons and workshops, which brought together GLAM practitioners and participants to explore uses and negotiate meanings of collections using critical, collaborative, and creative methods. These co-creative events opened new avenues for thinking about the potential and limits of digital collections – in the words of Lodato and DiSalvo (2016, 554): 'what these events do is contribute to our social imaginaries.' I therefore hope that the practice-based experimental character of this research building on the inspiring participation of so many different people from museums, the Open GLAM community, the digital creative sector, universities, and various individual contexts will contribute to our social imagination of creative and meaningful engagement with cultural heritage collections.

9.1 Main findings

Guided by the main question of how co-creative events frame engagement with museum objects and digitised collections, this research addressed three sub-themes: the challenges and benefits of these co-creative events for museum practitioners, Open GLAM community members, and active users; their collaboration in these events; and the ways in which creative practice has connected people to collections. The co-creative events – the HuH, CdV West, and the ReW at the MEK – provided complementary facets to enable the research

[33] Sharing is Caring is also the title of an annual Open GLAM conference and related publication edited by Merete Sanderhoff (2014).

questions to be addressed from multiple perspectives and across different media. Together they shed light on some of the conditions that make reuse of digitised collections work within ongoing processes of mediation in museums and people's lives. They showed that factors other than digital media impact engagement with collections, including the institutional context of collections, the practical literacies of users, the dialogue of people from within and outside GLAM institutions, and how this dialogue is fostered by socio-affective spaces.

9.1.1 Collaboration: Challenges and benefits

The stakeholders involved – museum practitioners, members of the Open GLAM community, and active users – had different interests in the reuse of digitised collections and differed considerably in the ways in which they benefited from or were challenged by the co-creative events. The following section summarises how the co-creative events impacted them and their collaboration with each other.

For GLAM practitioners, deconstructing the institutional background and opening themselves to new meanings while still providing expert knowledge was a balancing act. This implied a critical reflection of their role and a combined understanding of both digital practices and engagement work. Only a minority of the participating practitioners displayed these literacies. Room thus remained for improvement in the ways in which GLAM practitioners engaged with active users to negotiate the meanings of collections and how their digital versions can be used. The co-creative events indicated a need for more holistic learning processes for practitioners in GLAM institutions, which, in line with other research, would combine the building of dialogic, social, emotional, and digital capacities (Galani et al. 2019; Perry 2019; Morse 2021; Malde et al. 2019). While the co-creative events were helpful for revealing this requirement and initiated self-reflection processes, the hard work involved in changing practices, organisational structures, and professional profiles has to be done by people who work across the institutions beyond the scope of these events.

One of the main actors pushing for digital change processes is the Open GLAM community, which advocates the idea of open commons as an alternative to

institutional control over digitised collections. Hackathons function as public events to anchor openness in GLAM institutions and showcase the open variability of digitised collections through the sense-making and remediation practices of hacking teams. The hackathon teams who participated in this study consisted of Open GLAM community members and digitally and culturally skilled mediators with relevant professional interests or hobbyist motivations. Within this community, openness constituted a shared goal to participate in the social 'carsharing' experience of the hackathon, providing a mindset in which the roles of GLAM data providers and GLAM data users were conceptualised on the same authority level. However, the research also indicated the tendency of organisers at CdV West to focus more on institutional partners and less on individual participants and skilled hacking communities. Changes in the event structure of CdV, including a stronger participatory logic of care and integration of elements that support active users, would help to keep the growing community together. After all, the knowledge and experience of digitally creative users are key to making the case for opening up data, and their needs should therefore be relevant too.

In each of the study's three events, a diverse set of active users of collections participated on a voluntary basis. Important motivations driving them were the outlook of practical engagement with collections, networking with GLAM practitioners, and learning of remediation skills in a social and affective context. Dialogue and exchange were central to their engagement with GLAM practitioners and other participants. This emphasised the importance of face-to-face socio-affective spaces for supporting engagement with collections. Therefore, the research showed that the ways in which these engagement zones are structured and facilitated crucially impact participant experiences.

The research confirmed Morse's (2021) observation that contributory participatory projects are centred more around the institution while a participatory logic of care focuses more on empathy, openness, and flexibility to cater for and adapt adequately to the needs and interests of all participants. The study identified two elements of co-creative events that would require more careful consideration in order to change future participatory logic.

First, the concept of knowledge is of central concern as it demarcates the boundaries between insider and outsider. Instead of reinforcing these boundaries, redrawing them would support collaboration in more effective ways. This could be achieved by means of several approaches: pluralising and dehierarchising forms of knowing to embrace know-how, emotional responses, and non-Western perspectives; developing shared literacies in digital media and mediation practices to better understand one another; involvement of all stakeholders in a hands-on way in the creative process; building social ties to acknowledge differences; and creating safe spaces for dialogue.

Second, the idea of creative reuse needs to be altered to speak to experienced users – e.g., participants in the hackathon – and also to the wider public. As is explained in the following section, instead of highlighting digital technology and tools, the collaborative learning of remediation practices and literacies should be foregrounded.

9.1.2 Creative practices: Engaging with collections

This in-depth study of participants' creative reuse has shown that media translation practices encompass both having ideas and implementing them. Having an idea relies on sense-making practices, which, as Dervin (1998) has argued, can be understood as ways of bridging a gap. Participants watched, listened to, browsed, and explored digitised collections and objects on display to search for an emotional, sensory, or personal response. Brainstorming, researching, and discussing these first interpretations in a group supported the development of meaningful connections between the participants and the objects. Importantly, this connection was underpinned by both discomforting reactions as well as positive feelings. Furthermore, participants applied similar sense-making practices when engaging with objects on display and browsing online collection datasets. Thus, in relation to collections, participants deliberately chose from the various interwoven layers of content and media manifested in cultural heritage collection objects.

The entanglement of these layers made cultural objects interesting for participants, but it is the digital qualities of cultural data which made them

reusable. The study showed that quality and quantity of data defined the basic possibilities for using collections in digital workflows, meaning that higher quality and complexity improved their usability, as indicated in previous research (Valeonti et al. 2019). Digital media, as Manovich (2001) has defined, add new affordances to digitised collections: they are programmable and can be modified with different software programmes, and are made of pixels, resolutions, or frequencies making up distinct (digital) modules or structures to work with, partly using automated processes. However, the pivotal quality of digitised collections, for some hacking participants, was open variability: they afforded creation and manifestation of personal relationships between people, practices, and cultures.

Interestingly, examples of reuse in this research also indicate that open variability is not exclusive to digital media but rather a cultural constant that digital tools only propelled. Participants applied different types of translation and remixing processes: they printed out digital images, created narrations with a digital stop-motion app, cycled along historical bike tours, combined different datasets across institutional borders, and translated the concept of a board game into smartphone game aesthetics. In all, in this research, participants used creative practices to rethink their relationships with cultural heritage based on the intertwined media contexts that constitute digitised collections. It is therefore not helpful to conceptualise this process as a separate digital activity. Instead, reuse entails a constructivist learning process which is part of and framed by other media practices in the daily lives of participants. The study showed that stronger media literacies and openness towards learning about new tools and practices were beneficial for this process, indicating new directions for combining digital collections and learning in museums.

These findings highlight the powerful lens of remediation for reframing engagement with digitised collections in museums. As became clear in this analysis, participants drew new relations between cultural heritage and their perspectives on the present through various reuse practices. This process confirms Bolter and Grusin's (1999, 75) argument that 'remediation does not destroy the aura of a work of art; instead it always refashions that aura in

another media form'. Consequently, enabling users to participate in this ongoing process of remediation can be one of the most effective ways to keep cultural heritage alive as the different research cases indicated: what resonates with users becomes remediated in an actualised version. In this way, users not only contribute new remediations to the ongoing process of cultural negotiation, but also experience agency as active cultural participants, developing literacies and means for creative self-expression in a mediated world.

However, lack of motivation, time, and know-how pose serious barriers for cultural participation. Although some active users enjoy working with digitised collections on their own, one main contribution of this research is the examination of co-creative events to motivate and support less experienced users in engaging with museum objects and digitised collections. As different stakeholder groups participated, the events that were examined also showed the crucial role of such 'in-between infrastructures to bridge otherwise incompatible socio-technical infrastructures and practices' (Marttila and Botero 2017, 125).

Drawing on this idea, GLAM practitioners should not only think of sharing digitised collections but also caring for the 'infrastructuring' processes that are needed to make these more accessible and reusable. I therefore propose to focus on practice- and user-orientation in engagement with collections instead of starting with technical aspects. Drawing from the research findings I recommend seven aspects contributing to this aim:

- create socio-affective spaces for people,
- reflect on the institutional framing,
- acknowledge discomforting feelings,
- pluralise forms of knowing and expert roles,
- explore practice-oriented learning formats,
- connect with ongoing media practices,
- follow a participatory logic of care for people and collections.

Implementing these conditions can take place in many different formats, but regardless of what shape they take, they are crucial to provide the social and

emotional glue used to build relationships, constitute communities of practice, and encourage co-articulation of issues.

9.2 Limitations of the study and future research

The study shed light on creative practices with digitised collections to generate knowledge about reuse in theory and practice. It applied qualitative methods and practice research, leveraging in-depth analyses of the relationships between cultural objects, stakeholders, and co-creative formats. The study focused on practices and affordances in a context-sensitive and relational approach, adding a new perspective to discussions of Open GLAM and cultural commons as well as contributing to the participatory concept of co-creation. However, as with any qualitative study, the scope of the research and the number of participants was limited to make the analysis of the rich and diverse ethnographic data feasible.

One limitation lies in the decision to focus on face-to-face events, which in turn excluded online forms of co-creation using digitised collections such as crowdsourcing. The Covid-19 pandemic has shifted the attention of GLAM practitioners to these digitally enabled forms of participation, but even before that crowdsourcing had been a well-populated, dense, and growing field of research (Ridge 2013a; Ridge 2013b; Ridge 2014; Bonacchi et al. 2019; Ridge et al.). In contrast, face-to-face co-creation with digitised collections is still an understudied field, partly because of its novelty as an emerging practice and the challenges of documenting co-creative processes. Here, this thesis makes a significant contribution by examining the potential of hackathons and workshops based on three independent research facets. While their different framings restricted comparison, their differences also enabled an exploratory perspective on the complex process of engagement. Facet analysis helped to shed light on both distinct characteristics of each event type and interlinked aspects useful for the broader discussion of engagement with digitised collections.

Another limitation of the research was the focus on German and English literature as well as research cases in Germany and Scotland. While the digital cultural commons are often thought of as a global network, the Northern European context forms a small but dominant part of it. More research beyond

the Eurocentric perspective is urgently needed to explore the relationships around digital collections with regards to the colonial history of collecting institutions, exploitation of communities, and ongoing inequalities between Western epistemologies and other forms of knowing. These topics are an integral part of GLAM collections, as the debate around decolonisation and indigenisation shows, and need to be addressed in the future based on broadened epistemological approaches such as the concept of the pluriverse proposed by Escobar (2018), in collaboration with initiatives such as African Digital Heritage[34] and open processes such as the Talking Objects Lab.[35]

Finally, the research cases and the group of research participants shaped the focus and findings of this project. Within the study of participatory practices, this aspect requires careful consideration. As reuse of digitised collections is not yet a mainstream activity, the research did start with those already using digital collections and participating in co-creative projects such as hackathons. However, access to and participation in these events also created a bias in the sampling of users: they were all motivated to join, and the majority were interested in culture, even sometimes working in a cultural heritage institution. In order to complement this sampling with perspectives of participants who were less likely to visit a museum or use a digitised collection, a collaboration with a Berlin-based school was organised. However, because of the Covid-19 lockdown in March 2020, this event had to be cancelled after the first kick-off session. The research therefore does not address non-users or outreach to specific communities and, in this sense, did not directly indicate how the participation gap might be narrowed or how reuse of collections can support specific social missions. However, the research findings demonstrate the value of emotional engagement with cultural heritage and creative skillsets for developing awareness of personal potential, self-expression, and cultural participation, which can be transferred to other fields. Further research that is designed to work particularly with groups less likely to use museum collections, long-term collaborations, and ways to measure social impact that goes beyond the

[34] See African Digital Heritage project: https://africandigitalheritage.org/, accessed 18 November 2021.

[35] See Talking Objects Lab: https://talkingobjectslab.org/, accessed 18 November 2021.

quantitative factors and instead considers the care work required is needed to improve understandings of the social value of digitised collections.

In summary, further research is necessary to study different cultural heritage hackathons, other shared forms of using collections creatively, and individual user practices. We are just at the beginning of developing creative reuses of digital collections and more creative and systematic work is needed to examine the potential of these practices. While this research investigated face-to-face engagement, the question of online co-creation, which the Covid-19 pandemic pushed to the fore, also requires more research. Quantitative and mixed methods approaches could also build more evidence on the socio-demographic profiles of participants. Furthermore, long-term participatory research is also needed to test more forms of co-creative use with digitised collections in relation with questions around their social relevance.

9.3 Towards the in-between

This thesis fits with an emerging field of research in participatory and digital museum practice that highlights the need for infrastructures, design spaces, and co-creative engagement to increase the access and use of openly licensed digitised collections (Marttila 2016; Arrigoni et al. 2020; Schmidt 2020; Marttila and Botero 2017; Marttila and Botero 2021). It contributes to an exciting new perspective on digital heritage experiences, calling for more reflexivity, fluidity, and experimentation (Galani and Kidd 2019; Arrigoni and Galani 2019). Looking back on more than twenty years of digitising collections, practitioners and researchers can now start to focus on the social potential of these resources with approaches that highlight the in-between: relations, practices, and contexts.

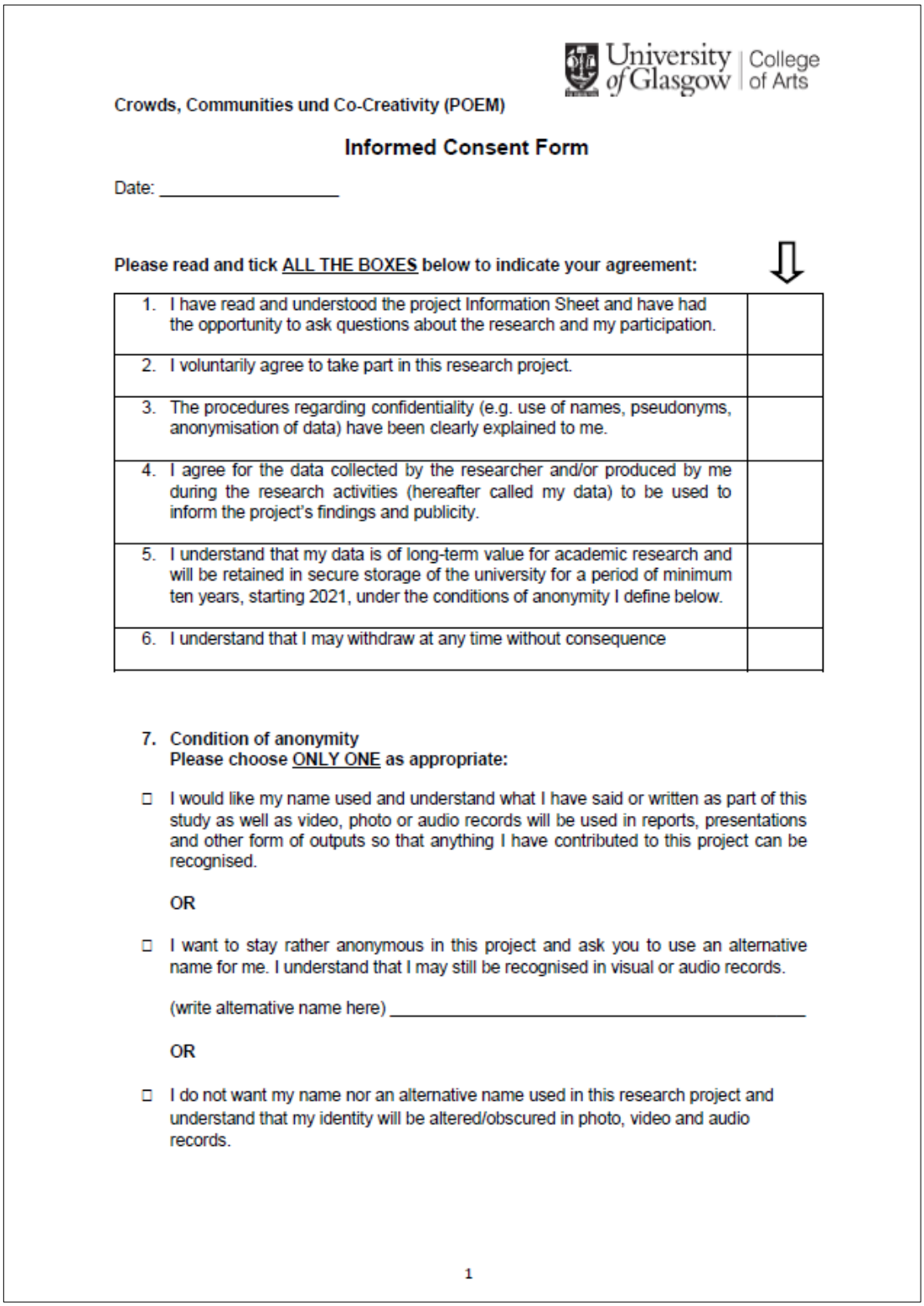
Relationships between cultural heritage practitioners, individual users, and activist communities proved to be central in this research: they impacted engagement with collections on social and affective levels, leading to both dialogue and discomfort. More research into these relationships is needed in order to understand and extend the social formations and spaces framing reuse.

Practice-oriented methods and analysis in this project foregrounded the relational process at the core of engagement: in-between object and user a whole complex of habitual, professional, and experimental practices was at play. These practices, their learning and reflection, require more attention in future research and practice if we want more users to develop skills and motivation for engaging with digital collections in creative and critical ways.

Contexts overlapped and collided in the co-creative events studied. In the form of museum spaces, institutional logics, event formats, and community approaches, they shaped specific practices with and relationships around collections. Reflecting these social contexts, exploring new ways of combining them, and thereby redrawing the boundaries between them are crucial steps towards opening up digital collections for diverse user groups.

The contribution of this research is to bring these different facets together and show how they shed light upon each other. Co-creatively interweaving these relations, practices, and contexts is key to unfolding the social potential of digital cultural heritage collections in the future.

Appendix A: Consent form



University of Glasgow | College of Arts

Crowds, Communities und Co-Creativity (POEM)

Informed Consent Form

Date: _____

Please read and tick ALL THE BOXES below to indicate your agreement:

1. I have read and understood the project Information Sheet and have had the opportunity to ask questions about the research and my participation.	
2. I voluntarily agree to take part in this research project.	
3. The procedures regarding confidentiality (e.g. use of names, pseudonyms, anonymisation of data) have been clearly explained to me.	
4. I agree for the data collected by the researcher and/or produced by me during the research activities (hereafter called my data) to be used to inform the project's findings and publicity.	
5. I understand that my data is of long-term value for academic research and will be retained in secure storage of the university for a period of minimum ten years, starting 2021, under the conditions of anonymity I define below.	
6. I understand that I may withdraw at any time without consequence	

7. **Condition of anonymity**
Please choose ONLY ONE as appropriate:

☐ I would like my name used and understand what I have said or written as part of this study as well as video, photo or audio records will be used in reports, presentations and other form of outputs so that anything I have contributed to this project can be recognised.

OR

☐ I want to stay rather anonymous in this project and ask you to use an alternative name for me. I understand that I may still be recognised in visual or audio records.

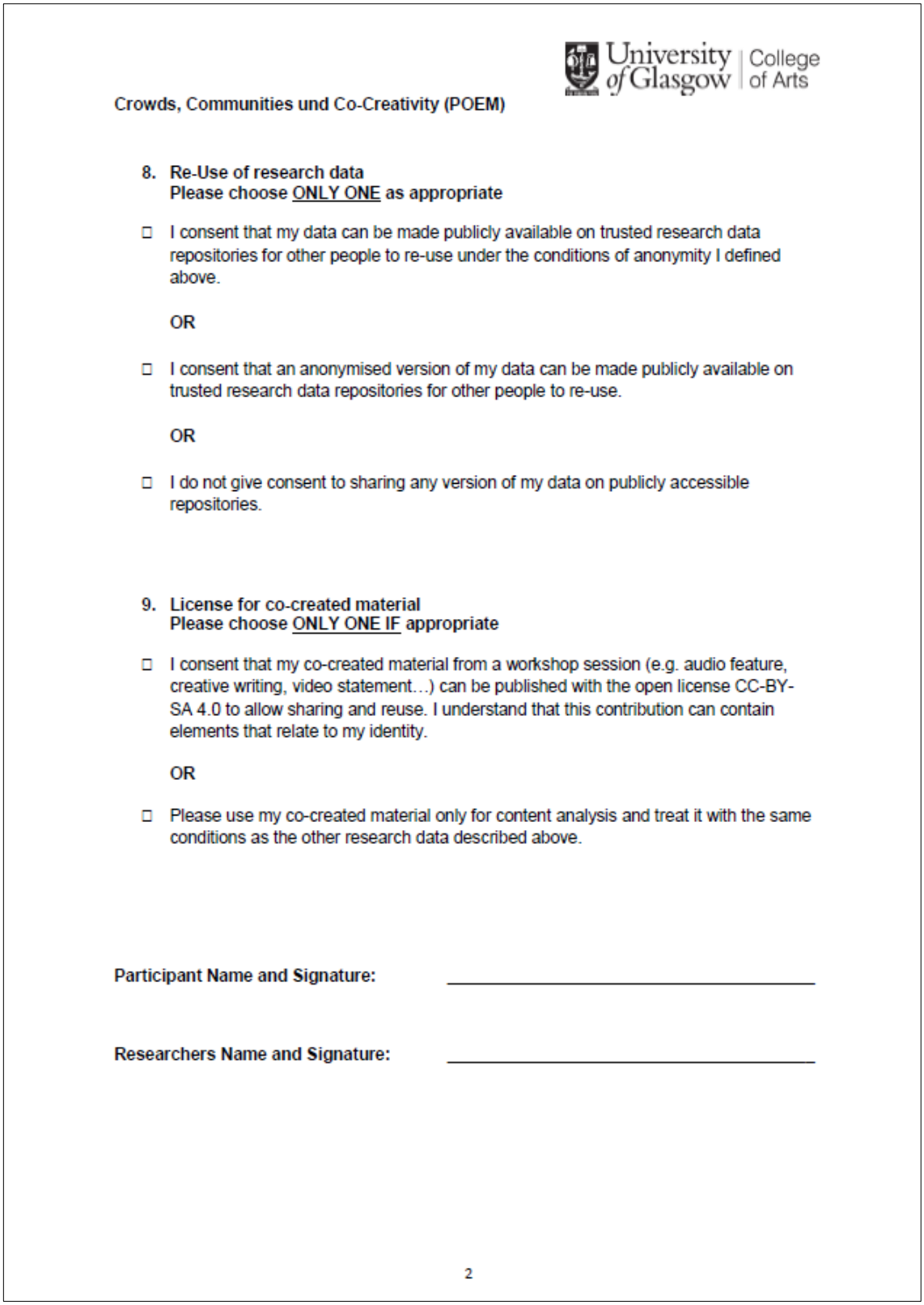
(write alternative name here) _____

OR

☐ I do not want my name nor an alternative name used in this research project and understand that my identity will be altered/obscured in photo, video and audio records.

1

Figure 30: Consent form, page one.



University of Glasgow | College of Arts

Crowds, Communities und Co-Creativity (POEM)

8. **Re-Use of research data**
Please choose ONLY ONE as appropriate

☐ I consent that my data can be made publicly available on trusted research data repositories for other people to re-use under the conditions of anonymity I defined above.

OR

☐ I consent that an anonymised version of my data can be made publicly available on trusted research data repositories for other people to re-use.

OR

☐ I do not give consent to sharing any version of my data on publicly accessible repositories.

9. **License for co-created material**
Please choose ONLY ONE IF appropriate

☐ I consent that my co-created material from a workshop session (e.g. audio feature, creative writing, video statement…) can be published with the open license CC-BY-SA 4.0 to allow sharing and reuse. I understand that this contribution can contain elements that relate to my identity.

OR

☐ Please use my co-created material only for content analysis and treat it with the same conditions as the other research data described above.

Participant Name and Signature: _____

Researchers Name and Signature: _____

2

Figure 31: Consent form, page two.

Appendix B: Interview guides

B.1 Hunterian Hackathon sample

Used as guideline for semi-structured and focus group interviews with museum staff and external participants.

1. What do you remember of the event?
2. Can you describe the group dynamic in the group (you moderated)?
3. How did you interpret your role as moderator?
4. Which group work phases worked well, which did not work well?
5. In general, how would you describe the participatory relationship between museum staff and external participants during the event?
6. Can you summarise positive and negative takeaways from your perspective as involved organiser/team member?
7. From your professional perspective – in which way could The Hunterian benefit from further hackathons?
8. How would a hackathon challenge the institution?
9. Where would you like to take the hackathon?

B.2 Coding da Vinci Westphalia-Ruhr sample

Used as guideline for semi-structured interviews with hacker teams (translated from German). Interviews were conducted in German.

1. Can you describe what you did in the last 8 weeks as part of this hackathon?
    a. What is it you are actually 'doing' in a hackathon?
    b. Do you have a certain approach?
2. How did the creative process/flow go? Can you draw it for me?
3. Looking at the drawing. When/how is a hackathon creative?
    a. What do you need to create something?
    b. What helped and what blocked your creativity?
4. Why did you choose the cultural dataset you worked with?
    a. How important were – institution, topic, data format – for your choice?
5. Has this been your first hackathon and why did you take part?
6. What is interesting/difficult about cultural heritage data?
    a. Does the digitisation of collections make culture more relevant/useful/interesting for you?
7. In the event you are always referred to as "hacker" – how would you like to call yourself?
    a. Where do you see your role in this event?

B.3 Remix Workshop sample

Used as guideline for semi-structured interviews with participants. Interviews were conducted in German and English.

1. Let's have a look at the film together - please can you tell us, what do we see?
2. What of your own and others' ideas did you connect with the object (museum)?
3. What material did you choose for your collage (collage phase)?
4. Which story did you want to tell (storyboard/stop motion film)?
5. Why/how did you choose the object?
6. How did you use it during the different parts of the workshop?
7. Did the different activities change the way you relate to the museum?
8. What would you do with digitised objects if anything would be possible?

Appendix C: Feedback surveys

C.1 Global History Hunterian Hackathon survey

Overview of survey questions, evaluation of multiple-choice responses, and excerpts of free text answers quoted in analysis.

1. How many times had you visited a museum or gallery for research or study purposes prior to taking part in the Hunterian hackathon in the last year?				
Answer options	0	1-2	3-4	5+
Responses	2	3	2	6

2. How confident did you feel visiting the Hunterian and using its collections for research and study before the hackathon? (0 = not confident at all, 10 = extremely confident)											
Answer options	0	1	2	3	4	5	6	7	8	9	10
Responses			3		1	3		1	1		4

3. How confident do you feel visiting the Hunterian and using its collections for research and study after the hackathon? (0 = not confident at all, 10 = extremely confident)											
Answer options	0	1	2	3	4	5	6	7	8	9	10
Responses						1	2	1	1	2	6

4. To prepare for the Hunterian hackathon, you were sent a welcome email & joining instructions. Do you feel that these helped you increase your confidence with the hackathon?			
Answer options	Yes	No	Not sure
Responses	9	2	2

5. Would you rather have had more information and joining instructions or about the same you received?

Answer options	About the same as I received	More information and joining instructions
Responses	11	2

6. The Global History Hunterian hackathon took place in various phases (1. meeting your group, choose an object, cluster the group's objects, discuss issues raised by objects, 2. Develop creative solutions together. 3. groups' elevator pitch to plenary) What would you have liked to do more of and what less of these?	
Response quoted as HuH survey 1	**Establishing the objective of the Hackathon - I needed to know what the outcome of my input would be to ensure it aligned with my organisation's values.**

7. We asked you to respond to some guiding questions in your teams (e.g. What made you uncomfortable about the specific object or display? How would you address this uncomfortable feeling?). In preparing your response to the displays, would you have preferred:				
Answer options	Completely free rein	Additional guidance questions	Additional guidance from hackathon organisers	Other
Responses	4	3	1	5

8. Why? (Please explain your answer to the previous question)	
9. How did you find the experience of working in a team to "hack" museum displays and objects? If it was helpful, what did it help you with?	
Response quoted as HuH survey 2	**It was interesting to hear other people's observations and feelings about objects - but some participants were visibly 'uncomfortable' with the responses being shared.**
Response quoted as HuH survey 3	**I found it really useful to be with a team of people from varied backgrounds. This included those who worked in the museum sector, both behind the scenes and front of house, which I do not have experience with. Our answers were guided by our existing knowledge which added (positive) layers of complexity to thinking about the task.**

Response quoted as HuH survey 4	**It helped me make connections between different objects within the museum - connections I probably would have never conceived of had it not been for the input of the people in my team. It also lead to interesting discussions on the purpose of museums and their position of authority as the curators of the different historical material.**										
10. Do you feel that the hackathon helped you gain an improved understanding of global history? If yes, what aspect was most helpful to your improvement? If no, what could have been done to develop your understanding?											
11. Based on your experience at this event, how likely are you to attend a future Global History Hackathon? (0 = extremely unlikely to attend, 10 = extremely likely to attend)											
Answer options	0	1	2	3	4	5	6	7	8	9	10
Responses		1						2	4	1	5
12. Based on your experience at this event, how likely would you be to recommend a future Global History Hackathon to a friend? (0 = extremely unlikely to recommend 10 = extremely likely to recommend)											
Answer options	0	1	2	3	4	5	6	7	8	9	10
Responses		1						1	5	1	5
13. Based on your experience at this event, how likely would you be to use the Hunterian museum and its collections in the future? (0 = extremely unlikely to return, 10 = extremely likely to return)											
Answer options	0	1	2	3	4	5	6	7	8	9	10
Responses						2	1	1	1	1	7
14. Do you have any other comments or suggestions to help us improve our future events?											

Table 13: Excerpt of HuH feedback survey

C.2 Coding da Vinci Westphalia-Ruhr surveys

Overview of survey questions, evaluation of multiple-choice responses, and excerpts of free text answers referred to in analysis (translated from German).

<table>
<tr><td colspan="5">1. Please describe your professional background</td></tr>
<tr><td colspan="5">2. In which role did you take part in the hackathon?</td></tr>
<tr><td>Answer options</td><td>Hacking participant</td><td>Cultural data provider</td><td>Organiser</td><td>Several roles</td></tr>
<tr><td>Pre-survey responses</td><td>4</td><td>5</td><td></td><td>2</td></tr>
<tr><td>Post-survey responses</td><td>8</td><td>9</td><td>1</td><td>7</td></tr>
<tr><td colspan="5">3. What motivated you to participate? (multiple free text answers were enabled)</td></tr>
<tr><td rowspan="5">Cultural data provider responses coded as ‘gaining new perspectives on digital collections’</td><td colspan="4">Get to know new ways of accessing and thinking</td></tr>
<tr><td colspan="4">Different presentation of information and content</td></tr>
<tr><td colspan="4">Interest to gain new perspective on issue</td></tr>
<tr><td colspan="4">New input for the presentation of ‘old’ data</td></tr>
<tr><td colspan="4">Hoping to get new inspiration and access to existing data/information</td></tr>
<tr><td rowspan="3">Cultural data provider responses coded as ‘outreach to data users’</td><td colspan="4">Exchange with other cultural institutions and coders</td></tr>
<tr><td colspan="4">We want to promote our institution through the hackathon and create attention for our data</td></tr>
<tr><td colspan="4">Overall getting in touch with groups interested in data</td></tr>
<tr><td>Cultural data provider responses coded as ‘interest in creative use of data’</td><td colspan="4">Creative reuse of our data</td></tr>
<tr><td colspan="5">4. Did the hackathon meet your expectations?</td></tr>
</table>

5. Who should be addressed by a hackathon?					
Answer options	Professionals	More like this	Equally both	More like this	Amateurs
Average of 11 pre-survey responses			x		
Average of 25 post-survey responses			x		
6. How mixed or homogeneous were the hacking teams?					
Answer options	Homogeneous	More like this	irrelevant	More like this	Mixed
Average of 11 pre-survey responses				x	
Average of 25 post-survey responses			x		
7. How accessible were the collections used for hacking?					
Answer options	Open	More like this	irrelevant	More like this	Protected
Average of 11 pre-survey responses	x				
Average of 25 post-survey responses	x				
8. How much guidance was provided?					
Answer options	Concrete question	More like this	Equally both	More like this	Creative freedom
Average of 11 pre-survey responses				x	
Average of 25 post-survey responses				x	
9. How did the creative process work out?					

Answer options	Practical	More like this	Equally both	More like this	Analytical
Average of 11 pre-survey responses		x			
Average of 25 post-survey responses		x			
10. What was the result of your process?					
Answer options	Working prototype	More like this	Irrelevant	More like this	Good idea
Average of 11 pre-survey responses			x		
Average of 25 post-survey responses		x			
11. What atmosphere dominated the hackathon?					
Answer options	Competitive	More like this	Equally both	More like this	Friendly
Average of 11 pre-survey responses				x	
Average of 25 post-survey responses				x	
12. How did the timeframe work out?					
Answer options	Time limited	More like this	Irrelevant	More like this	Time rich
Average of 11 pre-survey responses				x	
Average of 25 post-survey responses				x	
13. What should happen with your project after the event?					

Answer options	Implementation	More like this	Irrelevant	More like this	'In the drawer'
Average of 11 pre-survey responses		x			
Average of 25 post-survey responses		x			
14. How sustainable would you like the social contact to be?					
Answer options	Short-term relationships	More like this	Irrelevant	More like this	Sustainable relationships
Average of 11 pre-survey responses				x	
Average of 25 post-survey responses				x	
15. Do you have any further feedback?					

Table 14: Excerpt of CdV West pre- and post-surveys

C.3 Remix Workshop survey

Overview of survey questions and excerpts of free text answers referred to in analysis (partly translated from German).

1. How did you hear about the workshop?				
Answer options	Heard it from friends	Printed flyer	Facebook event	Other
Responses	3		1	2
2. Have you been at the MEK before				
Answer options	Yes	No		
Responses	2	4		
3. Why did you take part in the workshop?				
Responses quoted or referred to in analysis as ReW survey 1	**I love collaging**			
Responses quoted or referred to in analysis as ReW survey 2	**Because I am a stop-motion animator**			
Responses quoted or referred to in analysis as ReW survey 3	**Interesting topic, getting to know stop-motion app**			
Responses quoted or referred to in analysis as ReW survey 4	**Interest in seeing how other participants use material to create audio-visual presentation. Overlap with my current university course in media studies, practice, ethnology**			
Responses quoted or referred to in analysis as ReW survey 5	**I am very interested how museum objects can be re-interpreted throughout different technics.**			
4. How would you evaluate the organisation of the workshop?				
5. How would you evaluate the workshop facilitators?				

6. Were your expectations for the workshop met?
7. How would you describe the social or cultural exchange within the group?
8. Do you think the museum objects were useful for making the collages and stop motion films?
9. What did you take away from the workshop that you can use in your studies, job or other fields of interest?
10. Do you have any further feedback e.g. things you really liked or suggestions for improvement?

Table 15: Excerpt of ReW feedback survey

Appendix D: Overview of research data generated

D.1 Hunterian Hackathon

Type of data	Description	Format	Language
Organisational documents	Meeting minutes, invitation emails, to do lists	Word documents, pdf	English
My personal written notes from event	Reflections on the workshop at The Hunterian	Word document	English
Audio recordings of idea pitches	3 minutes pitches from groups (6 groups)	mp3, transcripts	English
Photos for documentation	Professional documentation of event	jpg	
Templates summarising group work	Filled-in templates to document process (6 groups)	Paper, scans	English
Posters of group work	Created by participants in group work	Paper, jpg, transcripts	English
Feedback interviews	4 interviews with participants	mp3, transcripts	English
Participants' written feedback	1 written reflection on group work	Word document	English
Online feedback survey	Global History Hackathon evaluation	Excel export	English
'Hacked' objects	List of objects that participants found discomforting	Excel sheet	English
Audio recording of focus group	Debrief meeting with Hunterian staff	mp3, transcript	English
My written notes	Global History Hackathon roundtable	Word document	English

Table 16: Data generated at HuH

D.2 Coding da Vinci Westphalia-Ruhr

Type of data	Description	Format	Language
My personal written notes from event	2-days kick-off event (ca. 70 attendees)	Word documents	German
My personal written notes from event	1-day award ceremony (ca. 50 visitors)	Word documents	German
Audio recordings of event	Moderation kick-off	mp3	German, English
Audio recordings of event	Data presentation kick-off	mp3, partly transcribed	German
Audio recordings of event	Idea pitches kick-off	mp3, partly transcribed	German
Audio recordings of event	Moderation award ceremony	mp3	German
Audio recordings of event	Key notes award ceremony	mp3	German, English
Audio recordings of event	Prototype presentation award ceremony	mp3	German
Audio recordings of event	Award ceremony	mp3	German
Photos for documentation	Kick-off	jpg	
Photos for documentation	Award ceremony	jpg	
Online survey	Pre-survey (11 participants)	JISC online surveys, Excel export	German
Online feedback survey	Post-survey (25 participants)	JISC online surveys, Excel export	German

Interviews with hackers	7 interviews with hackathon teams (1-3 members, 13 interviewees in total)	mp3, transcripts	German
Process sketches created through interviews	13 sketches by interviewees	Paper, scans	
Project prototypes	Online project descriptions	Different formats	German
‘Hacked’ datasets	Online datasets	Different formats	German

Table 17: Data generated at CdV West

D.3 Remix Workshop

Type of data	Description	Format	Language
Organisational documents	Meeting notes, invitation emails, to do lists	Word documents, pdf	English
My written event fieldnote	1-day workshop with 10 participants	Word document	English
Participants' object idea	Documentation of ideas and notes	mp3	German, English
Photos for documentation	1-day workshop	jpg	
Online feedback survey	Survey (6 participants)	JISC online surveys, Excel export	German, English
Interviews with participants	5 interviews with workshop participants	mp3, transcripts	German, English
Stop-motion films created by participants	9 films created by workshop participants	mp4	German, English
Collage created by participants	1 collage created by participant in workshop	jpg	English
'Remixed' objects	List of objects that participants used for their remixes	Excel sheet	German

Table 18: Data generated at ReW

Appendix E: Co-created material

E.1 Hunterian Hackathon

E.1.1 Templates

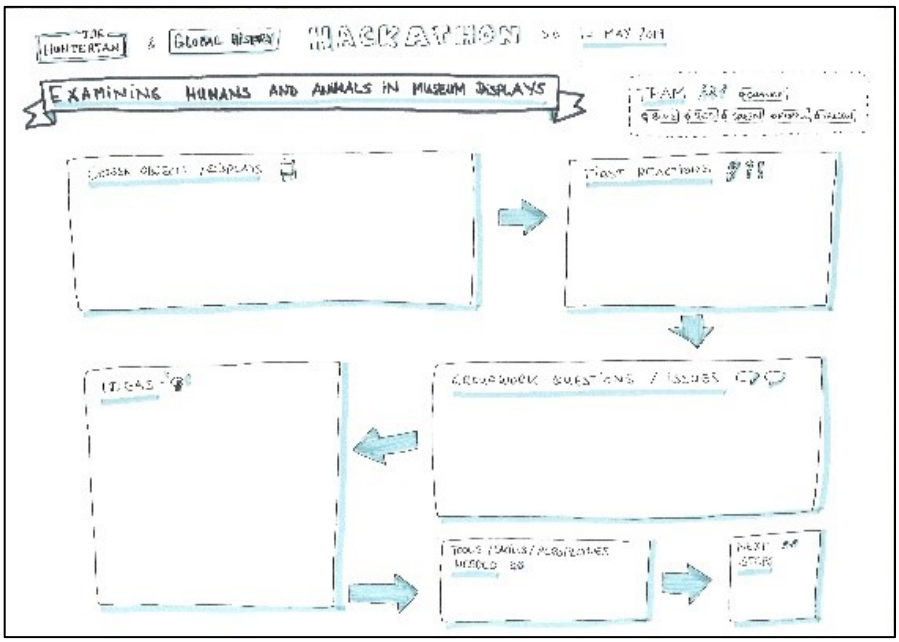


Figure 33: Template for group work at HuH. Mucha.

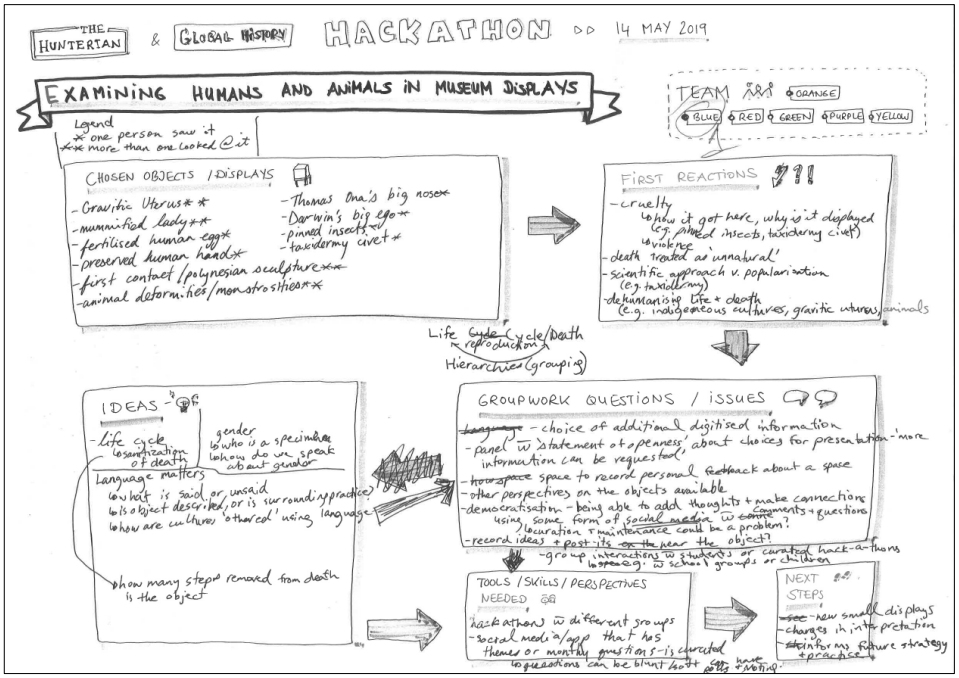


Figure 32: Team Blue idea template. HuH participants.

E.1.2 Poster Team Orange

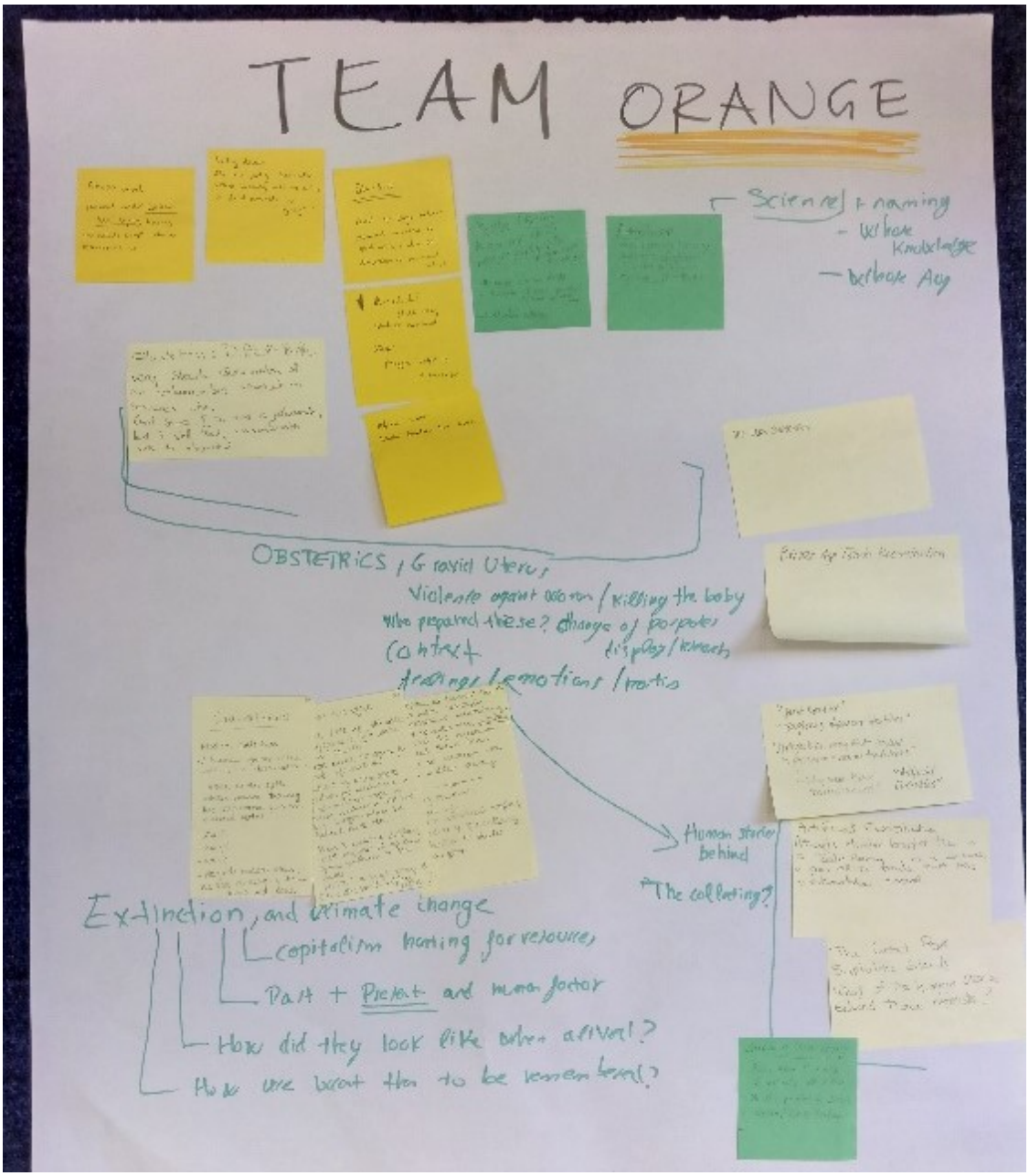


Figure 34: Team Orange poster (full). HuH participants.

E.1.3 Poster Team Yellow

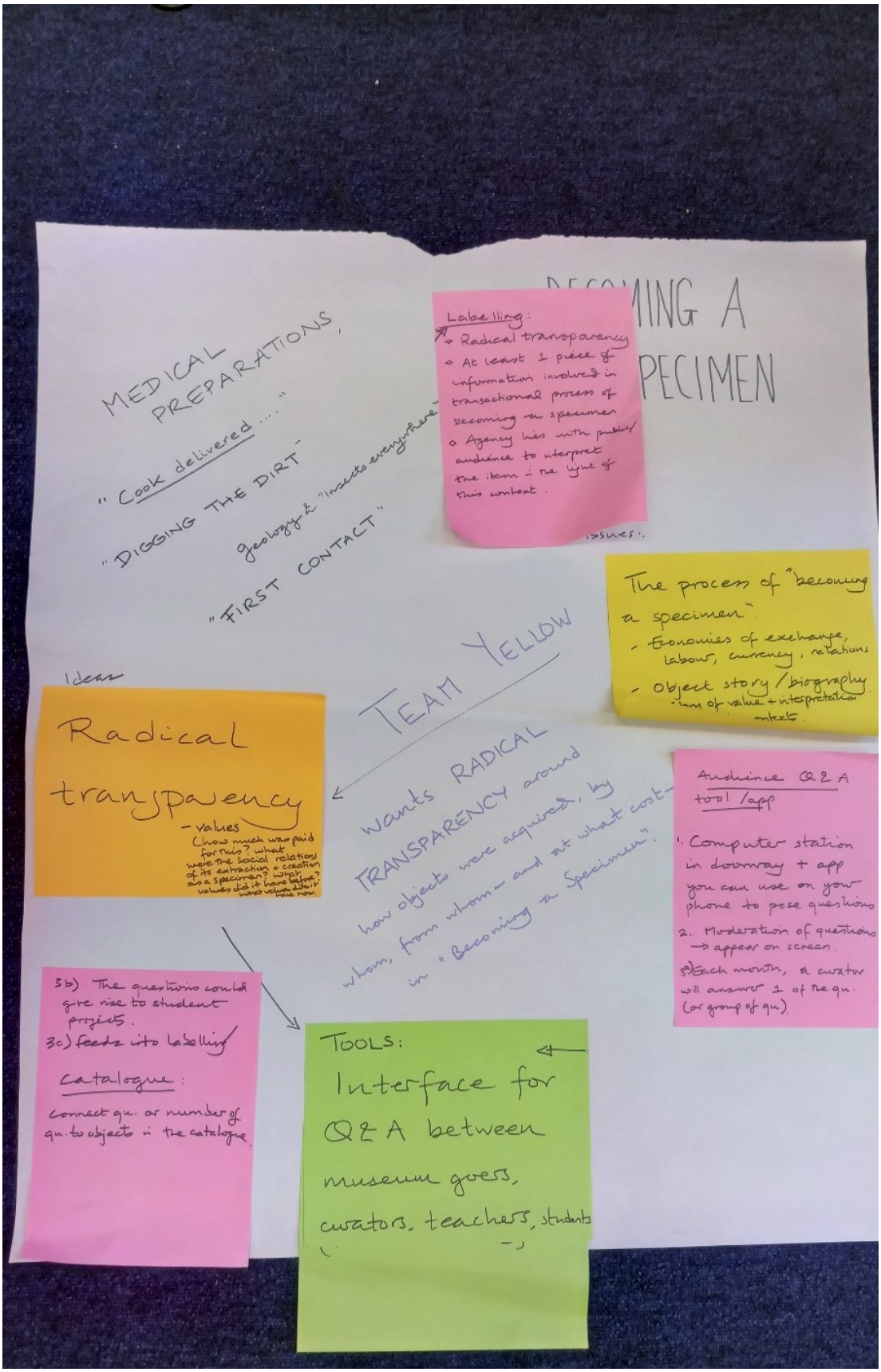


Figure 35: Team Yellow poster. HuH participants.

E.2 Coding da Vinci Westphalia-Ruhr

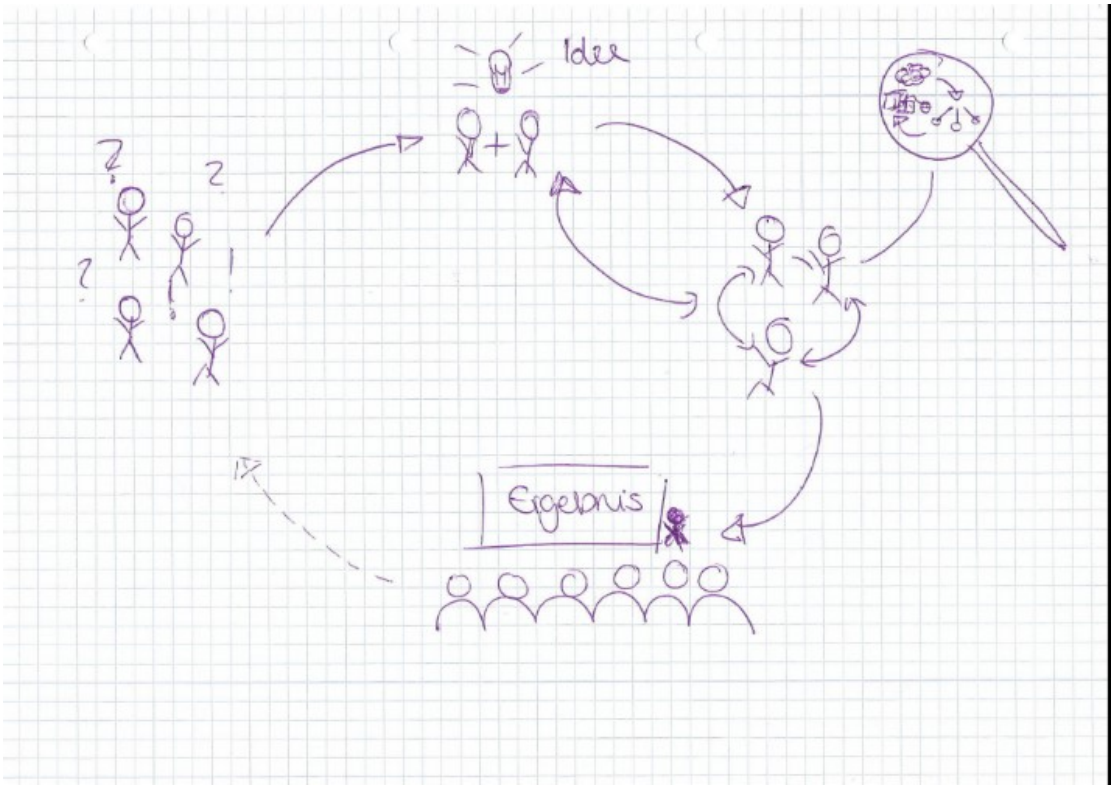


Figure 37: Creative process as cycle. Interview participant.

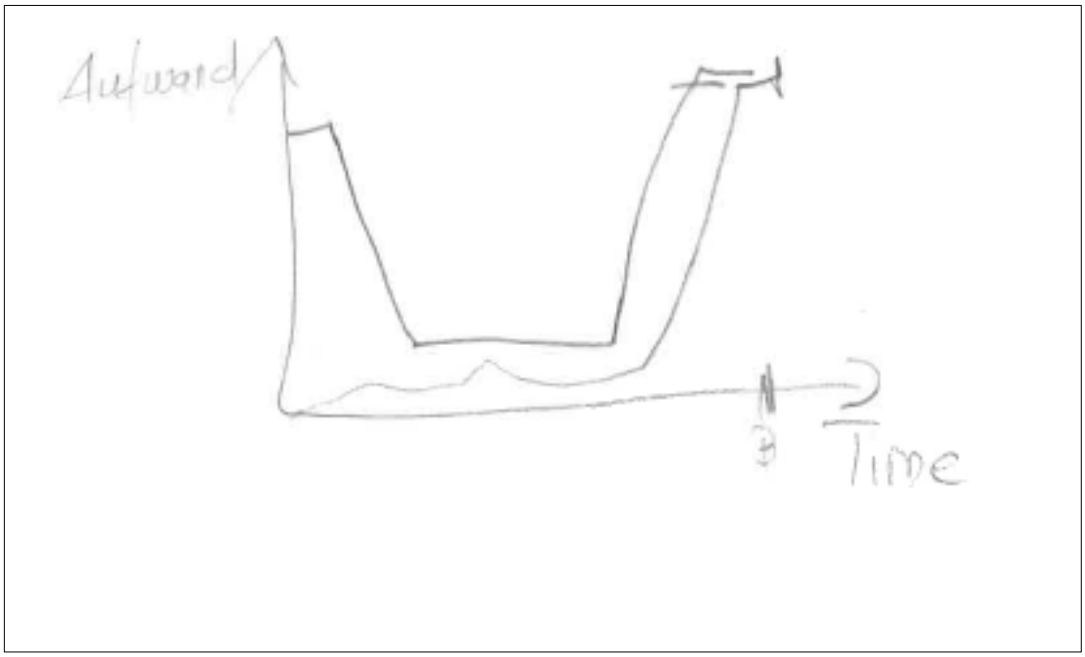


Figure 36: Creative process as graph. Interview participant.

E.3 Remix Workshop

E.3.1 Invitation

Figure 38: Invitation flyer for ReW. Mucha and Boersma.

E.3.2 Collage

Figure 39: Frontside of collage. ReW participant.

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