

Colophon

About this Report

Beyond Search: Exploring Creative Approaches to Interfacing with Cultural Heritage Collections (A Case Study Analysis) is published by the Audiovisual Research Alliance for Archivists & Cultural Heritage Professionals, an initiative of the Netherlands Institute for Sound & Vision, in collaboration with FIAT/IFTA's Value, Use and Copyright Commission.

Sound & Vision is the Dutch national institute for media and culture. Through its holdings of over a million hours of material (and growing each day), its expertise, and its activities, Sound and Vision aims to strengthen an open and free society. Today, it offers its holdings to the broadest variety of end users, including journalists, students, researchers, heritage organizations, and the general public.

The **Audiovisual Research Alliance for Archivists & Cultural Heritage Professionals (AVRA)**, set up and supported by Sound & Vision, is an initiative that seeks to openly engage with and produce research in collaboration with the wider audiovisual (AV) archiving and heritage community.

AVRA commissions and publishes research in the field of sound and moving image archiving and heritage, thinking forward to consider how the decisions, tools, strategies, and approaches enacted today are and could impact the field of AV archiving and heritage. In exploring current and future impacts on the field, AVRA's research focus is on asking research questions of an analytical nature; looking across institutions, projects, people, and places; bridging technical questions with more political, social, and philosophical inquiries; and showing and bringing together different approaches and strategies to offer broader overviews.

The **Value, Use and Copyright Commission (VUC)** is a commission formed by FIAT/IFTA, the world's leading professional association for those engaged in the preservation and exploitation of AV archives. VUC's mission is to provide a forum of exchange for FIAT/IFTA members and experts in the field to support the value, exploitation, and opening up of AV collections focused on the end user, e.g. general audiences, education, research, and other sectors. The core objective of the VUC is to gather and share experience and knowledge on all aspects of providing access to AV collections to increase users' awareness and to grow the value of AV archives worldwide.

About the Author

Nadia Piet is an independent researcher, designer, cultural producer, and community organizer based in Amsterdam, with a focus on technology, artificial intelligence, data, (digital) culture, and creativity. She's the founder of **AlxDESIGN**, holds an MA in Data-Driven Design, and works on freelance and self-initiated projects that question how we design, interact, and relate to technology. She draws on past experiences as the Head of Creative Technology at DEPT Agency and as a design researcher for

emerging technology prototypes with Bit and has facilitated workshops to demystify digital with DECODED and published the AI Meets Design toolkit.

Author's Thanks

I would like to express my sincere gratitude to the individuals and systems whose contributions and support were instrumental in the completion of this report. Their generosity in sharing their time, expertise, and insights greatly enriched the research process. First and foremost, I extend my heartfelt thanks to the members of the Peer Review Team: Elsa Garzón, Dale Grayson, Jaime Silva, Johan Oomen, Louise Broch, Maria Drabczyk, and Philo van Kemenade. Their invaluable feedback and constructive critiques played a pivotal role in shaping the content and direction of this report.

Thanks to Maarten Brinkerink, Elsa Garzón, Annella Mendoza, Dave Lewis, and Ilse Assmann for their active participation in the open conversation I organized as part of this research. Their willingness to share their experiences and insights significantly contributed to the depth and breadth of the research.

A special appreciation goes out to all who generously offered case study ideas during the open contribution call. Your input was instrumental in finding case studies outside my own bubble.

I extend my thanks to Philo for bringing the opening for this research to my awareness via the Raw, Frisky & Fluid Whatsapp Group—which deserves a shout-out in its own right—and for generously sharing a wealth of curated resources. I am grateful to the interviewees—Mariana Lanari, Simon Browne, Bert Spaan, and Lukas Pilka—whose work sparked my interest in archives prior to the research and sustained it throughout, for expanding my understanding of what archives can be, and for generously lending their precious time to talk with me.

I extend my deepest gratitude to Kendal Beynon for their dedicated collaboration in co-writing, thinking, editing, and weaving together a myriad threads of research into a coherent narrative.

A special acknowledgment to Kwan Suppaiboonsuk for their research support, technical insights, and ongoing inspiring and supportive friendship. I would like to express my admiration for Rachel Somers Miles, whose empathic leadership and collaborative spirit were a guiding force throughout the project, and for modeling how to lead with both care and focus. Lastly, I am thankful to Steven Elbers for his unwavering support and patience, which provided a steady and loving foundation during the journey of crafting this report. Your collective contributions were instrumental in bringing this report to fruition. Thank you. Finally, I'd like to thank the internet for being an imperfect yet invaluable portal to a wealth of global knowledge and inspiration. I'd also like to acknowledge the helpful use of ChatGPT, an imperfect tool that aided in streamlining complex sentences, rendering them into more coherent writing.

Copy Editor:
Thomas Cartwright

Publication Designer:
Ruben Doornweerd

Design Support & Typesetting:
Davey van der Velden

Cover Image: Screenshot from biblio-graph.org / Archival Consciousness, 2023

© This publication is licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. To view a copy of this license, visit: <https://creativecommons.org/licenses/by-nc-sa/4.0/>.

Cite as: Piet, Nadia. *Beyond Search: Exploring Creative Approaches to Interfacing with Cultural Heritage Collections (A Case Study Analysis)*. Hilversum, NL: Netherlands Institute for Sound & Vision, 2023. <https://doi.org/10.18146/avra2>.

To download this report, please visit: www.beeldengeluid.nl/avresearchalliance or <https://fiatifta.org/>.

Abstract

This research delves into the realm of digital audiovisual (AV) archives, focusing on user experience and advocating for the integration of exploratory approaches alongside conventional search. Within cultural heritage institutions, conventional keyword-based search interfaces have long served as the primary means to access digital AV archives. However, these interfaces often fall short in addressing the diverse needs of users and serving more exploratory or open-ended queries.

Drawing on a series of illustrative case studies, this report showcases innovative practices in the cultural heritage domain. Furthermore, it looks beyond archives to seek inspiration from practitioners in other disciplines, such as artists, filmmakers, and community initiatives grappling with similar questions.

The research report identifies four core themes: Generous + Fluid Interfaces; Situated + Experiential Entry Points; Computational Sensing + Algorithmic Metadata; and Participatory Sense-Making + Storytelling. Each theme offers distinct benefits in terms of user engagement, accessibility, contextualization, and storytelling. Challenges of complexity, accessibility, and compatibility are also discussed.

This research endeavors to redefine the potential of the interaction paradigm and offer a rich set of pathways, where digital AV archives transcend conventional search methods to offer immersive, dynamic, user-centric experiences. By integrating exploratory interfaces, cultural heritage institutions can unlock the full potential of their collections, making them more engaging and accessible to a broader audience.

Table of Contents

06 Introduction

- 09 Research Call + Researcher
- 10 Methodology
- 11 Report Structure
- 12 Living Doc

13 Theme #1: Generous + Fluid Interfaces

- 14 Data Viz
- 16 Visual Similarity
- 18 Knowledge Maps and Graph Views
- 20 Spatial Views
- 22 Practical Pointers

24 Theme #2: Situated + Experiential Entry Points

- 26 Extended Realities
- 28 Situated
- 30 Embodied/Multimodal Interactions
- 31 Physical Installations
- 33 Artist Lens
- 35 Fragments
- 36 Practical Pointers

38 Theme #3: Computational Sensing + Algorithmically- Abundant Metadata

- 39 Computer Vision
- 43 Speech2Text
- 43 Supplementary Metadata
- 45 Practical Pointers

48 Theme #4: Participatory Sense-Making + Storytelling

- 50 Crowd Annotation
- 52 Co-Creation and Community
- 54 Challenging Dominant and Historical Narratives
- 56 Personal Curations/Communal Storytelling/Drag-and-Drop Creative Reuse
- 58 Materials for Play
- 60 Practical Pointers

62 Conclusion

66 References

68 Appendix

- 68 Appendix I: Methodology, Performed Research Activities, & Avenues for Future Research
- 71 Appendix II: Peer Review Team

Introduction

In the realm of cultural heritage institutions, access to and discovery of digital audiovisual (AV) archives have traditionally relied heavily on search interfaces that prioritize textual queries. The conventional keyword search approach works well when visitors have a clear goal in mind, possess a general idea of a collection's content, and can formulate their information needs into textual queries. However, visitors are poorly served by search interfaces and their affordances in other situations.

First, classical search requires information to be expressed in a textual query that is not always intuitive. When searching for AV materials, being able to search through other means, such as visual qualities like color or composition, may prove to be equally as helpful as keyword search.

Furthermore, keyword search relies on user knowledge. Knowing what questions to ask the search function of the collection database is a crucial skill for finding and accessing content of interest. Formulating the right queries may be especially challenging for visitors with no formal research training or pre-existing knowledge of an archive and its contents.

The keyword search approach fails to serve a large subset of users, who may lack precise inquiries, struggle to define them, or prefer a more exploratory and intuitive approach.

Another challenge for keyword search is the reliability of an archive. To retrieve records that fit a textual query, metadata used to describe archived materials must match the query. Regardless of extensive efforts to index existing collections, reliable metadata are not always available for (big) parts of cultural collections, making the results incomplete at best and unreliable at worst.

Even when functional and suited for some contexts, keyword search-based interfaces are usually uninspired in format. In contrast, “exploratory interfaces benefit from the temporal and spatial variety of the collection to provide opportunities to discover contrasts and juxtaposition in the material across place and time.”¹

This report focuses on how cultural heritage institutions with AV and audio collections are expanding their access offering from common keyword search interfaces to more exploratory approaches for surfacing content. This research also seeks to engage with how these expanded approaches interact with storytelling and information visualization.

This research is concerned with the user experience (UX) of archives, meaning its reasoning is based on the perspective of visitors interacting with the archive (“front-end”) rather than the processes of archival practitioners and institutions (“back-end”).

By shedding light on technological developments and the affordances of emerging technologies such as artificial intelligence (AI) and extended reality (XR), this project envisions a future in which digital AV archives are also able to offer enhanced modes of interaction, enriched storytelling, and increased accessibility.

Through this exploration of alternative and emerging approaches, the research aims to expand the horizons of AV archivists and practitioners, inspiring them to reimagine how users might interact with digital archives in more exploratory and experiential ways. It maps the land of what is possible—or could be possible—for archives post-digitization.

The objective of this research is not to replace or disrupt common practices or user paths that already exist, such as keyword search, as these can serve an important and useful function, but to explore new pathways for user interaction with AV archives alongside the more conventional methods.

In a generative open session hosted as part of this research, Maarten Brinkerink (Sound & Vision) posed the question, “How can we mimic the experience of exploring—going down different paths, roaming around, and stumbling upon something?”² This framing

1 Matthews, P & Aston, J. “Interactive Multimedia Ethnography: Archiving Workflow, Interface Aesthetics and Metadata.” *ACM Computing and Cultural Heritage*. Accessed September 24, 2023. https://uwe-repository.worktribe.com/preview/941552/CCH_paper_matthews_aston_final.pdf.

2 Brinkerink, Maarten. Participant in “Open Conversation with Archival Practitioners” led by the author online. July 28, 2023.

speaks to the senses and imagination, providing a visual metaphor to help us reframe our approach and center user needs around discovery and immersion, as opposed to fulfilling research needs as efficiently as possible.

“How can we mimic the experience of exploring—going down different paths, roaming around, and stumbling upon something?”

— Maarten Brinkerink

While ideas around exploratory interfaces, such as “generous interfaces” and interactive storytelling, have been around for a while, recent developments in both the archival world and its digital landscape make this research urgent and timely.

There is a growing interest for institutions to engage a broader audience in the general public, beyond its traditional user groups of researchers, media, and education. In the past 5–10 years, more public-private partnerships have taken place between archives and other organizations. This development provides an additional incentive for cultural heritage institutions to present their collections in more engaging ways that help potential partners discover their valuable content and make collaborations attractive.

Finally, a level of urgency exists in light of the growing volume of data that archives hold and wish to present. Considering the abundance of data and interest in archival engagement, there is a pressing need to shift from conventional search-based interfaces to include more exploratory and interactive approaches. This will enable discovery within the collection and introduce new avenues for visitor participation, personalized interactions, and deeper engagement with and creative reuse of archived material.

One such alternative approach lies in “generous interfaces” that use interactive data visualization techniques to communicate the scale and diversity of a collection. By offering dynamic visual representations of an archive’s contents, visitors can engage in exploratory journeys that go beyond the confines of conventional search methods. This visual approach enhances the visitor experience by enabling serendipitous discoveries and expanding understanding of the collection’s scope.

We can also look to narrative approaches such as interactive storytelling, data stories, narrative chatbots, and narrated curator stories to guide a visitor through (parts of) a collection and encourage personalization via interactivity.

Drawing on some of the approaches described above, this report considers some case studies and offers a description, analysis, and reflection on a number of examples of cultural heritage institutions

creatively engaging with their collections. The report also explores how people are addressing challenges and incorporating this work into archival practice.

In consideration of the varying resources and limitations faced by different institutions, this project also takes into account hacky, do-it-yourself, and grassroots approaches that are viable for smaller organizations with limited funding and resources. By exploring these alternative avenues, the research project aims to offer practical considerations and implementation strategies suitable for institutions of varying sizes and capabilities.

This research looks beyond the confines of cultural heritage institutions to draw inspiration from other fields that play and grapple with similar questions, such as the arts, film-making, new media, creative technology, and experimental publishing. Cultural heritage institutions can look to their experiments and interventions for valuable insights and innovative ideas to enrich their own approaches.

Neither of the proposed approaches is intended to disrupt or replace familiar archival interfaces. Instead, it is more helpful to think of them as extensions, or overlays, on the archive.

By examining the intersection of technology, creativity, and archival practices, this research project seeks to offer inspiration for present and future interactions with AV archives and to provide valuable insights for researchers, education professionals, media practitioners, and the creative industry. By encouraging adoption of and research into exploratory modes of interaction, this research seeks to instill a user-centric, creative, and digitally-native approach, ultimately creating better experiences for audiences and more value from archives.

Research Call + Researcher

Based on observations similar to those shared above, an open call for a researcher-in-residence position was issued by the **AVRA** out of **Sound & Vision**, in collaboration with FIAT/IFTA's **VUC**, in Fall 2022.

Nadia Piet, who was selected by the commissioning organizations as the author of this report, was selected because her specific background and skills related to UX, creative technology, digital culture, and new media provide an opportunity to investigate more exploratory forms of archival engagement from an “outsider’s perspective.” Through peer review feedback and interviews with archival practitioners, the report is grounded in the needs of archival institutions but looks to offer a perspective outside of the archivist-practitioner scope to surface novel examples, insights, and connections.

Methodology

The research employed a range of methodologies for comprehensive data collection and analysis. These included case studies, qualitative interviews, generative working sessions, desk research, initial input from VUC members, and guidance from a peer review team.

The primary methodology was a case study approach, examining projects within and beyond cultural heritage institutions that embraced creative exploration within their collection interfaces. These case studies were gathered through various means, including desk research, existing references, interview inputs, and online curations from other researchers.

One notable limitation of this study is the researcher's status as an outsider to the industry under investigation. While this perspective allowed for a fresh analysis of the subject matter, it also introduced potential bias due to a lack of in-depth familiarity with the intricacies, nuances, and internal dynamics of the archival field. The researcher's status as an outsider may have influenced the interpretation of findings and the depth of insights gathered from participants. However, this perspective was also advantageous, as it prevented preconceived notions from coloring the analysis.

While efforts were made to collect case studies globally, there was a limitation in obtaining a diverse range of examples, resulting in an overemphasis on cases from Europe, the USA, and Australia, leading to an incomplete and Eurocentric depiction of the archival landscape. Due to these challenges and limited time and resources, the geographical spread of the case studies is not as globally diverse as intended or desired. Moreover, a bias towards larger and well-funded institutions was inadvertently introduced due to the accessibility of comprehensive case study documentation. This bias may have skewed the analysis and prevented a holistic representation of archival practice, neglecting the unique practices of smaller and less-documented entities.

Collected case studies were clustered around similar ideas, and insights from interviews and validation from the peer review team led to the identification of four themes for the report. Qualitative interviews with creative practitioners involved with archives were intended to expand conceptualizations and gather interesting case studies.

The research also incorporated exploratory desk research and a literature review to provide a broad understanding of the subject matter. Working sessions with the VUC and an open focus group with archival practitioners ensured alignment with the archival field context and provided valuable input. Additionally, a Peer Review Team (see Appendix II for a list of members) consisting of archival experts played a crucial role in providing feedback on the research direction, validating themes, and proofreading report drafts.

It is also important to note that the scope of the research project was bounded by constraints of time and resources, resulting in a surface-level exploration of the topic. Consequently, certain aspects of the industry and its practices may not have been fully uncovered or comprehensively examined. A more extended timeframe would allow for a more in-depth investigation, facilitating a deeper understanding of the complexities of the industry.

For more details on the methodology, a full overview of performed research activities, and potential avenues for future research, please see Appendix I.

Report Structure

This report aims to inspire archivists and practitioners by delving into the realm of alternative and creative modes of interacting with AV archives.

The report puts forward four distinct themes, each representing a field of opportunity with its own benefits and challenges. While these developments play out in parallel and strengthen rather than exclude each other, each theme offers a different response to meet the emerging need for more intuitive and engaging exploratory interfaces for AV archives.

The sections of this report delve into each of these themes and are supported by case studies and a discussion of the underlying concepts, feasibility considerations, and potential benefits of each approach. The four themes are:

- **#1: Generous + Fluid Interfaces**
This theme emphasizes visual exploration, offering dynamic representations of archive contents. It encourages serendipitous discoveries and provides a more engaging visitor experience.
- **#2: Situated + Experiential Entry Points**
This approach seeks to break out of traditional archival interfaces. It aims to provide entry points that are contextually relevant and experientially rich for collections to exist across various channels in the world.
- **#3: Computational Sensing + Algorithmically-Abundant Metadata**
Leveraging the potential of AI, this theme focuses on supplementing existing metadata with computational techniques for a richer user experience and exploratory approaches.
- **#4: Participatory Sense-Making + Storytelling**
This theme advocates a more communal approach to archival practice, positioning it as a participatory act and encouraging users to engage with archival material and contribute to unfolding narratives.

At the end of each theme we offer a **Practical Pointers** “over to you” section, distinguished by a color-blocked background. Here we offer opportunities and challenges and invite you to put inspiration into action by orienting towards implementation and kicking off a conversation at your institution.

Drawing on insights gained from the themes, the Conclusion highlights the potential advantages and downsides of creative interfaces for archival collections, structural challenges that are barriers for adoption, and recommendations for further experimentation and communities of practice.

Living Doc

In addition to this written report, the research output includes a visual research board that serves as both a more multimedia version of the report and as a living document. Why?

- **Participatory Input:** To offer a space for participatory input and an opportunity for the research to be collectively expanded.
- **Visual Character:** The nature and content of this topic is visual, including being multi-media/AV focused, and this space more easily and dynamically showcases this.
- **Speed of Change:** Things become outdated quickly. New tools and projects see the light of day every day, so while this report is offered as a PDF, it is a reflection of a particular, fixed moment in time; the living doc can evolve, be added to, and change as technologies and their uses do.
- **No Waste:** Only a part of any given research project makes it into the final report, the rest of the findings usually discarded. We decided to share it all, including the outtakes and under-developed thoughts, for future researchers to take value from and build on.

The living document is offered as a Miro board. You can access/visit/view and add to the board [here](#).

1

Generous + Fluid Interfaces

Visual exploration offers dynamic representations of archive contents, encouraging serendipitous discoveries & providing a more engaging visitor experience.

Mitchell Whitelaw proposes the concept of "generous interfaces" to address the limitations of traditional search-based access in digital archival collections. "Generous interfaces offer rich, browsable views; provide evocative samples of primary content; and support an understanding of context and relationships."³ These interfaces offer an alternative approach to collection access, with the goal of encouraging open-ended exploration as a way of volunteering information to the user, rather than forcing them to seek it.

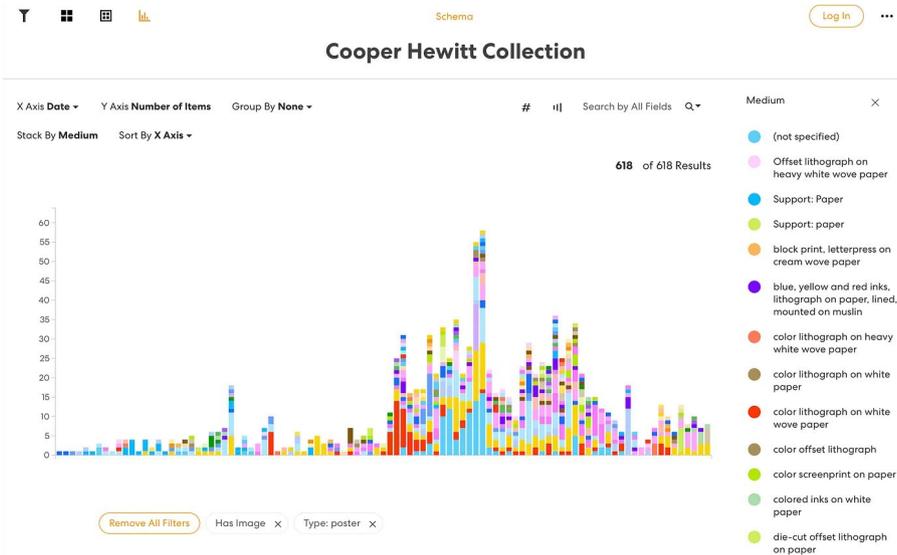
Generous interfaces rely heavily on metadata so, while the idea has been around for a while, its implementation has become much more feasible in recent years thanks to AI—both for the enhancement of metadata for individual records (see theme on AI metadata) and for automatically analyzing and visualizing relations within the collection.

Generous interfaces are interactive and often fluid, meaning users can switch between and customize different types of visualizations.

Data Viz

Many implementations of generous interfaces draw inspiration from data visualization techniques. Common examples include placing records across chronological timelines, location-based maps, and amount or percentage per category in expandable bar, pie, or donut charts.

The speculative interface for the **Cooper Hewitt Collection by Gist** uses a stacked bar chart to "show the distribution of subcategories filtered by 'poster' over time—the bar chart segments are clickable to reveal the objects in that particular selection."⁴



The Cooper Hewitt Collection bar chart depicting art medium (e.g. lithograph/die-cut, etc.).⁵⁵

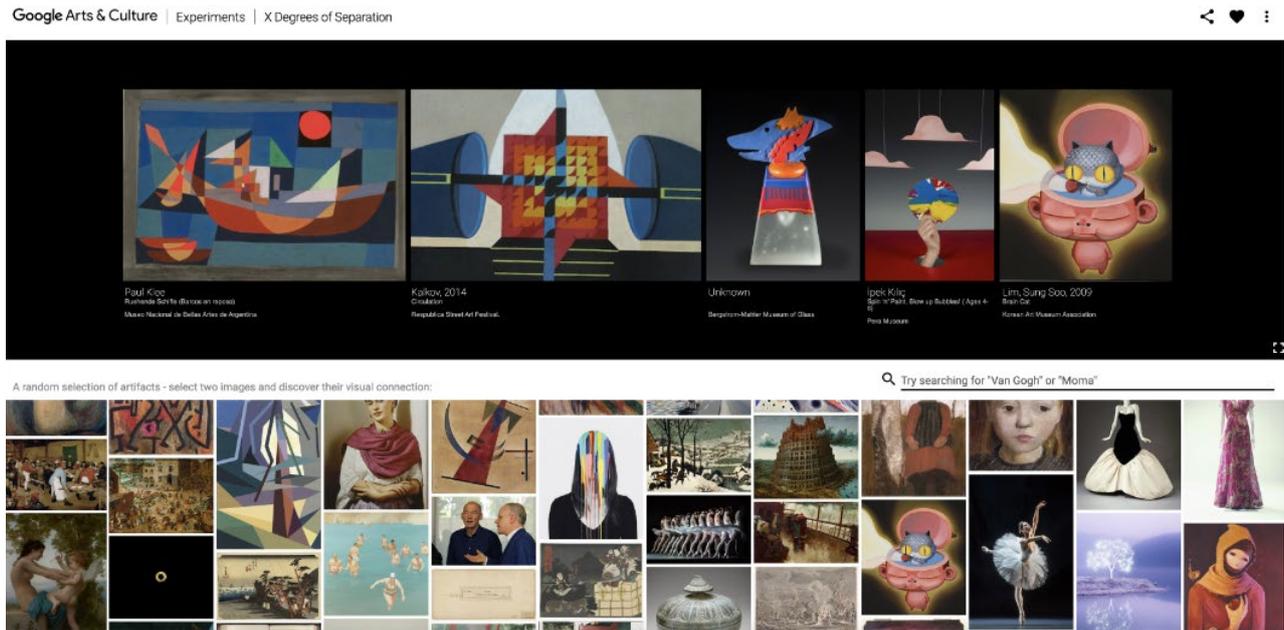
3 Whitelaw, Mitchell. "Towards Generous Interfaces for Archival Collections." *Comma 2* (2012). <https://doi.org/10.3828/comma.2012.2.13>.

4 Schema Design Studio. "Visualizing Collections Using Generous Interfaces." June 2, 2019. Accessed September 24, 2023. <https://medium.com/schemadesignstudio/gist-visualizing-collections-using-generous-interfaces-b9da44341c66>.

5 Schema Design Studio. "Visualizing Collections Using Generous Interfaces."

Visual Similarity

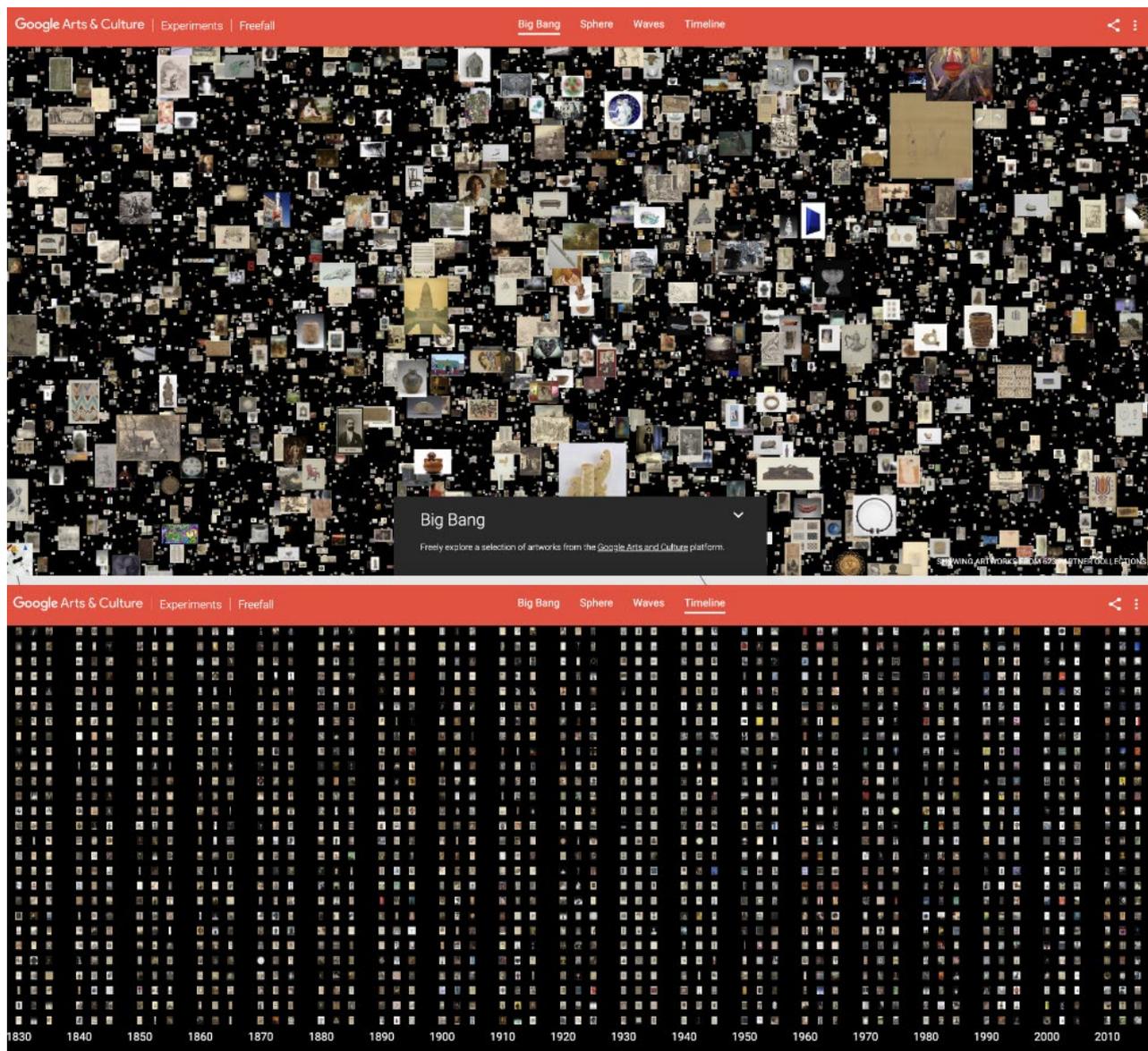
Visual similarity is enabled by dimensionality reduction algorithms such as t-SNE, an algorithm frequently used to visualize high-dimensional datasets and that allows for an interface that sorts images by visual similarity. Beyond the cluster view, Mario Klingemann uses this function in his experiment **X Degrees of Separation**. Using machine learning to calculate the visual similarity between two images, it allows the user to pick any two random images from the archive and asks the computer to calculate the shortest route between them. This proposes a very unique way of interacting with an archive, one that works for both open-ended serendipitous discovery and more contextual research. Most interestingly, it might surface paths and relationships in the data that would not be visible otherwise.



Google Arts & Culture's X Degrees of Separation, showing a visual-similarity algorithm in use.⁷

⁷ "X Degrees of Separation." Google Arts & Culture. Accessed September 24, 2023. https://artsexperiments.withgoogle.com/xdegrees/8gHu5Z5RF4BsNg/BgHD_Fxb-V_K3A.

Another project to illustrate these ideas is **Free Fall** by Cyril Diagne & Nicolas Barradeau, which lets users explore 3,000+ artworks from **Google's Arts & Culture archive** in 3D space—swapping between a visual timeline and three different spatial presentations based on visual similarity.

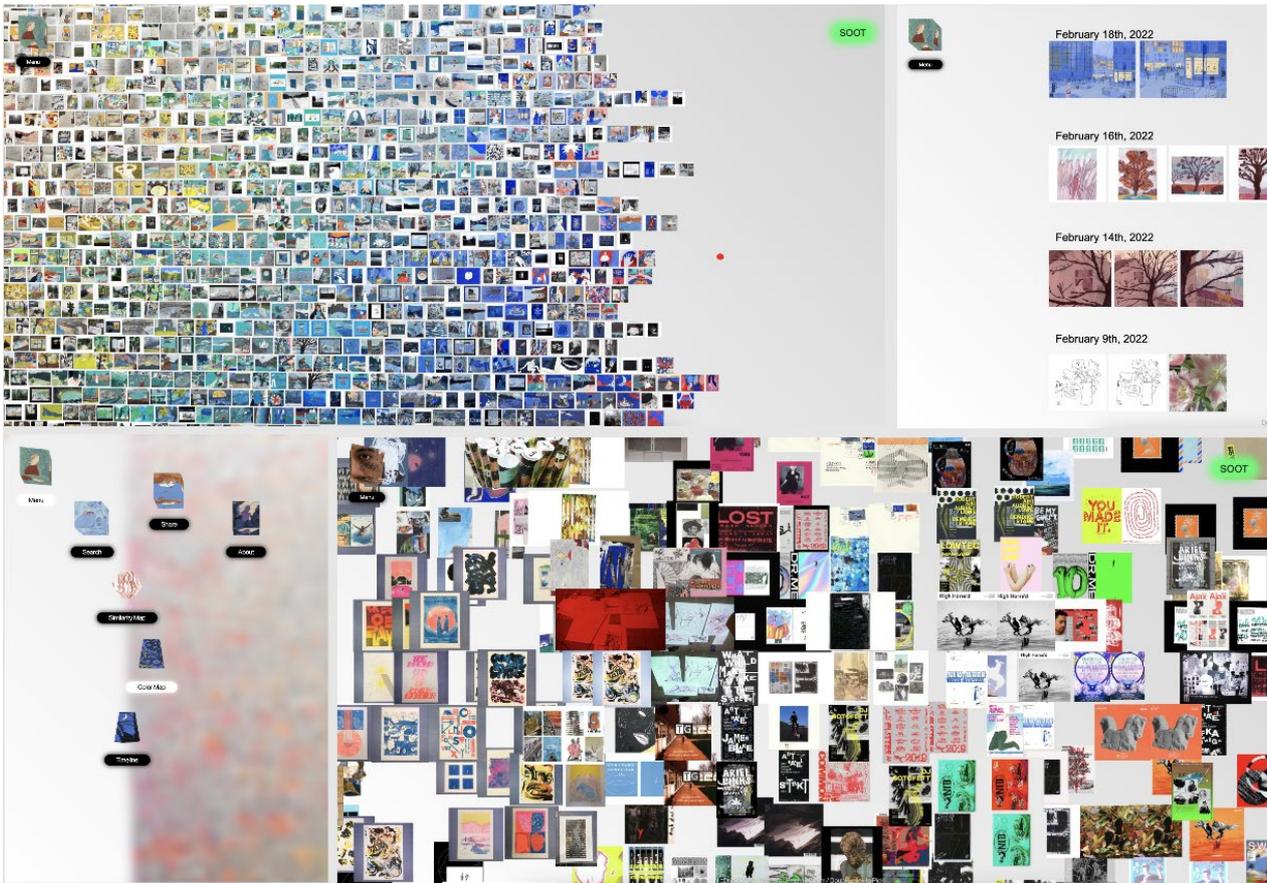


avra — generous + fluid interfaces

Another project from Google Arts & Culture, Freefall, showing a wide view of 3,000+ artworks.⁸

8 "Freefall." Google Arts & Culture. Accessed September 24, 2023. <https://artsexperiments.withgoogle.com/freefall/>.

SOOT.com is a small-scale tool that brings similar capabilities in its “visual filesystem” to individual users, and specifically to creatives, allowing them to upload their own images and view them sorted by color, date, or visual similarity in a fluid interface.

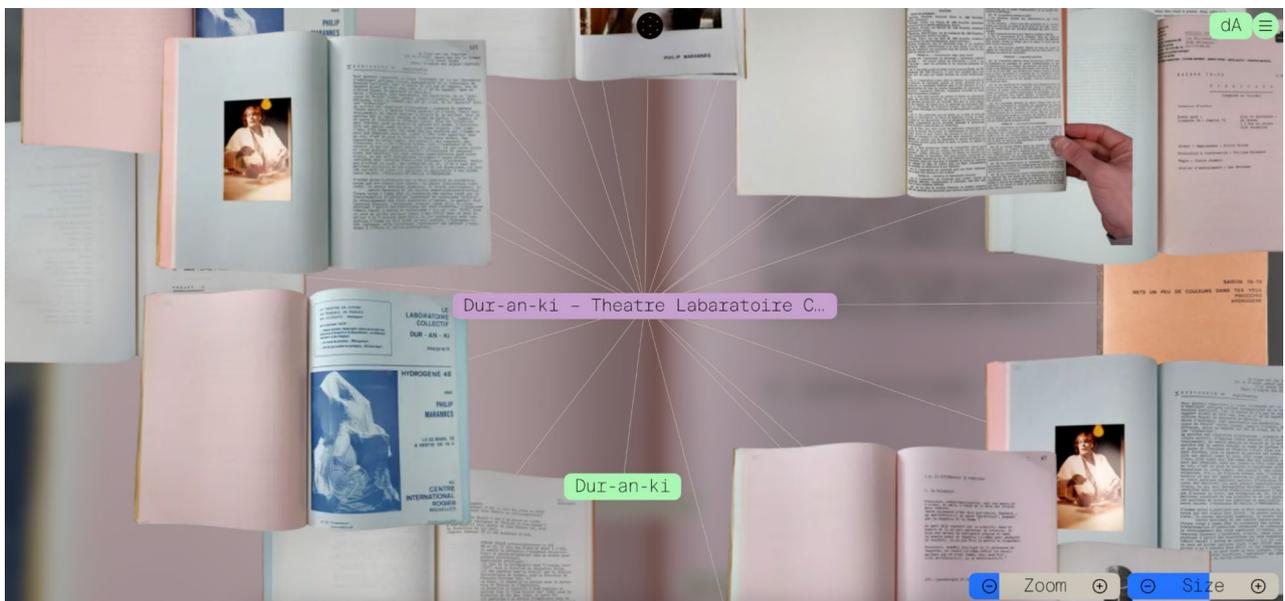


A screenshot of SOOT.COM's visual interface.⁹

Knowledge Maps and Graph Views

Another strain of generous interfaces is knowledge/network maps and graph views that focus on drawing connections across dimensions within the archive—and potentially even pulling from or linking to other collections or external sources. A notable effort in this regard is the research project **Past Visions** by VIKUS, which aims to visualize cultural collections at the University of Applied Sciences Potsdam. The project itself focuses on a collection of drawings by King Frederick William IV of Prussia and displays each image in a graph-style visualization that shows the thematic and historical connections within the drawings, allowing users to explore the collection through a different lens and context.

⁹ “SOOT.” Accessed September 24, 2023. <https://soot.com/>.



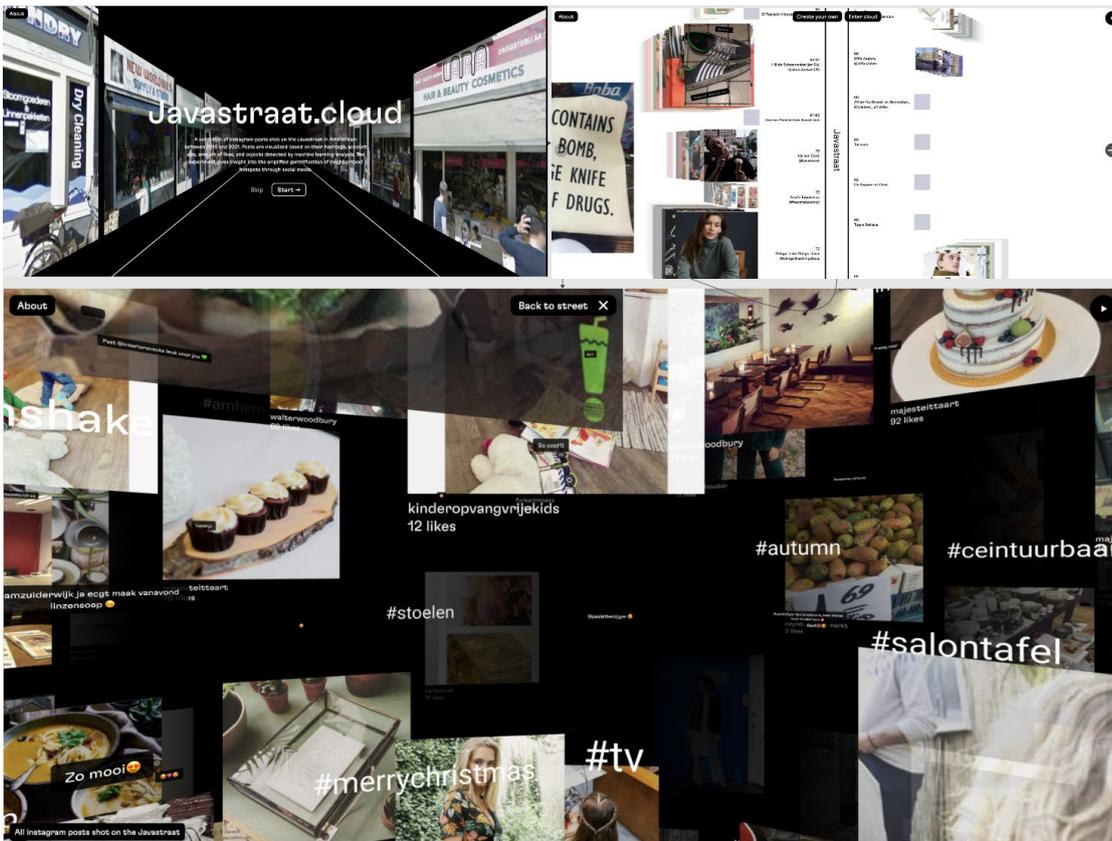
avra — generous + fluid interfaces

Two alternate views of the collection in the Biblio-Graph web application, focusing on connections and spread views.¹¹

Spatial Views

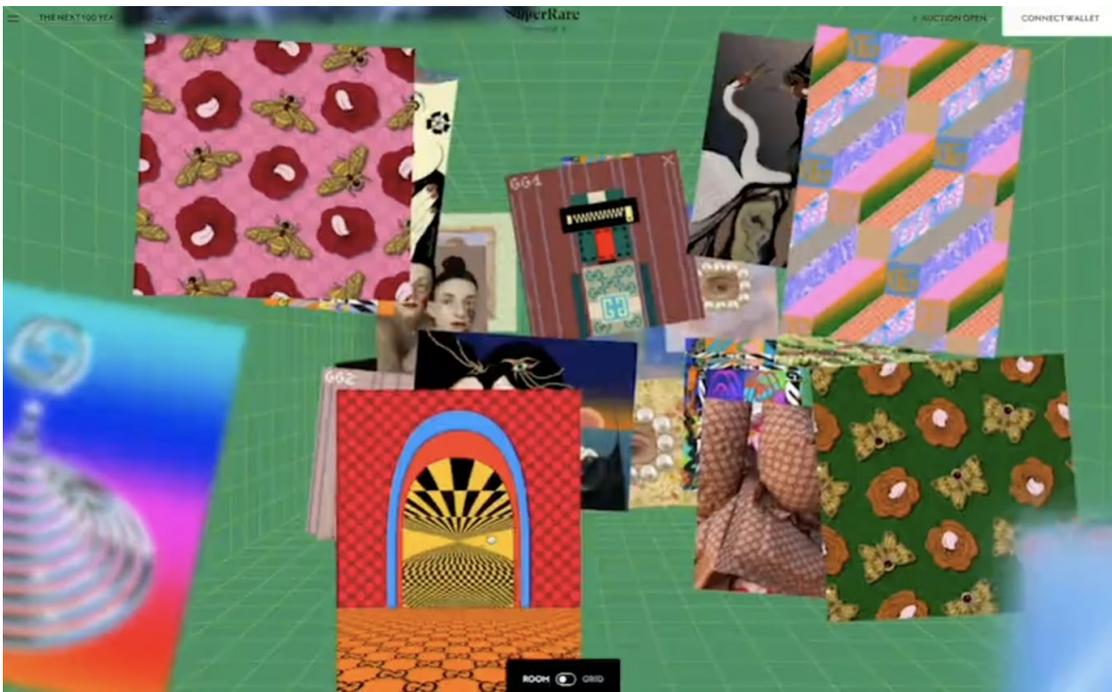
Furthering the idea of the spatial within the archive, some archives opt for a wholly spatial/3D presentation of information. This experimental view is becoming more commonplace, in part due to web libraries like WEBGL and three.js, and because users are becoming more familiar with spatial navigation through gaming and metaversal activities. **Javastraat.cloud** takes archives into the third dimension, clustering a large set of Instagram posts according to hashtags and positioning/visualizing them in a 3D space that the user can pan and zoom in.

¹¹ Archival Consciousness. "Biblio-Graph." Accessed September 24, 2023. <https://biblio-graph.org/public/>.



A collage of the Javastraat.cloud interface showing both the timeline and hashtag views.¹²

Another beautiful example of spatial web interfaces is **Gucci's Vault Art Space**.



Gucci's Vault Art Space interface screen showing navigational options.¹³

¹² "Javastraat.cloud." Centre for Urban Studies, University of Amsterdam. Accessed September 24, 2023. <https://javastraat.cloud/>.

¹³ "Gucci Art Space." Gucci. Accessed September 24, 2023. <https://artspace.gucci.com/>.

The aforementioned examples are intended to illustrate and inspire—rather than define—the idea of generous interfaces, which could take on many other seen and unseen manifestations but can assist us to think about archiving as a more fluid practice.

Practical Pointers

Opportunities/Values

- Generous interfaces in digital archival collections are very engaging—highly visual and playful, they have the potential to appeal to new general audiences.
- Its multiple-purpose nature can cater to diverse needs and preferences across user groups and job roles.
- These interfaces provide an accessible entry point for users, allowing interaction with the collection without requiring a pre-existing model or clear intent.
- They also enable high-level insights that span the entire collection, unveiling new patterns and uncovering interesting insights for archivists and researchers.

Challenges/Constraints

Generous interfaces are not always intuitive for users. When using more complex user interfaces, it is important to incorporate familiar components and affordances as much as possible and to provide gradual onboarding for new users.

- That said, being able to develop complex user interfaces with diverse accessibility needs in mind remains a challenge. Even responsiveness across devices may be difficult; implementation may be desktop-only, showing a pop-up when visiting on a smartphone.
- There are not (yet) many off-the-shelf software solutions for generous interfaces, as there are for search. Such solutions would be optimal, because maintenance etc. would then be taken care of.
- Not every institution can afford bespoke development and maintenance.

Conversation-Starting Questions

- David Haskiya (Swedish National Heritage Board) writes in his [Evaluation of Generous Interfaces](#) that “at the heart of the very concept is that [generous interfaces] should be intimately connected to the very nature of the

collection they're exploring."¹⁴ When telling oral stories about the collection, which narrative devices or structures do you employ? Which aspects, features, POVs, patterns, or juxtapositions are central and interesting about the collection? How might these surface and be shown in an interface?

- Which metadata are present (or easily created) to build new visualizations on? A timeline view is feasible for most archives with metadata about the year of production or other date markers, while the metadata required for a knowledge graph are less commonly already present.
- Would these kinds of approaches serve the users of your archive?
- What capacity do you have to do this internally?
- What funds do you have available to do this work?

Tools/Software to Explore

- **ResearchSpace** is an open-source software tool for knowledge graphs.
- The **Gist** platform provides generous interfaces for visualizing collections, as explained in this **Medium article by Schema Design Studio**.
- **Pixplot from Yale Digital Humanities Lab** is a tool for visualizing clusters of images.
- **Timeline Tools** is a visualization suite geared to digital collections.
- **Biblio-Graph** is a web application for cultural libraries and archives, working as an interaction layer on top of existing databases.

Additional Resources

- **Open History Archive** for various examples of digital archives and their interfaces.
- **Issue 11: Generous Interfaces from Europeana Pro** evaluates generous interfaces for their visualization of cultural archives.

14 Haskiya, David. "An Evaluation of Generous Interfaces." EuropeanaTech Insight, last updated March 18, 2020. Accessed September 24, 2023. <https://pro.europeana.eu/page/issue-11-generous-interfaces#an-evaluation-of-generous-interfaces>.

2

Situated + Experiential Entry Points

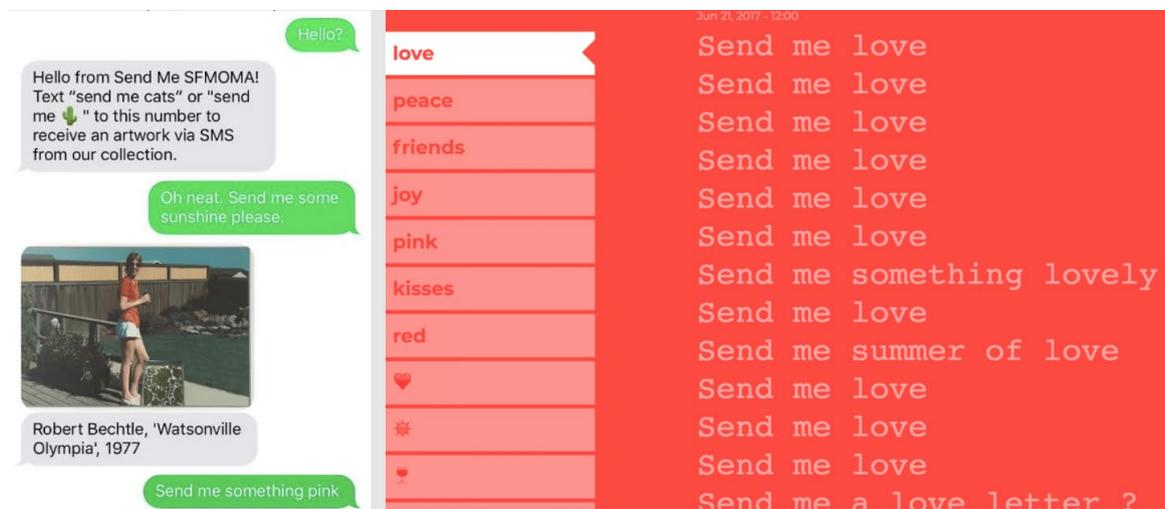
Offering entry points outside
of traditional interfaces that
are contextually relevant &
experientially rich for collections.

Digital archives are evolving beyond the familiar shelves and grids of their physical counterparts, embracing new possibilities in the digital realm. This allows us to shift from a purely functional approach to a more experiential one. In its most rudimentary form, experiential design is about creating experiences that prioritize human interaction in a space.¹⁵

The emergence of spatial and embedded experiences gained from the rise of the 3D metaverse enables new channels and interactions. The introduction of “phygitality” blends reality with the virtual and blurs the boundaries between the physical and the digital.

Voice interfaces, gesture interfaces, augmented reality, audio walks, virtual worlds, and even physical and kinetic installations redefine the potential of archival engagement, opening up a range of interesting applications and experiments that reimagine access/entry points to the archive. Through what other forms might the archive come to life? What other spaces and places can we invite to interact with the archive? This reimagining also invites a shift of thinking to see a user’s visit to the archive as “an experience” instead of or in addition to “a job to be done.”

While technological developments open up new opportunities, designing interesting experiences is not reliant on their adoption. **Send Me SFMOMA** from 2017 is a great example of harnessing unexpected rather than recent channels to bring the archive to the user and “shed light on the museum’s vast collection”. This SMS-based service invited users to send a text message to the museum, which would reply with a relevant and often funny item from their archive. About the interaction, SFMOMA said “It’s not a search engine. You can’t request something specific that you want. It’s a sublime engine.”¹⁶



Screen interface of MOMA'S Send Me SFMOMA showing a query and results.¹⁷

15 Munro, Lindsay. "The Rise of Experiential Design: What You Need to Succeed." Adobe Blog, November 23, 2015. Accessed September 24, 2023. <https://blog.adobe.com/en/publish/2015/11/23/the-rise-of-experiential-design-what-you-need-to-succeed>.

16 "SFMOMA SendMe." Stamen. Accessed September 24, 2023. <https://stamen.com/work/sfmoma-sendme/>.

17 Mollica, Jay. "Send me SFMOMA." SFMOMA, June 2017. Accessed September 24, 2023. <https://www.sfmoma.org/read/send-me-sfmoma/>.

Extended Realities

We have briefly touched on the idea of bringing a spatial aspect into an archive, but by blurring the physical and digital we can take this a step further, bringing archives further out of storage.

The highly anticipated release of *Animal Crossing: New Horizons* occurred on Nintendo Switch during the COVID-19 pandemic. A much-needed virtual escape from the confines of our quarantined homes, players could run around their personal island, build relationships with villagers, collect items, and create designs to display and wear. The online feature allowed for a wider selection of designs, such as popular artworks with which to decorate players' houses, to be downloaded into the game by scanning a QR code. This feature was quickly adopted by creatives online, and many independent artists used this design feature to upload their artwork and hold virtual exhibitions for their villagers and online friends; before long, largely established cultural institutions had taken note and followed suit. **The Getty Museum** was one such, uploading materials from the museum's collection for players to download and add to their islands, thereby opening their archives to a wider public in a fun and accessible way.

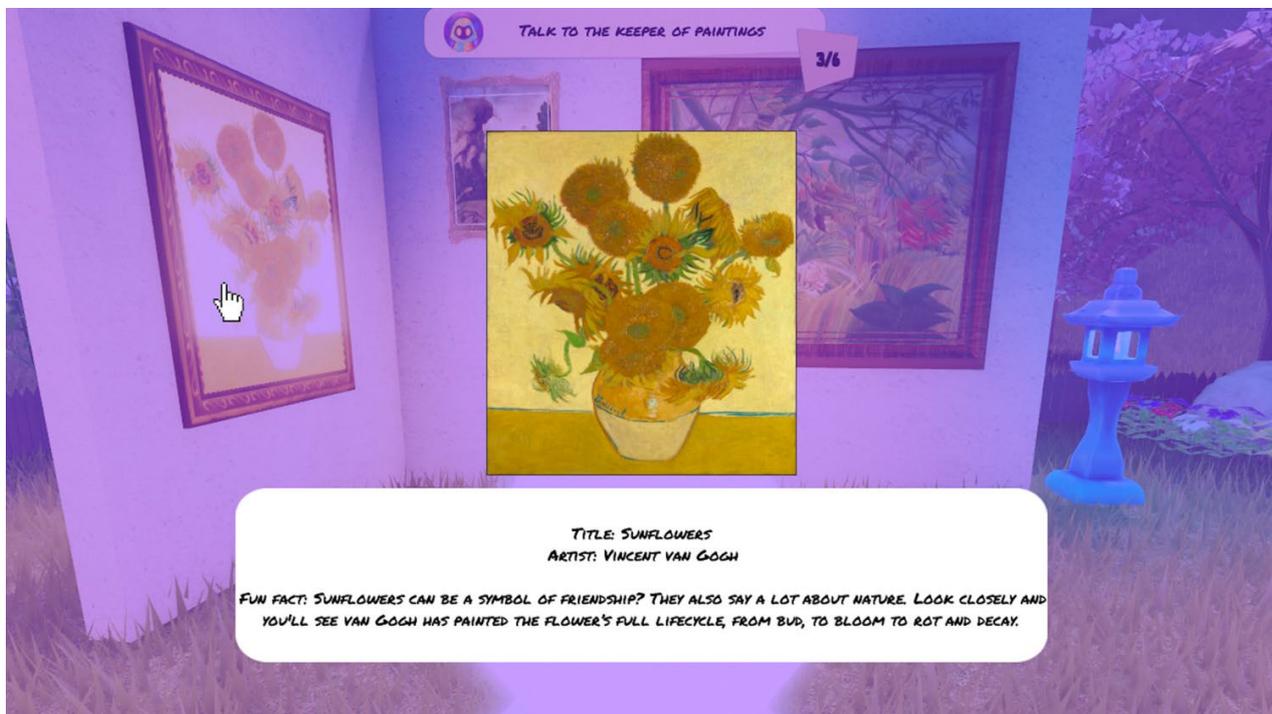


Screenshot of The Getty Museum's collection in-game in *Animal Crossing* on Nintendo Switch, showing how players can interact with the artwork together.¹⁸

While this is an interesting entry point for an alternative public, it should be noted that a level of privilege is needed to engage with this collection. The game console itself costs upwards of €300, and the game set players back €70. Happily, the idea of bringing

18 Zawacki, Selina Chang-Yi & Sarah Waldorf. "How to Build an Art Museum in *Animal Crossing*." Getty, April 16, 2020. Accessed September 24, 2023. <https://www.getty.edu/news/how-to-build-an-art-museum-in-animal-crossing/>.

collections into the virtual universe has gained traction on free platforms, and the **National Gallery of London** began to recreate their famous artworks in the expansive online multiplayer game Roblox. Much like Getty's efforts in Animal Crossing, players could explore the gallery's collection from the comfort of their own homes and curate their own art collection in a 3D digital world—but without the hefty price-tag.



The Roblox collaboration with The National Gallery London provided an institutional art collection in virtual space.¹⁹

19 National Gallery. "Curate Your Own Art Collection as a Keeper of Paintings." Press release, July 2022. Accessed September 24, 2023. <https://www.nationalgallery.org.uk/about-us/press-and-media/press-releases/curate-your-own-art-collection-as-a-keeper-of-paintings-national-gallery-creates-immersive-experience-for-families-on-roblox>.

Situated

What if we continue to take “the archive” (the records in the collection) out of “the archive” (the place/destination)? The archive—physical or digital—has always been a place to go to. But as technology becomes more embedded and embodied, there is tremendous potential to situate the archive in the world—rather than separate from or parallel to it. This opens up new avenues for situated and sensorial user experiences across diverse settings, connecting archival materials more directly to users’ temporal and spatial contexts.

“The archive—physical or digital—has always been a place to go to. But as technology becomes more embedded and embodied, there is tremendous potential to situate the archive in the world—rather than separate from or parallel to it.”

An audio walk can be an excellent way to engage users. Take, for example, **Het Water Komt**, an IOS application that guides the user through their environment, walking and listening at the same time. Narrator Winfried Bajens navigates users through areas of the Netherlands as they listen to stories about historical flood disasters and protecting against the water in the future. By making the collection of stories more embodied, the engagement becomes more experiential.

In a slightly different vein, The Photographer’s Gallery in London hosts the online **Screen Walks** program, in which artists and researchers are invited to explore online spaces and artistic strategies as a way of navigating the densely populated digital cultural scene. Each invited artist shares their screen exploration via an online stream, with viewers tuning in to the video from the comfort of their own homes. An archive could easily adopt this, inviting curators to design a tour of their collection online, with the audience following along digitally.



A screenshot of Molly Soda's edition of Screen Walks by The Photographers' Gallery London²⁰

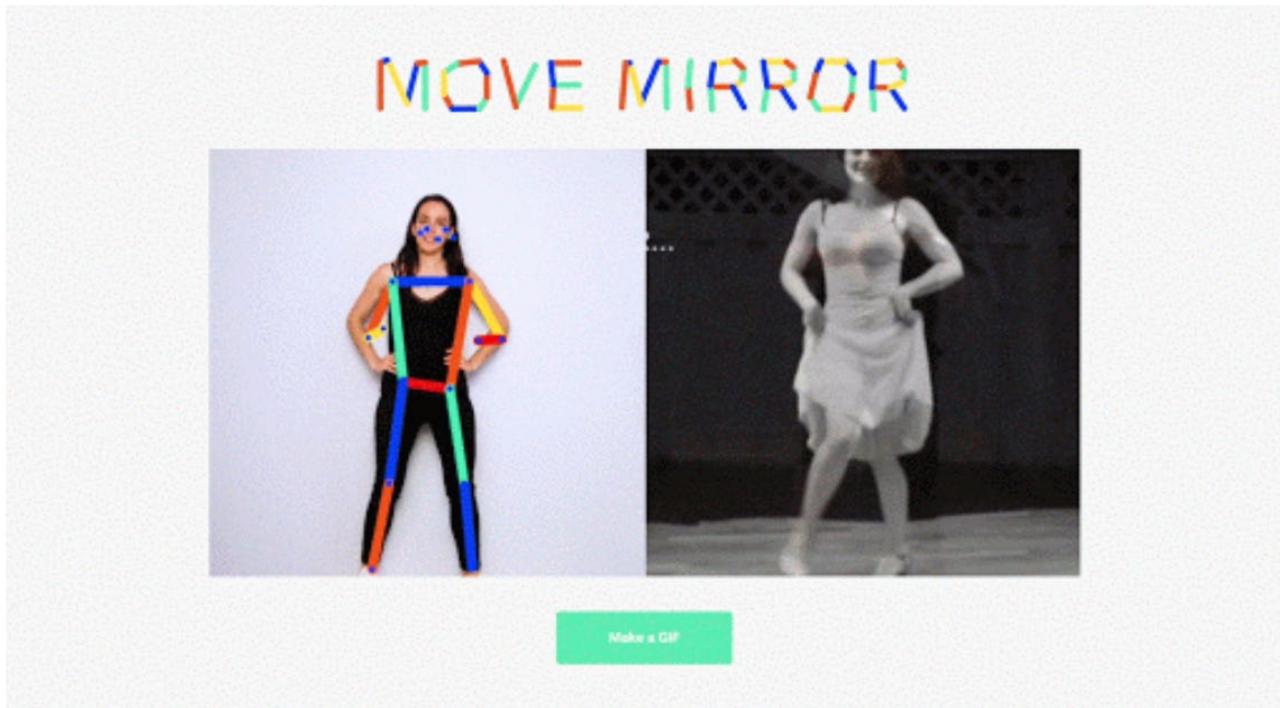
avra — situated + experiential entry points

20 Photographers' Gallery. "Screen Walks." Accessed September 24, 2023. <https://thephotographersgallery.org.uk/photography-culture/screen-walks>.

Embodied/Multimodal Interactions

How can archives be designed to allow users to interact with AV archives through multiple modalities, such as touch, gesture, or voice?

In the **Move Mirror** experiment, users can “explore pictures [...] just by moving around”²¹ (using human pose estimation technology), the system matching their body pose with images in the dataset and returning the closest match. While this does not pull from a thematic collection, it shows how embodied interactions can innovatively prompt engagement with a cultural heritage collection.

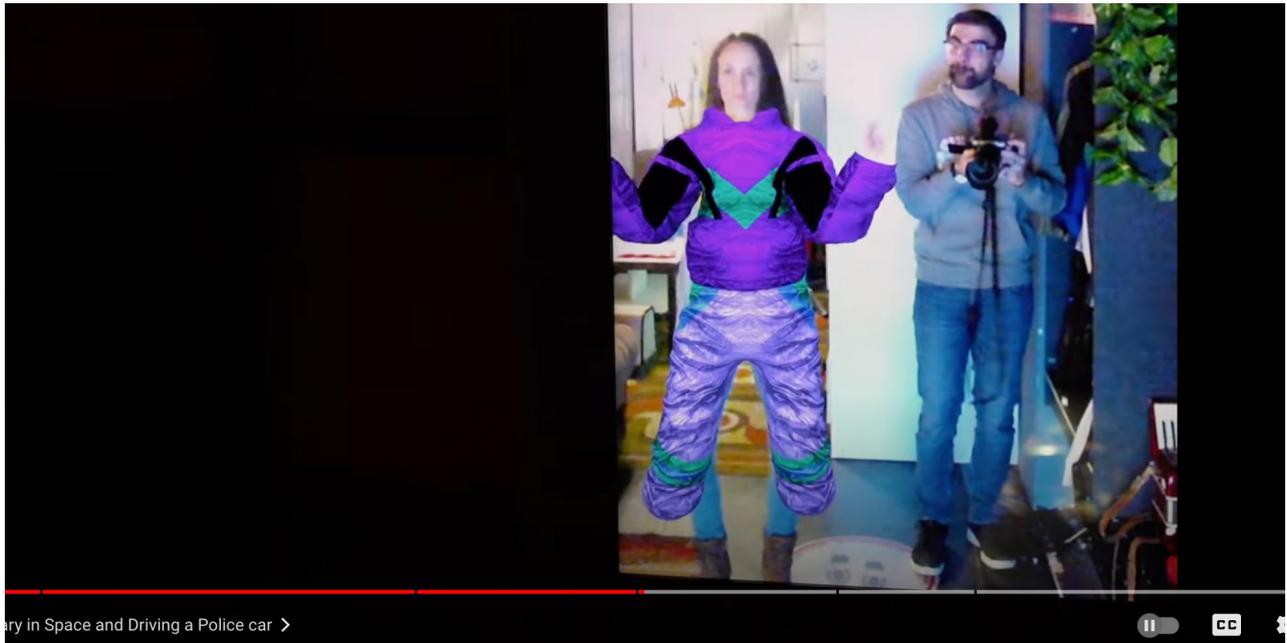


An example of Move Mirror in use, showing how the body is mapped.²²

Another way to visualize a collection in a bodily way can be seen at **The Budapest Retro Museum**, which houses swathes of relics and installations and takes visitors back to an earlier era in Budapest in a very interactive manner. Amongst the recreations of typical Hungarian interiors across the years, a large screen fixed to the wall places the user firmly in the scene. Next to the screen is a large wardrobe with various costumes from different subcultures of Hungarian life; when the user brings a particular item of clothing close to their body, the image of that garment is transposed onto them, giving them a unique insight into the collection. This method of bringing the user directly into the materials in a collection allows for a deeper understanding of their histories, and adds playfulness as a new layer and level of engagement.

21 “Move Mirror.” Experiments with Google. Accessed September 24, 2023. <https://experiments.withgoogle.com/move-mirror>.

22 “Move Mirror.” Experiments with Google.



Still from a visitor's YouTube diary of a trip to The Budapest Retro Museum, showing how the garments are overlaid onto the body using augmented reality.²³

Physical Installations

Physical installations are another way to bring the archive into a space. **Open Archief** is a joint initiative by Nieuwe Instituut, Sound & Vision, and the International Institute of Social History (IISH) that "explores the beauty and innovation that can be inspired by making archival material accessible to artists for creative reuse."²⁴ In its third residency, three artists were commissioned to create and present a new media work as part of a physical exhibition. This led to an associative video essay, an audio performance, and a split-screen video installation, each surfacing untold stories from the archive and proposing new formats through which archival materials could be witnessed in physical space.



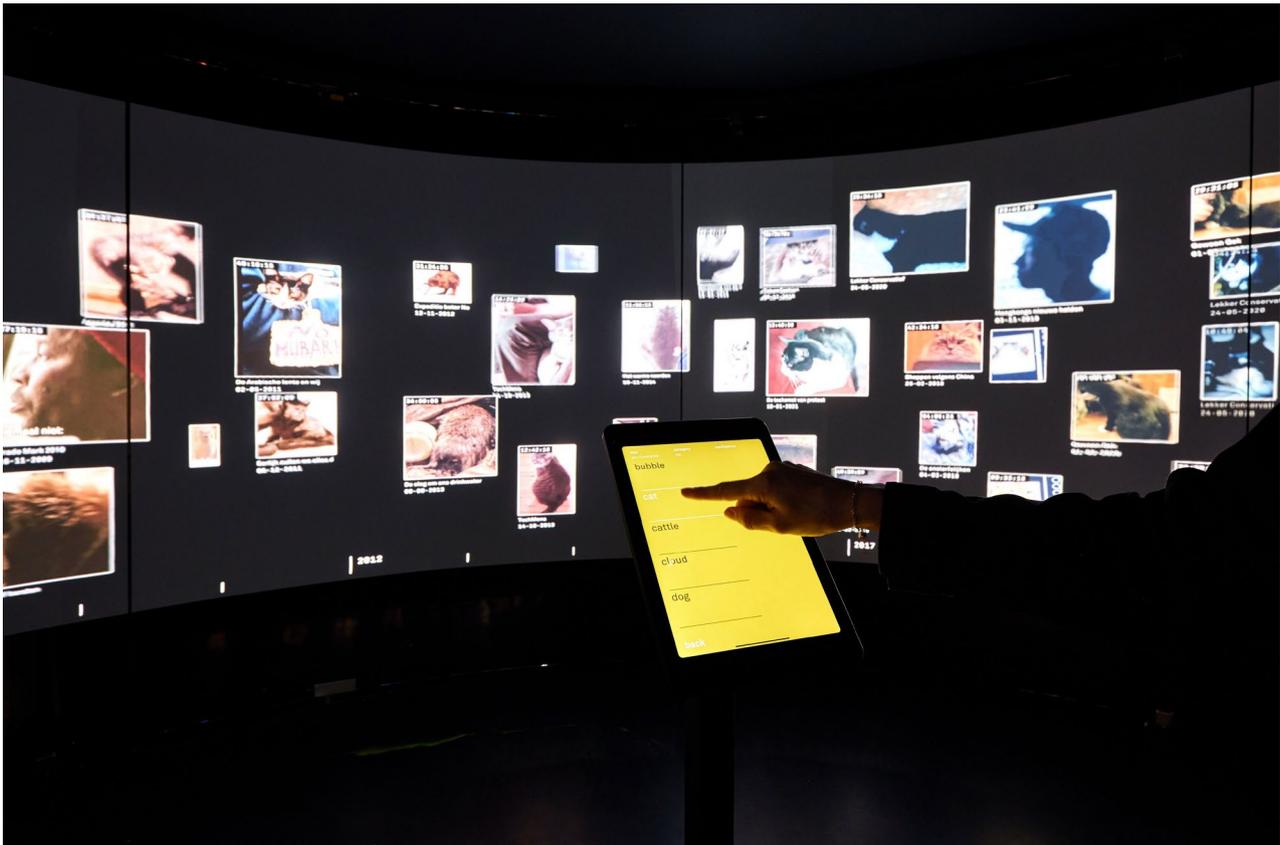
Physical installations as part of Open Archief at Het Nieuwe Instituut. Left: Audio installation from archival materials by Alice Wong & Simon Tse. Right: Video installation by Daria Kiseleva.²⁵

23 Stuffed Cabbage Adventures. "Traveling Back in Time at the Budapest Retro Interactive Museum | Hungary Travel Guide." YouTube, February 23, 2023. Accessed 24 September, 2023. https://www.youtube.com/watch?v=6qky_QZluxk&t=172s.

24 "Open Archief." Accessed 24 September, 2023. <https://www.openarchieff.com/>.

25 "Open Archief."

Artist Richard Vijgen built an interactive installation called **Through Artificial Eyes**, which is based on the VPRO broadcasting archive and lets the user explore the archive through computer vision²⁶ labels in an intuitive and spatial experience outside the browser.



Richard Vijgen's physical installation for the VPRO Tegenlicht Archive allows users to explore filtered views of the archive on large screens.²⁷

avra — situated + experiential entry points

26 Computer Vision is a field of AI that enables computers to “see” and make meaning from visual input (digital images, videos, etc).

27 Nieuwe Instituut. “The Future through Artificial Eyes.” Accessed 24 September, 2023. <https://nieuweinstituut.nl/en/projects/tegenlicht>.

Artist Lens

We can pull from artists and creatives working with archival footage as a great source of inspiration for novel formats. Many research-driven creatives, with titles such as “artist-researcher” or “critical-maker” or “creative-technologist”, use archival footage as a creative material and raw input to transform into a new work. These artists create new narratives and suggest different readings of existing materials, rendering them relevant and timely again, relating them to the present day, and drawing latent connections. Engaging and commissioning collaborations with creatives can help institutions see and show their collections through a new lens, assembling new worlds from the scraps of the old.

One example of this is experimental filmmaker, creative technologist, and educator Derrick Schultz’s **Scream Scenes** series, in which he uses human pose estimation AI to analyze the body poses of people in a shot and matches them with people in similar positions from other videos. He then algorithmically edits together a new film from existing snippets from various archival collections, linked together only by the characters’ bodily positions. This is a novel way of remixing video material through posture that can lead to potential outputs for creative reuse and the “sampling” of the archive.



Still from Derrick Schultz's algorithmically-edited Scream Scenes.²⁸

28 Schultz, Derrick & Tim Moore. Scream Scenes. Accessed 24 September, 2023. <http://screamscenes.com/>.

Similarly, Yugoslav-born documentary filmmaker Mila Turajlić recovered archival footage of the liberation movement of the cold war in Belgrade. After a long process of digitization, she repurposed these materials to tell the stories of their creation in a documentary film screened at the **International Documentary Film Festival Amsterdam (IDFA)**. This transformation of the archive allowed for the retelling and reimagining of its content, creating a new pathway to the collection to be acted upon and inspiring archives to invite users into their collections.

Another interesting example of activating the archive through an artist's lens is **Active Voice: Social Library** by Mariana Lanari in 2019. This was a physical installation that depicted the Casa do Povo library, a space that had been closed for 40 years. Lanari distributed the institution's collection of more than 8,000 books over a 500 square-meter surface, inviting the audience to transit this library-neighborhood. Complementing the collection's physical expression, a sound performance of seven voices mixed live by the artist played amplified and remixed readings by visitors, inviting the audience to engage in another new way with the collection. Lanari built on this approach and presented a similar exhibition, **Catching Up In The Archive**, at de Appel in 2022, where she paired the spatial element with an initial prototype of the Biblio-graph app introduced in theme #1.



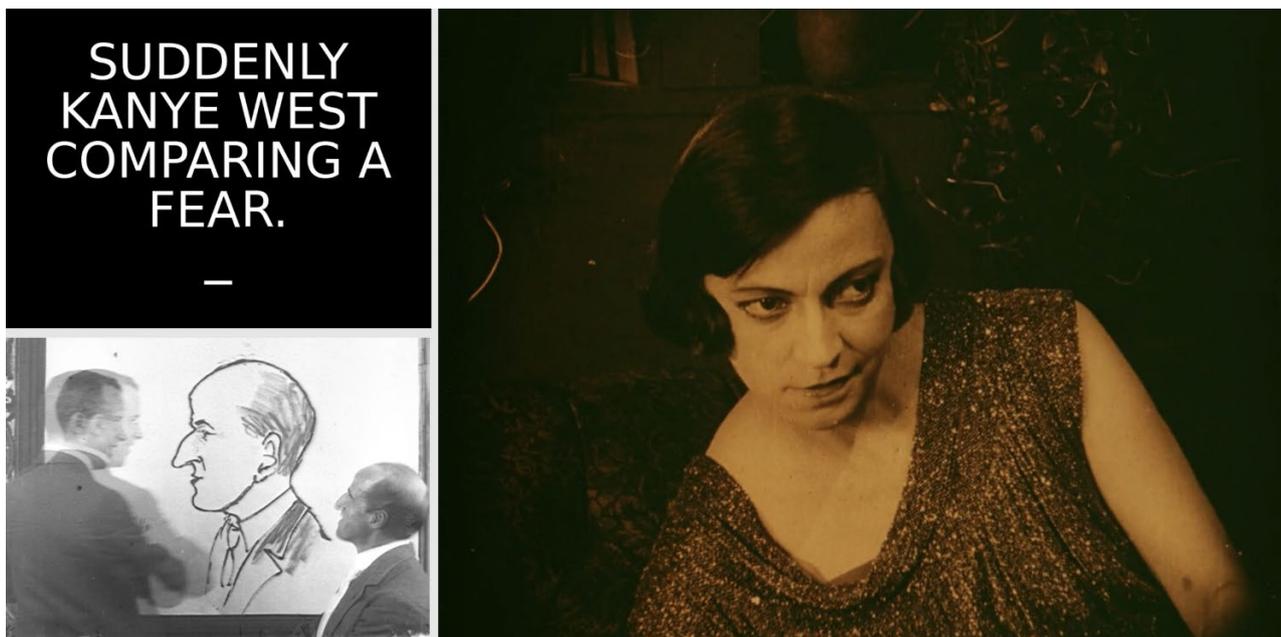
Mariana Lanari's physical installation of the Casa do Povo library along street names on the floor. Photo credit: Carol Quintanilha.²⁹

29 Casa do Povo. "Active Voice: Social Library Mariana Lanari." Accessed 24 September, 2023. <https://casadopovo.org.br/en/voz-ativa-biblioteca-social/>.

Fragments

Most of these projects operate at the level of archival segments and individual records rather than whole collections. Most archival interfaces default to provide a complete overview of a collection as a whole, then allow you to search for and zoom into specific records. It is interesting to consider a counter-approach: what if we build experiences that highlight a small selection or specific story from the collection, allowing you to zoom out instead?

Jan Bot is a project by artists Bram Loogman and Pablo Nunez Palma in collaboration with Eye Filmmuseum that explores AI to actualize film heritage. Triggered by current events (pulled from a wide range of popular news topics via an application programming interface), the tool uses footage from the archive to algorithmically create 30-second poetic films. Originated as an experiment, Jan Bot was “killed” in 2022 because considering the rapid speed at which AI evolves, Jan Bot’s artworks are no longer avant-garde but artistic snapshots of an old technology. Jan Bot is an interesting archival interface that uses the news as a navigator/search-and-explore mechanism, returning relevant records to timely themes and potentially surfacing unexpected connections. This presents the archival footage in an unexpected way, taking fragments to “lure” the user in and spark their curiosity. While Jan Bot lived primarily online, it also existed as a physical installation at the Eye Filmmuseum in 2019, showcasing the system’s process and output.



Stills of archival footage used in Jan Bot’s auto-edited videos.³⁰

By working with fragments and snippets, the videos serve as a looking glass into the whole. Because people are wired for stories and not databases, this could prove very effective in capturing the interest of archival audiences.

30 Eye. “Meet the Archive: First Robot Filmmaker.” Accessed 24 September, 2023. <https://www.eyefilm.nl/en/whats-on/meet-the-archive-first-robot-filmmaker/270302>.

Practical Pointers

Opportunities/Values

- Situated expressions of the archive have the potential to appeal to a larger and more diverse audience, especially a younger demographic, expanding the reach and impact of the archive.
- Through storytelling, these immersive encounters with the archive can captivate and resonate with users on a deeper, more emotional level, leaving a lasting impression.
- They lend themselves to temporary campaigns or installations, allowing for dynamic experiences to raise awareness of certain collections.
- These experiences can be seamlessly deployed across various platforms, social media channels, and spaces, extending the archive's accessibility, presence, and relevance in the digital landscape.
- New narratives emerge through individual and artistic interpretations and presentations, deepening and expanding our understanding of the collection.

Challenges/Constraints

- Reliance on custom solutions and designs, which can be time-consuming and resource-intensive.
- These initiatives require technical skills, expertise, and digital integration capabilities that many archives lack.
- While immersive experiences offer a more interactive and experiential approach, they may be the best fit for users with specific research goals, who require more targeted access to archival materials.

Conversation-Starting Questions

- Where are your visitors? Which platforms could you show up in? Are there any emerging platforms or games that have an organic link to your specific collection?
- For XR/AR: Are there hidden aspects to the archive that could serve as an augmenting factor to the experience? Are there physical artefacts that would lend themselves well as triggers for an AR experience that gives additional content and information?

- For audio walk: Is your collection geographically grounded, or does it have a direct link to specific locations (in proximity to each other)?
- Data and interaction: What types of data exist in your archive? Are there fun ways to plug in interaction through those data points?
- Would these kinds of approaches serve the users of your archive?
- What capacity do you have to do this internally?
- What funds do you have available to do this work?

Tools + Software to Explore

- [Google's Tabmaker](#) provides a no-code approach for creating custom tab extensions for Google Chrome. Customized experiences can be made for exploring digital archives from one's browser.
- No-code AR tools like [Artivive](#) or [Overly](#) serve as platforms for creating AR experiences for visual objects. With the use of QR codes, tools like [AR Code](#) also make integrating AR experiences more accessible.
- Platforms like Mozilla Hubs or world-building games like Roblox and Minecraft allow for gamified (VR) environments and experiences to be implemented.

3

Computational Sensing + Algorithmically- Abundant Metadata

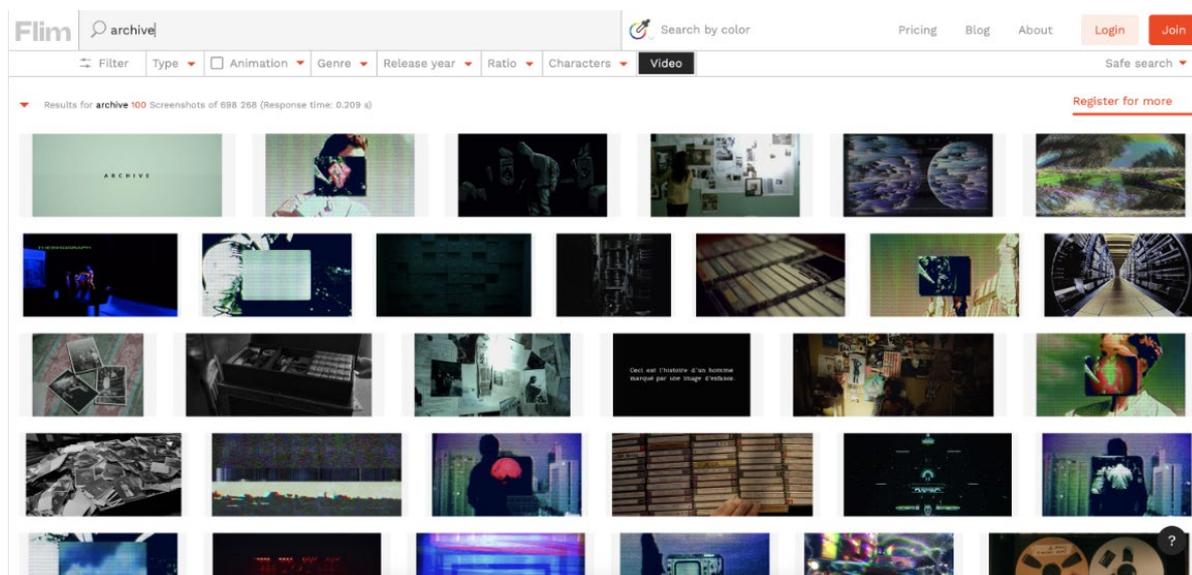
Supplementing existing metadata with computational techniques and the potential of AI for a richer user experience & exploratory approaches.

Metadata play a crucial role in making archives usable and valuable and are an enabler and at times prerequisite for exploratory interfaces, but their creation is labor-intensive. Leveraging AI/ machine learning technologies can help streamline the indexing process by algorithmically enriching metadata, rendering AV data searchable in new and meaningful ways. AI algorithms can analyze content within visual and sound records and propose relevant metadata based on its observations. The abundance, accessibility, and dimensions of metadata unlocked by AI provide new possibilities for interactions.

Computer Vision

Computer vision algorithms can automatically analyze visual content, enabling the identification and categorization of objects, scenes, persons, colors, and other visual elements or comparison of similar images.

Flim.ai is a small-scale, independent AI-powered search engine for movie screenshots and stills from film, documentary, and music videos, based on what the team calls "iconographic searching." Each screenshot is entered into a database with metadata provided by the team, such as film title, type, release date, names of director, DOP, actors, and style topics. AI then creates a layer of additional metadata analyzing color, objects, clothes, and characters. This allows the user a more intuitive search using visual memory (e.g. "woman in green dress eating cornflakes in bathtub") and discovery (e.g. starting from a DOP whose style you enjoy, then browsing similar shots to find others). It provides important additional functionality for the user without placing too much confidence in or emphasis on the AI tags, which are not always correct. Primarily a tool for creatives and film professionals searching for reference shots, Flim is a great example of AI being used to enrich metadata, providing more meaningful and fitting search capabilities and novel explorations.



Homepage of Flim.ai, an AI-powered search engine for movie screenshots.³¹

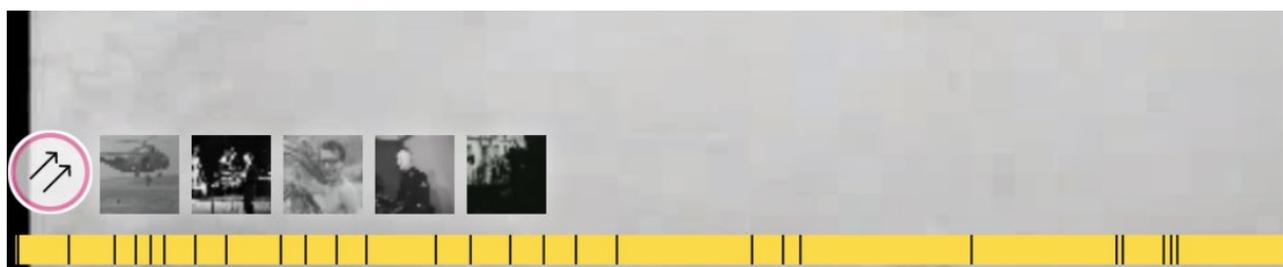
31 Flim website. Accessed 24 September, 2023. <https://beta.flim.ai/?p=2>.

It is also possible to use computer vision to analyze more unique or collection-specific visual qualities. **The Sensory Moving Image Archive** does this by analyzing its film content for novel visual qualities in its experimental archive interface and "a visualization and exploration of 103,273 shots from 6,969 open license videos" made by Bert Spaan and commissioned by the **Sensory Moving Image Archive** (SEMIA) project.

The default opens to a color map, but the most unique feature of the interface is hidden within the individual items, where each frame is analyzed by AI not just for hue but for detected shapes, direction of prominent movement, and the visual complexity of the shot. These collection-specific metadata allow the user to journey through the archive in unusual ways—most like following breadcrumbs where there is no destination, but the path unfolds one step at a time.



Zoomed-in view of the homepage of The Sensory Moving Image Archive.³²

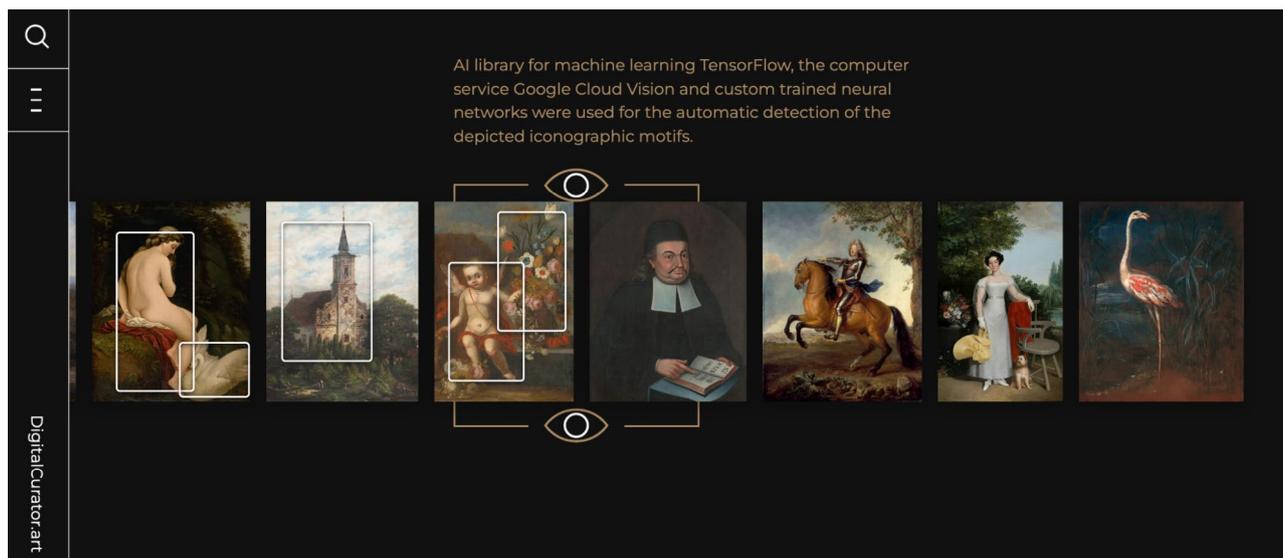


Detail of The Sensory Moving Image Archive, showing the AI-detected direction of motion within each shot along the timeline of the video.³³

32 Spaan, Bert & The Sensory Moving Image Archive (SEMIA). Accessed 24 September, 2023. "The Sensory Moving Image Archive." <https://bertspaan.nl/semia/#/>.

33 Spaan & SEMIA, "The Sensory Moving Image Archive."

While these projects offer insights into what can be done with AI, projects are also done on a smaller scale with fewer resources. Take the **Digital Curator** project by Lukas Pilka: a hand-trained web application, the project allows users to explore the art collections of Central European museums through recurring motifs and themes in the artworks. The user can build their own collection of motifs to chart their development and usage across time and compare these data with other themes throughout history. This is achieved by creating datasets from the collections of 19 museums and analyzing the content of each artwork. From this, recurring motifs are categorized and can be searched by the user. This is an interesting way to view a collection across the centuries and can be a valuable tool for researchers. Due to its implementation by a small team, these ideas can be transposed to an archive in a relatively short time, even with a limited knowledge of AI.



Explainer slide from the Digital Curator interface, showing object recognition in artworks.³⁴

The ability to analyze and extract visual content through AI can also be used for more illustrative purposes. Using the extracted metadata and content, we can present connections for users in a graphic context. The experimental museology project **Surprise Machines** by Dario Rodighiero, initiated by Harvard Art Museums, attempts to visualize large datasets from the collection and explore the limits of artificial intelligence in a series of images. These vista-like graphics can be viewed in a gallery setting, making “200,000 objects usually inaccessible” now accessible to visitors. This type of data extraction can be used as an additional layer of display for a digital collection, using its visual properties as an additional entry point into the archive.

34 Pilka, Lukas. “Digital Curator.” Accessed 24 September, 2023. <https://digitalcurator.art/aboutproject>.



Physical installation of the large-scale cluster map as part of the Surprise Machines project.³⁵

While these experiments and projects in computer vision can help us enrich the data we already have in the archive, it should be noted that these practices are fundamentally reductive by design. Training these algorithms involves searching for patterns and similarities, but the results can sometimes appear flattened, without nuance, or, in some cases, inconsistent. Accordingly, it is important to implement AI as an added component or layer to the existing metadata to help us keep up with the ever-growing amount of information online. AI is a tool that should be employed to lighten the load of indexing so that we can use our resources to push these archives to a fuller, more engaging potential.

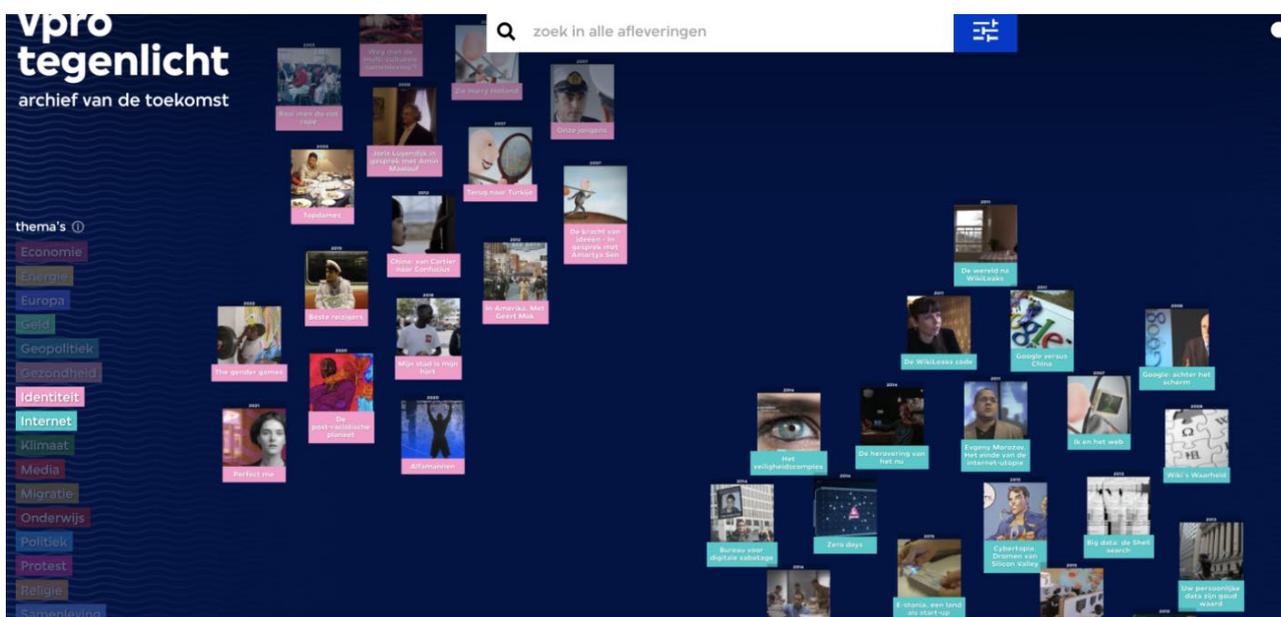
35 Rodighiero, Dario. "Surprise Machines for Harvard Art Museums." Accessed 24 September, 2023. <https://dariorodighiero.com/Surprise-Machines>.

Speech2Text

Speech-to-text technology facilitates the conversion of spoken words in AV materials into searchable text. Archivists can use this capability to generate transcripts that not only enhance accessibility but enable keyword-based searching and linking to specific points in the AV content.

Entity-recognition algorithms can identify and extract named entities such as people, locations, organizations, and dates from AV materials.

The **Archief van de Toekomst** by VPRO in collaboration with Sound & Vision illustrates the potential of these technologies for AV material in an open and interactive archive and installation of 500+ broadcasted episodes of the Tegenlicht show. Using computer vision, the designers ran object recognition models to index the visual content of the video archive. Using natural language processing for speech2text, they rendered spoken audio into searchable text. AI added a rich layer of metadata to each episode and the archive as a whole. We can imagine pushing this even further with features such as sentiment analysis, named entity recognition, content clustering, similarity analysis, and trends over time.



Filtered view of the VPRO Tegenlicht archive for tags “Identity” and “Internet.”³⁶

Supplementary Metadata

This automated approach streamlines the indexing process and can generate supplementary metadata, fill gaps, or kickstart metadata creation. This is particularly valuable for social media data or old footage that may lack sufficient metadata or context.

36 VPRO. “Archief van de Toekomst.” Accessed 24 September, 2023. <https://www.vpro.nl/programmas/tegenlicht/kijk/archief-van-de-toekomst.html>.

Research by Europeana elaborates on the value of supplementing existing metadata, because the keywords added by archivists "were institutional in style and not as folksonomic as we predicted our selected users to prefer." Using Google Vision to create tags across the collections images made it apparent that "for non-specialist audiences computer vision-created tags is a viable option to increase discoverability."³⁷

The project **Javastraat.cloud** (described earlier), aims to give insight into the gentrification of the neighbourhood of Javastraat in Amsterdam by creating a dataset out of Instagram posts and their images, hashtags, account size, number of likes, and object recognition. It presents the collection through a visual and generous interface—made possible by computer vision, which allows for automatic object recognition and tagging in each image.

Suslib is an interesting studio because of their experiments integrating AI with large collections. Describing themselves as an "initiative developing the future of knowledge interaction," Suslib focuses on a range of supplementary data solutions to enrich their clients' collections for a better user experience. One example of this is their Knowledge Recognition software, which allows users to search semantically through collections and group its assets based on extracted topics. It can also allow users to move between assets based on their similarity or matching web videos. Suslib's Intention Recognition program focuses on actions between an object and the user—for example, the need to flip through a book—and uses this information to create digital interfaces that facilitate these physical gestures. Using AI to create a more physical level of interaction with an archive's materials is another way to enrich a collection and make the relationship between the user and the archive more tangible.



Interface by Suslib being controlled by actions, gestures, and object-actions.³⁸

37 Haskiya, "Evaluation of Generous Interfaces."

38 suslib. "Autonomous Libraries." Accessed 24 September, 2023. <https://suslib.com/research/autonomous-libraries/>.

Adopting these technologies can alleviate the traditional burden of metadata creation and enable archives (including those with fewer resources) to enhance accessibility, interactivity, and usability and open up new possibilities for ways of engaging and exploring the archives.

Practical Pointers

Considerations/Reliability

A degree of caution is necessary when implementing AI-generated content in the archive. AI systems are built on consistency and patterning, which sometimes have faults, but the **Go FAIR Principles** offer some pointers “to improve the Findability, Accessibility, Interoperability, and Reuse of digital assets.”³⁹

As Philo van Kemenade noted in his peer review of this research, it is helpful to draw a distinction between “enriching metadata used to improve the user experience” and “enriching metadata to update an archival record.”⁴⁰ For the latter, archival organizations are often rightly concerned with the validity of generated metadata and risks associated with attaching potentially false metadata to the record. In the context of this research, we do not propose using AI-generated metadata to incorporate and enrich the original archival record but to enable new interactions and experiences. While these issues are important, they are not the focus of this research.

When implementing algorithms for metadata enrichment, it is important to acknowledge that errors can—and will—occur. It is thus necessary to work with AI to validate that the system is tagging correctly. Strategies to navigate this include visually differentiating between human-assigned tags and machine-assigned tags in the interface. For inspiration we can look to **Kaspar.ai**, a video editing software using AI to analyze video material, detect objects and actions, and propose related tags. Its user interface is very effective in how it displays tags while offering the user simple controls to edit and (in)validate them.

Opportunities/Value

- AI can enhance process efficiency by reducing the workload for archives, enabling them to handle larger volumes of materials in a shorter time.

39 “Fair Principles.” GoFair. Accessed 24 September, 2023. <https://www.go-fair.org/fair-principles/>.

40 Philo van Kemenade, “AVRA Peer Review Session #1,” conversation led by author online, 9 May 2023.

Rich metadata also enable simple data insights, such as gender representation or sentiment analysis across various channels.

- They also facilitate multi-modal analysis and connections between images and text.
- The availability of rich metadata serves as a prerequisite for the development of generous and creative interfaces, such as sorting content by color or visual similarity.
- Rich metadata are a starting point for experimental features like emotion analysis or browsing.
- It can enable conversational interfaces with an "AI librarian," providing users with natural language interactions and assistance in navigating the archives.
- AI-generated metadata can help support consistency across archives, facilitating the linking of contextual data and creating inter-relationships.
- Defining metadata helps to improve user discoverability, making it easier for users to locate the specific content they are seeking.

Challenges/Constraints

- There is always the possibility for error, including false classifications, misattributed tags, and embedded bias. A level of human interaction is thus necessary to validate machine-assigned tags and set appropriate confidence levels based on the user type and content.
- While these technologies are becoming increasingly accessible, the adoption of AI and machine learning for metadata enrichment requires a certain level of technological maturity, infrastructure, and funding.

Conversation-Starting Questions

- Which layer(s) of metadata are currently missing or incomplete? Could AI help supplement these?
- Which layers of metadata could enable new exploration methods? (E.g. color, object detection)
- Which of these out-of-the-box AI capabilities are relevant to your collection?
- Would recognition by a custom AI model benefit any specific features of your collection?

- Imagine AI metadata as a set of lenses to examine your collection; even without perfect accuracy, which lenses might be interesting?
- How can you acknowledge and structurally audit the results and bias within AI-generated metadata?
- Would these kinds of approaches serve the users of your archive?
- What capacity do you have to do this internally?
- What funds do you have available to do this work?

Tools + Software to Explore

- Smaller initiatives such as [ArtDocViz](#).
- Most AI tasks are performed in code scripts written in Python, often using existing libraries such as IBM Watson Studio, Azure Machine Learning, Amazon SageMaker, and Google Cloud AutoML. While plenty of code snippets and open-source software exist, you will need a developer/coder/programmer to help you create a custom pipeline.
- FFMPEG & FFProbe for video editing & manipulation with Python.

Additional Resources

- [Interview](#) with Alexa Steinbruck about subjectivity in AI as part of the “Training the Archive” podcast by Francis Hunger.
- [Europeana article](#) on AI in relation to GLAMs.
- [Watching Machines Loving Grace](#)—Cur(AI)torial agents explore both the potential for interfacing and critical aspects of AI in cultural heritage.
- Lukas Pilka’s experimental interface, [Digital Curator](#).
- Research article on [Archives and AI: An Overview of Current Debates and Future Perspectives](#).
- [Blog post from Archives Hub](#) with a more in-depth discussion of machine learning in archival collections.
- The book [Archives, Access & Artificial Intelligence: Working with Born-Digital and Digitized Archival Collections](#), particularly the last chapter, AFTERWORD: Towards a New Discipline of Computational Archival Science.
- [Suslib’s blog posts](#) on knowledge spaces and autonomous libraries.

4

Participatory Sense- Making + Storytelling

Positioning archival practice as a communal/participatory act, encouraging users to engage with the material & contribute to unfolding narratives.

The role of the archive is not merely to preserve artefacts of the past, but also to tell, re-tell, and rewrite its stories. Participatory sense-making challenges traditional notions of archives as closed, centralized, and gatekept repositories, and advocates to embrace a more open, inclusive, and community-driven approach that situates the archive as a living artefact.

The archive can be opened up by adopting participatory methods, much like Wikipedia did for encyclopedias: allowing visitors to participate, co-create, and sense-make with a collection through submissions, annotations, curation, and other forms of interaction. It should be noted that while archives are more than willing to share their content, copyright blocks the complete adoption of free sharing and reuse. To create a connection, larger archives are thus working more closely with communities and their citizens. This stretches the notion of what a user may want from an archive, inviting the user to go from passive consumer to active participant, adding their own insights, contexts, and interpretations.

"Many stories matter. Stories have been used to dispossess and malign, but stories can also be used to empower, and to humanize."

—Chimamanda Ngozi Adichie⁴¹

Independent community archives are growing massively in numbers. People have created personal archives or collections for centuries, but the practice of digital archiving at home has been amplified by the proliferation of consumer-facing digital technologies. The act of archiving has become more widespread, no longer a practice reserved for institutions. Instead, we see shifting practices of people individually and collectively collecting, conserving, and creating their own.

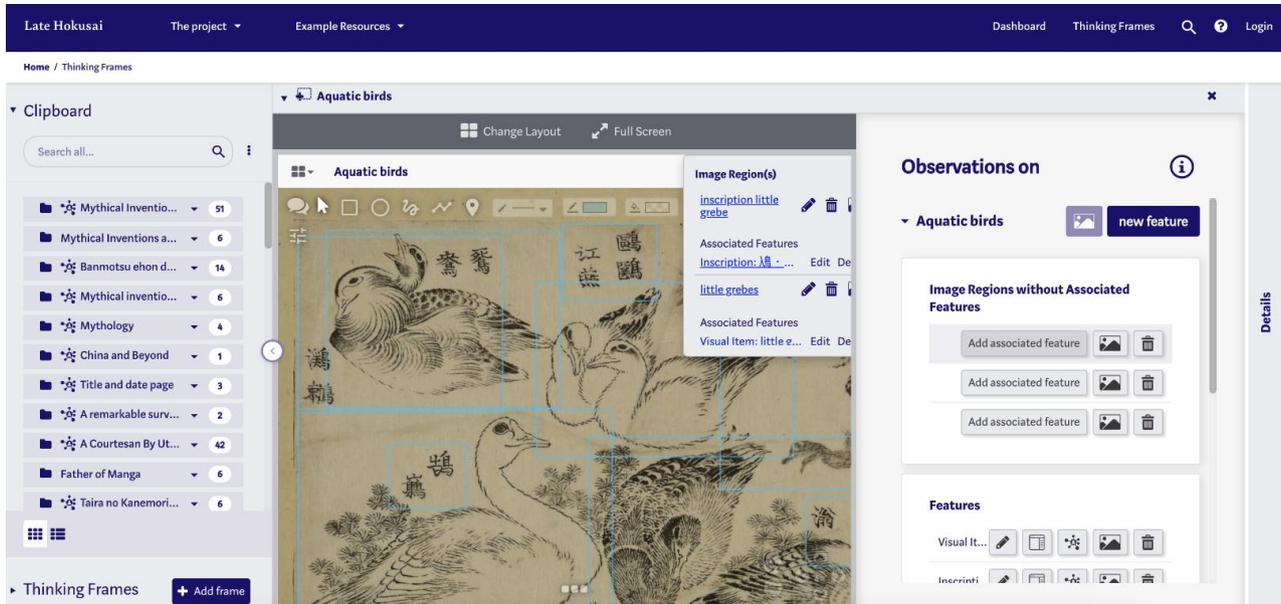
Users add value and insight to collections, transforming the archive from a static, read-only entity into a dynamic and evolving representation. By embracing polyvocality and plural narratives alongside or in contrast to singular authoritative perspectives, archives can foster a more inclusive representation of the past and present, challenging entrenched colonial and patriarchal narratives.

The archive is already a starting point for reflection, research, and conversation in contexts such as seminars and lectures. How might these reflections and discussions be integrated back into the archive to facilitate a two-way dialogue?

41 Chimamanda Ngozi Adichie. "The Danger of a Single Story." 2009. Youtube video. TED. Accessed 24 September, 2023. <https://www.youtube.com/watch?v=D9lhs241zeg>.

Crowd Annotation

Crowd annotation is a powerful way to label, annotate, add, or validate (meta)data, as in the **Late Hokusai** online archive, which allows users to mark and label associated features in visual material. Moving beyond the practical side of user-generated metadata, we can extend this idea to less-constrained collective annotation.

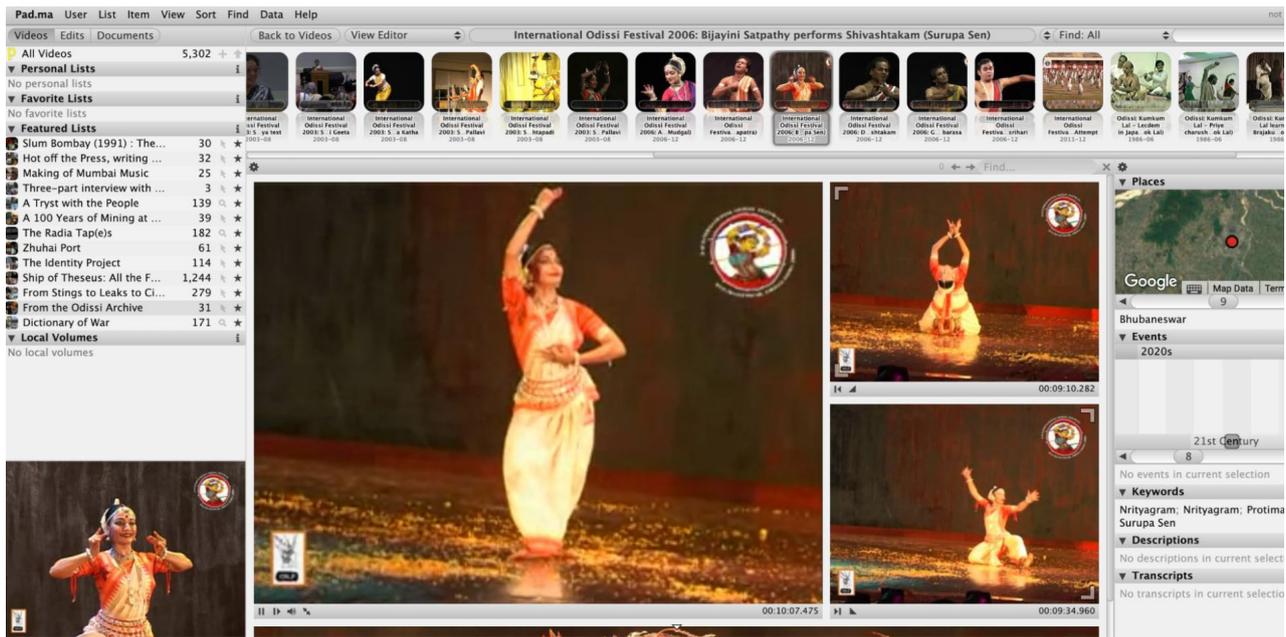


User interface for adding annotations, labelling image regions, and suggested metadata in the Late Hokusai online archive.⁴²

Another way of incorporating crowd annotation for subjective perception in video/AV materials is the art project **Exhausting a Crowd** by Kyle McDonald. This online crowd-sourced project allows users to circle and annotate anything in 12 hours of pre-recorded security camera footage. In the context of an art project, the interface is a strong inspiration for what a highly intuitive, free-flow, and scalable crowd annotation for video/AV materials might look like.

42 "Late Hokusai." Accessed 24 September, 2023. https://latehokusai.researchspace.org/resource/rsp:ThinkingFrames?view=objectImageObservation&resource=http%3A%2F%2Flatehokusai.researchspace.org%2Fresource%2FBM-Hokusai_Banbutsu_ehon_taizen-004

While annotating over maps and situated views is a great form of audience interaction, there are also instances of annotation directly onto the AV content itself. **Pad.ma** (short for Public Access Digital Media Archive) is an online archive of densely text-annotated video material focused on Indian heritage. The archive makes various types of interaction and contextualization of its materials possible. Using an overview of timelines and themes, users and contributors are invited to add descriptions, keywords, etc. on top of the image material, allowing for a closer examination of the collection.



The pad.ma interface.⁴⁴

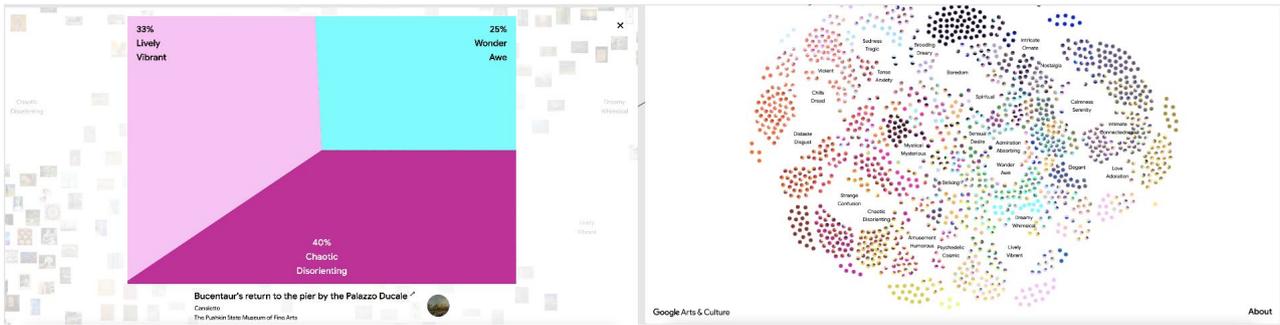
Co-Creation and Community

An exciting and more experimental avenue for exploring community input is to collect qualitative—even subjective or fuzzy—data, adding a layer of collective interpretation to the collection.

The **Art Emotions Map** is a collaborative project between Google Arts & Culture and the University of California Berkeley that maps emotions evoked by artworks over time and across cultures. It “asked 1,300 people to describe how 1,500 paintings make them feel by choosing from different words. The results revealed 25 different emotions that people linked to the artworks they saw. [The makers then] plotted these feelings on an interactive map, grouping artworks that triggered specific emotions.”⁴⁵ This enables a type of emotional browsing—a way of exploring the data that is less practical, but that is interesting, meaningful, and shines a unique light on the collection. It would be impossible to gather this layer of interpretation through traditional methods of archival indexing or even algorithmic metadata, making it a perfect fit for crowd annotation.

44 “Public Access Digital Media Archive.” Accessed 24 September, 2023. <https://pad.ma/home>.

45 Google Arts & Culture. “An Atlas of Emotions.” Accessed 24 September, 2023. <https://artsexperiments.withgoogle.com/art-emotions-map/>.



Two interfaces of The Art Emotions Map. Left: A data visualization of the emotions people feel around a single featured artwork. Right: Clustered map-view emotion distribution across all artworks.⁴⁶

A simpler but still powerful example of these ideas is evident in **Queering the Map**, a “community generated counter-mapping platform for digitally archiving LGBTQ2IA+ experience in relation to physical space.”⁴⁷ Built on top of the Google Maps API, it allows users to share and submit their stories and experiences, essentially creating their own collective collection.



Map view and user interaction for adding suggestions in the Queering the Map project.⁴⁸

46 Google Arts & Culture, “Atlas of Emotions.”

47 LaRochelle, Lucas. “Queering the Map.” Accessed 24 September, 2023. <https://www.queeringthemap.com/>.

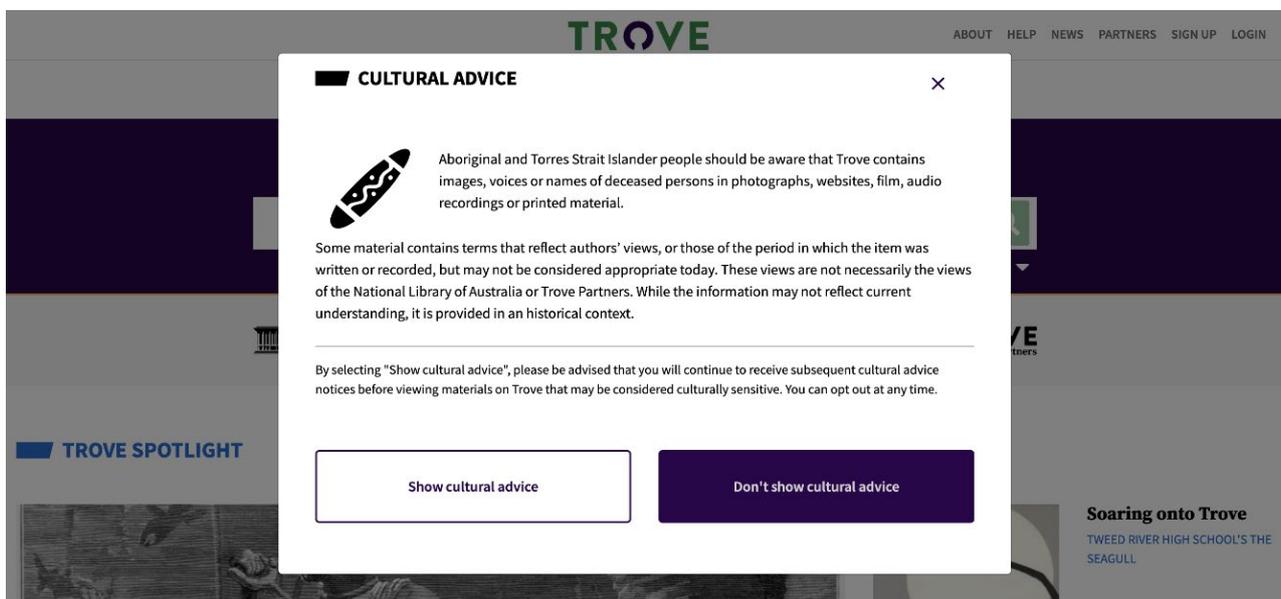
48 LaRochelle, “Queering the Map.”

The interface design plays a crucial role in making it easy for people to participate in this process and making place for plural interpretations to exist alongside each other without being confusing or overwhelming.

Challenging Dominant and Historical Narratives

Histories are written by the victors, so how might the archive help us revisit and reframe dominant narratives? Almost as a way for asynchronous and decentralized audits, what user-friendly, accessible ways exist for users to expand on singular narratives and offer another side to a story? And how might the archive adopt an interface that presents plural narratives without creating confusion or lacking credibility?

The **Trove** is a strong, simple example of an archive acknowledging its position and being brave enough to question it. Aiming to “keep everyone informed,” a cultural advice feature pops up to provide additional context on records containing culturally sensitive content, with a specific focus on Australia’s Aboriginal and Torres Strait Islander people and their communities. Trove also invites users to share cultural sensitivity feedback and to flag material that may require care.



Cultural Advice pop-up on The Trove archive.⁴⁹

Acknowledging that “there is no such thing as unbiased news,” the news website **AllSides** shows the same headline across the political spectrum, i.e. through media sources on both sides of the Republican/Democrat debate to compare how issues are framed through language and tone. This offers all sides of the coin, offering information without political interference. While this is different to historical annotations on archival material, it presents a possible interface for displaying multiple perspectives on the same topic.

49 National Library of Australia. “Trove.” Accessed 24 September, 2023. <https://trove.nla.gov.au/search/category/images?keyword=cook>.



HEADLINE ROUNDUP



Crowded Republican Primary Raises Questions, Concerns for 2024

There are now eleven candidates in the race for the Republican nomination. How will the crowded field impact the primary race? "Multi-Candidate Pileup": An opinion piece in the National...

REUTERS/Gaelen Morse, Marco Bello

From the Center

Crowded 2024 Republican race helps clear way for Trump nomination

Reuters

From the Left

Who's running for president? Field of delusional also-rans will make Trump the GOP nominee.

USA TODAY

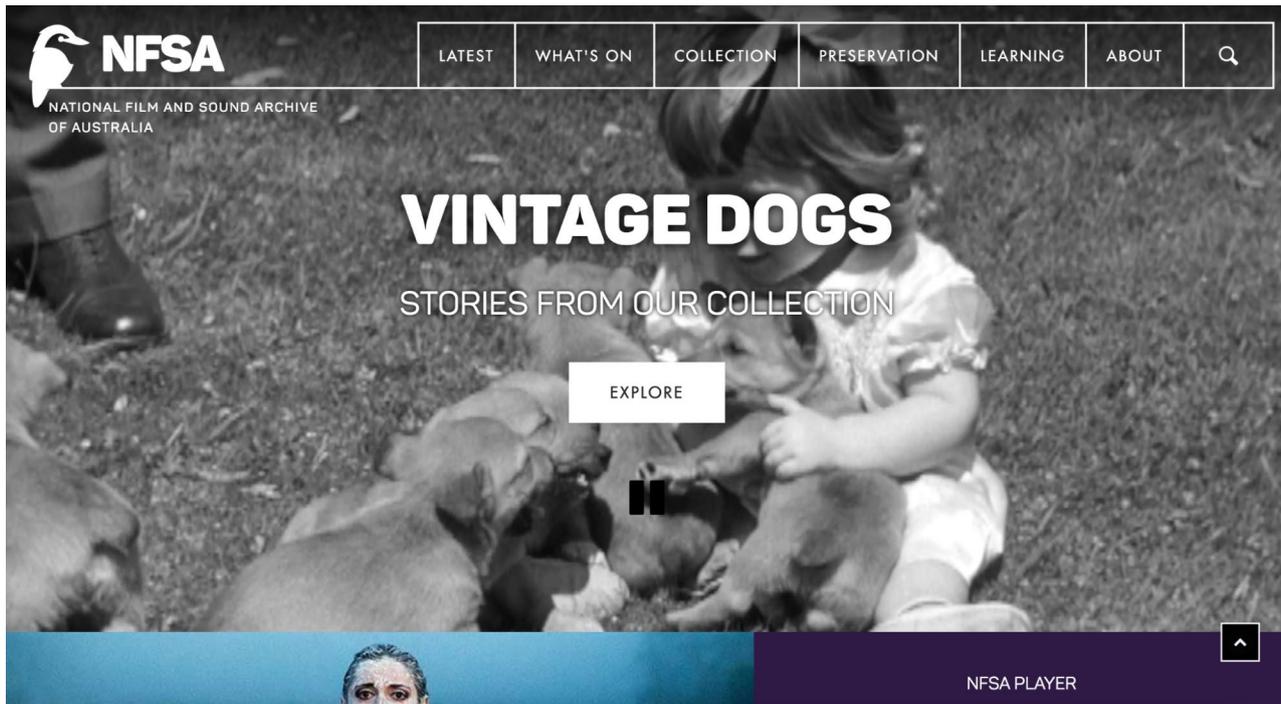
From the Right

A Small GOP Debate Stage Is Critical

National Review

Featured news headline on the website AllSides, which presents different framings of the same news across the political spectrum.⁵⁰

Another way to engage the archive through multiple angles is to offer curatorial opportunities to handpick highlights from the collection. The **National Film and Sound Archive of Australia** invites filmmakers and creators into the archive to focus on and give voice to specific themes in their selection. This is a simple way to gain outside perspectives for the collection and to display these viewpoints in an easily digestible way for the wider audience. This could be supplemented by an outside program that relates to the explored themes to activate the archive further.



Homepage of the NFSA.⁵¹

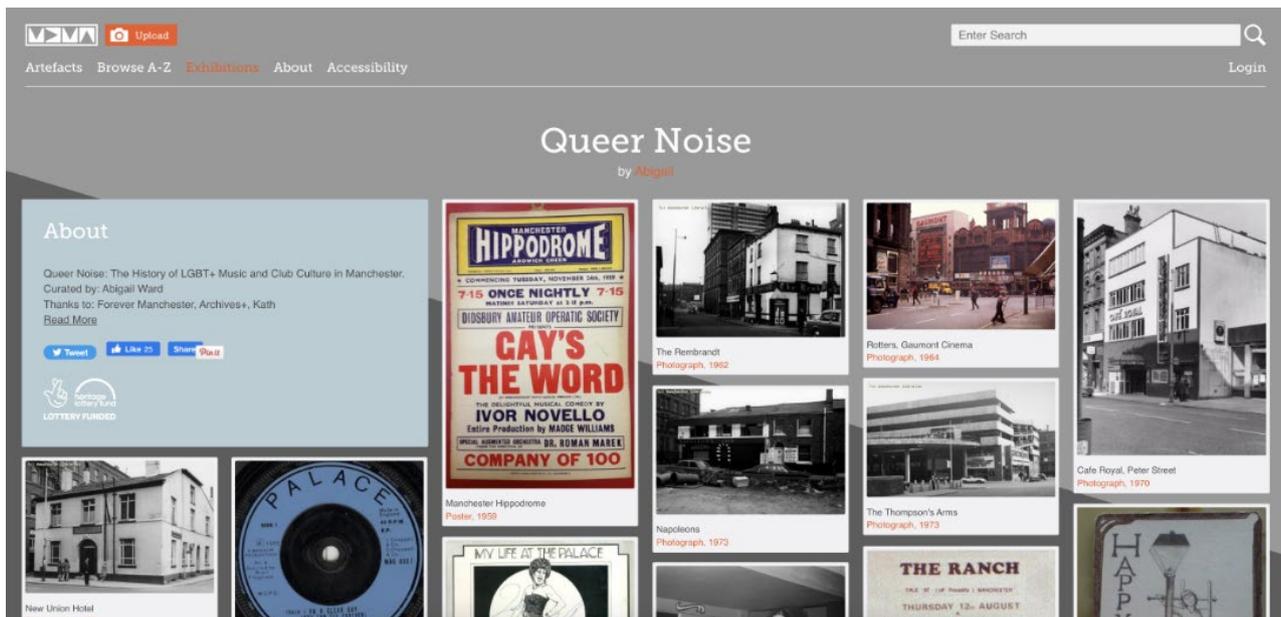
50 AllSides website. Accessed 24 September, 2023. <https://www.allsides.com/unbiased-balanced-news>.

51 National Film and Sound Archive of Australia. Accessed 24 September, 2023. <https://www.nfsa.gov.au/>.

Personal Curations/Communal Storytelling/Drag-and-Drop Creative Reuse

A powerful way to invite communal storytelling is to allow users to compose/curate and publish/share/show their own personal thematic collections of selected works from the wider archive. A minimal and functional example of this is the **Manchester Digital Music Archive**, an online community archive celebrating Greater Manchester's music and social history. Its community character is reflected in the option to submit new media and a function to curate and publish your own online exhibition from the archive's artefacts.

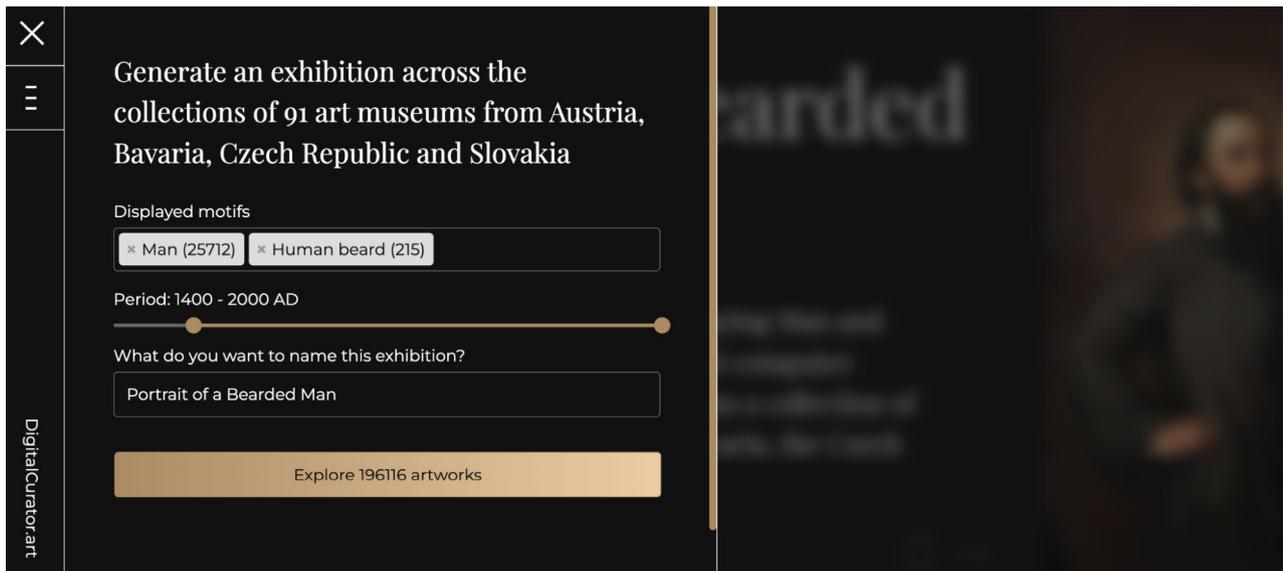
We can push this idea further by building digital tools that make creative reuse accessible to anyone, not just artists with an existing practice, inviting people to make and remake with archival materials.



User-generated Queer Noise exhibition page, part of the Manchester Digital Music Archive.⁵²

52 Abigail. "Queer Noise." Manchester Digital Media Archive. Accessed 24 September, 2023. https://www.mdmaarchive.co.uk/exhibition/id/77/QUEER_NOISE.html.

Lukas Pilka's **Digital Curator** (described in the previous section), which allows users to search the collection by recurring motifs and themes, also contains a feature for users to curate their own art collection. By allowing those who interact with a collection to create their own space within it, users experience a stronger kinship with the archival materials and therefore interact with its contents on a deeper level. This can be a valuable way to activate an archive so that it strengthens the relationship between the user and the archive itself.



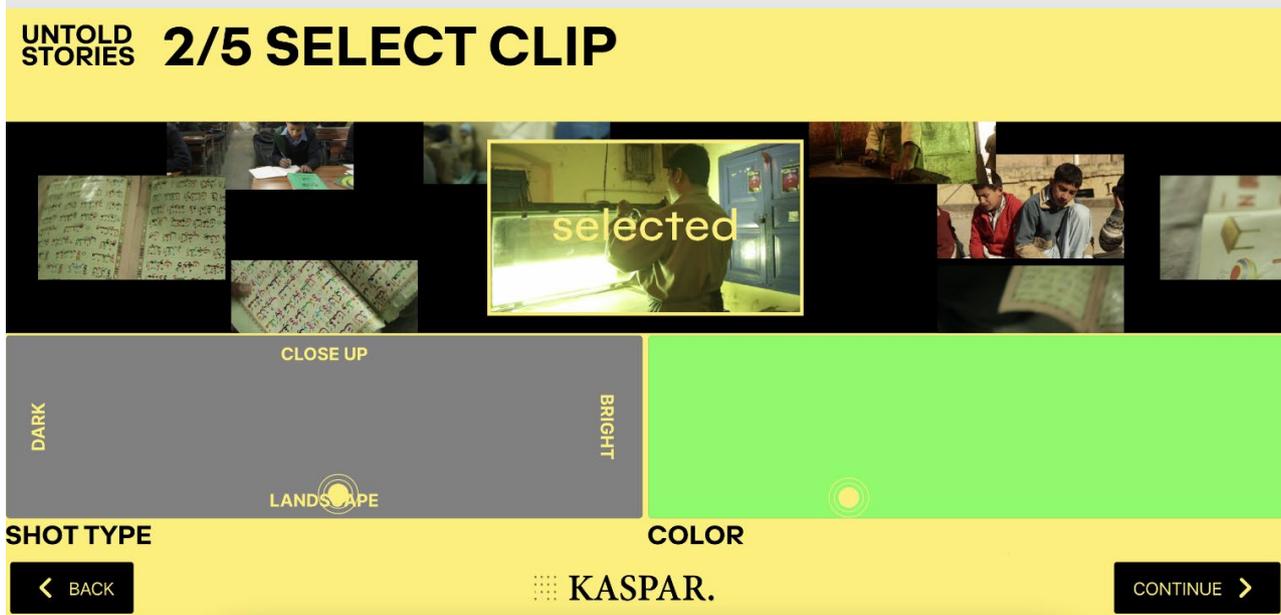
The experimental Digital Curator interface invites users to generate a virtual exhibition based on selected filters and parameters.⁵³

A creative example for video material specifically, is the interface and interactive video installation **Untold Stories**⁵⁴ by Kaspar AI, RNDR, and Storytellers United, which aims to “create new screenings out of unseen film footage with the help of AI.”⁵⁵ This interface allows users to select an archive, sort through the material by visual quality (such as color, bright/dark, and close-up/landscape), and algorithmically edit a video. While an experimental interface tested with only a small group of creatives in 2021, similar functionalities could be extended to any user to help them tell and surface stories from the archive.

53 Pilka, “Digital Curator.”

54 This project was formerly accessed on May 1, 2023. Between the time this report was finished being written, and this site was last accessed on September 24, 2023, it looks as if this project has gone offline. Since the concept is interesting in the context of this research, it has been left in. The original project, which remains being linked to here is: <https://preview.untoldstori.es/#/wizard/start>.

55 While the Untold Stories project is now offline, there still exists information about it online, such as here: “Untold Stories Lab”. Storytellers United. Accessed September 24, 2023. <https://storytellers.link/events/untoldstorieslab/>.



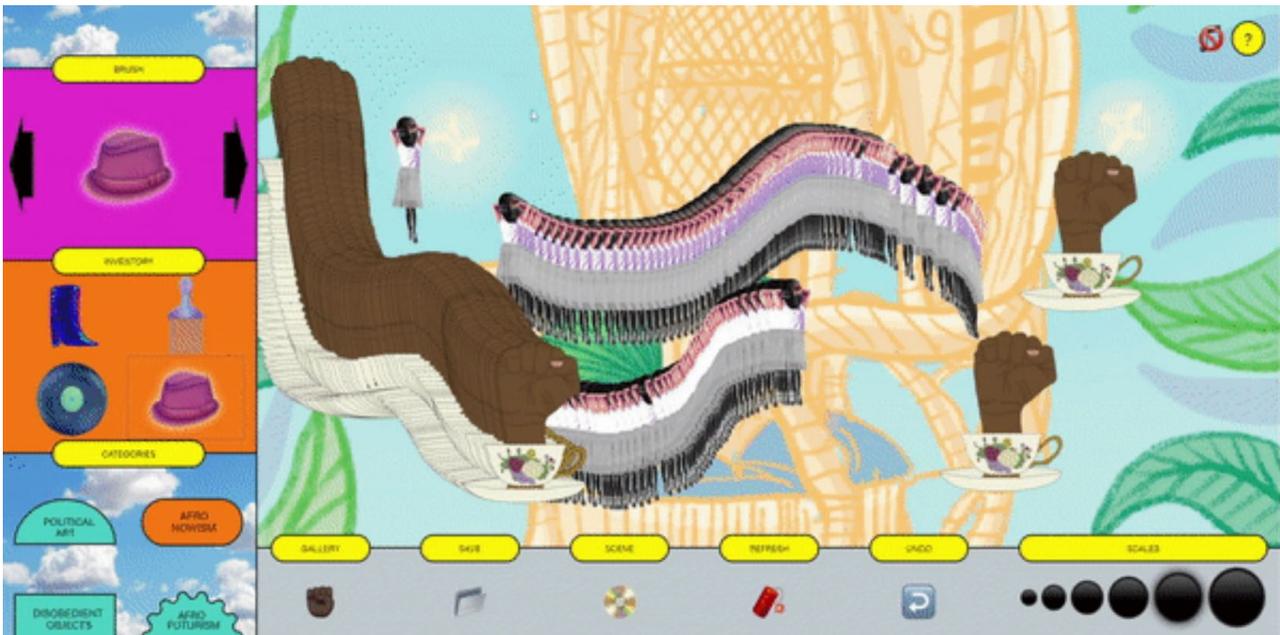
User flow for Untold Stories, in which users pick an archive, select a clip, and choose visual variables for the AI to sort and edit.⁵⁶

Materials for Play

A very exciting but less common form of participatory archiving is to incorporate play and design interfaces that approach materials almost as a game or a toy in addition to being a narrative device and historical object. Temporarily “shaking” the normative notion that archives are serious and boring, this has the potential to engage new audiences. Design studio Comuzi collaborated with Somerset to invent a new interface for their collection to appeal to a younger audience. This resulted in an incredibly playful, creative, and colorful tool called **Decentralise**, with which users can create their own digital artworks from archival objects: “Using these objects as materials, you are able to build your own artistic creations and contribute to the Decentralise archive, exploring how themes from the exhibition archive relate to the personal and collective experiences of what it means to be Black and British.”⁵⁷

56 From “Untold Stories.” <https://preview.untoldstori.es/#/wizard/start>. Previously accessed on May 1, 2023 but looks to now be taken offline as of September 24, 2023.

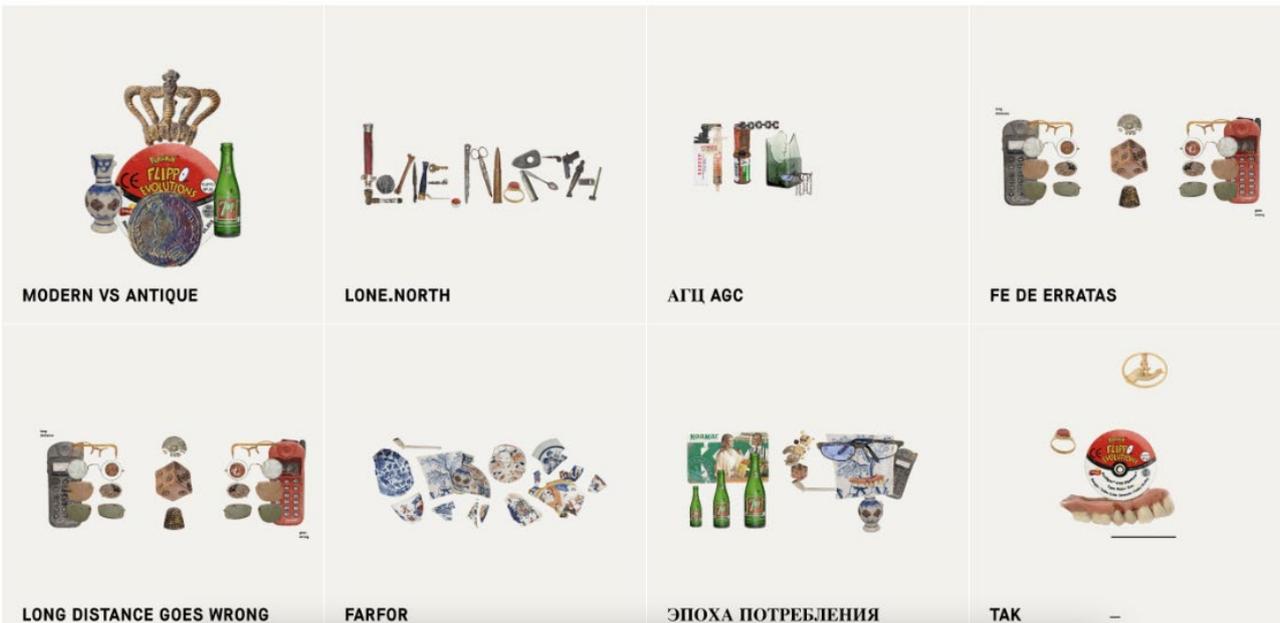
57 You can read more about the conceptualizing and development of Decentralise on Comuzi’s website: <https://www.comuzi.xyz/decentralise>.



The participatory interface of the Decentralise collage tool.⁵⁸

Another fun example is the website **Below the Surface**, which showcases objects found during excavation for a new subway line in Amsterdam. In addition to providing information, a playful collage feature invites visitors to create their own display from the excavated finds. Instead of inviting specific storytelling, users can play, assign their own meaning, and share their creations, bringing awareness to a collection that would otherwise be unlikely to appeal to a general audience. To date, 4,972 displays have been made, demonstrating that people enjoy interactive, playful presentations.

ALL DISPLAYS



Gallery page of Below the Surface, showcasing collages made with the tool.⁵⁹

58 Comuzi. "How Can we Create a Digital Tool that Explores Black British Culture within the Context of Somerset House?" Accessed 24 September, 2023. <https://www.comuzi.xyz/decentralise>.

59 City of Amsterdam. "Below the Surface." Accessed September 24, 2023. <https://belowthesurface.amsterdam/en/vitrines>.

The ideas presented above are varied but all rely on the same ideas of “opening up” the archive, of inviting people to actively participate, and of thinking about the archive as more of an agora for exchange and insight than a static storage space.

Practical Pointers

Opportunities/Values

- Participation in, rather than mere consumption of, archival materials enables deeper engagement and interaction with the materials, allowing users to actively explore and contribute to the archive.
- Participation leads to a richer archive and a more diverse and expansive dataset.
- Archives can acknowledge historical and present-day forms of oppression, fostering a more inclusive representation of voices and perspectives.
- Opening archives up can overcome limited resources by leveraging the collective knowledge and contributions of a broader community.
- Participation from users challenges the limitations imposed by physical constraints and doubles down on the potential of the digital realm.

Challenges/Constraints

While there are significant benefits to opening archives up and making them more participatory, there are also notable challenges to consider:

- Interactive and user-friendly platforms require careful consideration of user experience and navigation and a mindfulness of the complexity of the technology and interface design.
- Technical complexity arises from managing multiple layers of data with varying levels of credibility, source reliability, and display rules.
- Ensuring the accuracy and integrity of user-contributed content requires moderation and fact-checking mechanisms, which can be resource-intensive and time-consuming.
- As the field is still evolving, designing effective and

efficient interfaces for participatory archives lacks well-established best practices.

Conversation-Starting Questions

- How might you allow users to narrate stories by curating subsections of the collection into their own exhibits?
- Where might you invite users to help annotate and contextualize the material?
- Would these kinds of approaches serve the users of your archive?
- What capacity do you have to do this internally?
- What funds do you have available to do this work?

Tools + Software to Explore

- **Slices**, a tool for bringing stories to life from digital archives.
- Mad Libs-style template sheets for visitors to fill in as a simple analog tool that invites participatory input.
- Using hashtags on social platforms to co-curate with your audience.

Additional Resources

- A **case study** (from Coalition for Networked Information) of a crowd-sourced transcription project at Yale, with discussion points on what makes a successful crowd-sourcing project and how to foster community engagement.
- Analog: Data walks as a way of sharing data with communities—**report** from the Urban Institute outlining how to design, plan, and facilitate a data walk. It could be an experience on its own or serve as a prototype for an audio walk.

Conclusion

This research makes a small contribution to a much larger shift in archives seeking to direct their efforts beyond preservation and access to also include discovery, storytelling, and experience. Its findings highlight the enormous and exciting potential that exploratory approaches to archival interfaces, supported by emerging technologies, offer to make archives more engaging and relevant to a broader audience.

Archives are rich sources of interesting content, treasure boxes of stories and lessons of times, places, and people we will never otherwise meet. AV archives lend themselves particularly well to this, but the more linear and fixed approach of traditional search interfaces fails to surface the real creativity, quality and vast potential of archives.

The examples presented in this report stand in stark contrast to the grid-based, search-driven interfaces we are familiar with, and they visualize exciting alternative realities of what archives can be.

To complement the targeted search approach of those with clear research queries and specific desired outcomes, archives can accommodate other users and needs focused on discovery, exploration, storytelling, and inspiration.

Creative interfaces for archival collections offer several advantages that enhance user experiences and expand possibilities. Here are some benefits to consider:

Enhanced Engagement: Creative interfaces provide a visually appealing and immersive experience, capturing users' attention and encouraging deeper engagement with archival materials. By presenting content in innovative ways, they can spark curiosity and captivate users, leading to increased exploration and discovery.

Improved Accessibility: Creative interfaces have the potential to enhance accessibility by incorporating inclusive design principles. They can provide alternative modes of interaction, accommodate different learning styles, and offer features that cater to diverse user needs, making archival collections more accessible to a broader audience.

Richer Contextualization: Creative interfaces allow for the integration of various media types, such as images, audio, video, and textual content, enabling richer contextualization of archival materials. Users can gain a comprehensive understanding of the content by exploring multiple dimensions and perspectives, facilitating deeper insights and interpretations.

Discovery of Hidden Connections: Unconventional interfaces can reveal hidden connections and patterns within archival collections. By presenting information in novel ways or facilitating non-linear

exploration, users may make unexpected discoveries, uncovering valuable insights and forging new research directions.

Enhanced Storytelling: Creative interfaces offer opportunities for dynamic storytelling, allowing users to engage with narratives in interactive and immersive ways. Archival materials can be presented as part of a cohesive narrative, enhancing their impact and enabling users to experience historical or cultural contexts more vividly.

Flexibility and Customization: Creative interfaces often provide customization options, allowing users to personalize their experiences based on their interests and preferences. Users can navigate and interact with archival collections in ways that suit their needs, fostering a sense of ownership and empowerment.

Creative interfaces present some challenges, but their potential to elevate user engagement, accessibility, contextualization, discovery, storytelling, and customization make them valuable tools for unlocking the full potential of archival collections.

That said, potential drawbacks and challenges to consider include:

Complexity: Creative interfaces often introduce complex interactions and visual designs. This complexity can sometimes be overwhelming for users, particularly those who are less technologically savvy or are unfamiliar with unconventional interfaces. It may require additional learning time and effort to navigate and understand the interface.

Accessibility: Innovative interfaces may prioritize aesthetics and unique interactions over accessibility considerations. Certain design choices or interactive elements may pose challenges for individuals with disabilities or those relying on assistive technologies. Ensuring inclusivity and accessibility can be a significant challenge when implementing creative interfaces.

Compatibility: Creative interfaces may have specific hardware or software dependencies, limiting their compatibility with different devices or operating systems. This can restrict access for users who do not have the necessary equipment or technologies to fully engage with the interface.

User Familiarity: Users accustomed to traditional archival interfaces may find it difficult to adapt to new and unconventional designs. Familiarity and ease of use play an important role in user adoption and acceptance. Introducing unfamiliar interfaces may create resistance or reluctance among some users.

Maintenance and Updates: Complex creative interfaces may require regular maintenance and updates to ensure optimal functionality and usability. The need for ongoing support, bug fixes, and compatibility updates can increase the overall maintenance burden for archival collections.

Balancing the advantages and challenges of creative interfaces is crucial to ensure that they enhance user experiences without sacrificing accessibility, usability, and long-term sustainability.

Structural Challenges: Some larger and well-funded institutions are leading in innovation, embracing technological opportunities, and experimenting with new forms of interactions. Due to both resource constraints and other factors, they are the exception to the rule.

The majority of archives face serious structural challenges to adopting new technologies and creative approaches in their digital infrastructure. Many archives are halted by their tech stack, and while legacy record-management software is becoming increasingly outdated and unsuited, the hefty cost of switching and lack of viable alternatives keeps many archives stuck with their old systems. Archives are having real difficulty finding reliable tech suppliers, revealing a market opportunity for technology suppliers that provide creative interfaces for cultural heritage collections. Digital maturity in the archival industry is lagging, marking the need for archival practitioners and institutions to invest in developing better digital literacy. This lack of literacy and lack of in-house technology teams leaves archives deeply reliant on external partners.

While some tech developments can be easily addressed through extensions or add-ons (e.g. an AR filter based on the archive), others (e.g. AI metadata) are more embedded and disruptive to the archival workflow at a more fundamental level. The imminent problems of outdated legacy software are one thing, but the ongoing challenges of a rapidly evolving media industry in which everyone creates and distributes media online and new media formats (such as games and NFTs) spring up are posing difficult questions about what the 21st-century media landscape requires from archives' workflow and tech stack.

This research acknowledges the user experience as one of many challenges and opportunity areas pertaining to digital AV archives in the current moment.

Recommendation Towards Experimentation

While structural challenges must be addressed to encourage the general progress of the archival field, this need not prevent archives from experimenting.

While the ideas presented in this research operate outside the usual modus operandi of archival practitioners and institutions, they can be explored in small, experimental, incremental steps.

Drawing on her work with cultural heritage institutions across the globe, Mariana Lazana offered a suggestion in her interview: it may be more helpful for archives to “think of building experiences as an overlay on the archive, rather than aiming to fully integrate them or

replace existing structures.”⁶⁰ Experimenting with creative approaches outside of and in parallel to the original archive can offer visitors exciting experiences, while archivists can prototype and expand alternative interactions without jeopardizing the stability of the user-targeted queries of search and grid-based interfaces.

“Think of building experiences as an overlay on the archive, rather than aiming to fully integrate them or replace existing structures.”

— Mariana Lazana

Thinking of these creative new interfaces as overlays or experiments changes the dynamic around strategy, resources, and process. Framing something as an experiment shifts our mindset, making it easier to be creative and playful in design. Implementation is more feasible, because interventions are smaller and require fewer resources. Finally, discussions around bureaucracy or a need for structural integration will all become easier with a functional prototype or boundary object present. Experiments can also be scaled down by working with a limited section of the archive or a particular collection or data type within it.

These experiments can be run in-house or in collaboration with external parties, such as creative studios and independent artists and creatives. Initiating these explorations through artist commissions, collaborations, and open calls invites a rich range of potential avenues and can bring the archive to life. For smaller institutions that lack the resources to fund such collaborations, simply making their collection open and attractive for creative reuse (where rights permissions exist)—like Rijks Studio’s annual open call⁶¹ — can serve as a hack to invite similar explorations.

Recommendation Towards Communities of Practice

There is a need to develop (stronger) communities of practice around the topics raised in this research. We hosted various gatherings and focus groups throughout this process, and practitioners at each session stressed the value of meeting with other practitioners and institutions to discuss challenges around specific themes, such as visualization in AV archives. Meeting at in-person conferences and symposia does not always lead to a deep exchange of knowledge or resources (such as talent, processes, and technologies), so fostering active online communities of practice could play a big role in ongoing exchange and collaboration, and in strengthening archives’ creative approaches.

60 Mariana Lazana. Interview by author, May 22, 2023.

61 Rijks Studio. “Create your own Rijksstudio.” Accessed September 24, 2023. <https://www.rijksmuseum.nl/nl/rijksstudio>.

References

Case Studies

Abigail. "Queer Noise." Manchester Digital Media Archive. Accessed 24 September, 2023. https://www.mdmaarchive.co.uk/exhibition/id/77/QUEER_NOISE.html.

AllSides website. Accessed 24 September, 2023. <https://www.allsides.com/unbiased-balanced-news>.

Archival Consciousness. "Biblio-Graph." Accessed September 24, 2023. <https://biblio-graph.org/public/>.

Budapest Retro Interactive Museum. Accessed September 24, 2023. <https://bpretro.com/en>.

Casa do Povo. "Active Voice: Social Library Mariana Lanari." Accessed 24 September, 2023. <https://casadopovo.org.br/en/voz-ativa-biblioteca-social/>.

City of Amsterdam. "Below the Surface." Accessed September 24, 2023. <https://belowthesurface.amsterdam/en/vitrines>.

De Appel Amsterdam. "Catching Up in the Archive, Maria Lanari." Accessed 24 September, 2023. <https://www.deappel.nl/nl/events/2563-catching-up-in-the-archive-with-mariana-lanari>.

EuropeanaTech Insight. "Issue 11: Generous Interfaces." Last updated March 18, 2020. <https://pro.europeana.eu/page/issue-11-generous-interfaces>.

Eye. "Meet the Archive: First Robot Filmmaker." Accessed 24 September, 2023. <https://www.eyefilm.nl/en/whats-on/meet-the-archive-first-robot-filmmaker/270302>.

"Fair Principles." GoFair. Accessed 24 September, 2023. <https://www.go-fair.org/fair-principles/>.

Film website. Accessed 24 September, 2023. <https://beta.film.ai/?p=2>.

"Freefall." Google Arts & Culture. Accessed September 24, 2023. <https://artsexperiments.withgoogle.com/freefall/>.

"Gucci Art Space." Gucci. Accessed September 24, 2023. <https://artspace.gucci.com/>.

International Documentary Film Festival Amsterdam. "Non-Aligned Newsreels: Fragments #2, by Mila Turajlic." Accessed 24 September, 2023. <https://www.idfa.nl/en/film/e4e460ff-5d11-4662-8562-45f9f7f4c71b/non-aligned-newsreels-fragments-2-new-voices-from-the-summit/>.

"Javastraat.cloud." Centre for Urban Studies, University of Amsterdam. Accessed September 24, 2023. <https://javastraat.cloud/>

Kaspar home page. Accessed 24 September, 2023. <https://www.kasparai.com/>.

LaRochelle, Lucas. "Queering the Map." Accessed 24 September, 2023. <https://www.queeringthemap.com/>.

"Late Hokusai." Accessed 24 September, 2023. <https://latehokusai.researchspace.org/resource/rsp:Start>.

McDonald, Kyle. "Exhausting a Crowd." Accessed 24 September, 2023. <https://www.exhaustingacrowd.com/>.

Mollica, Jay. "Send me SFMOMA." SFMOMA, June 2017. Accessed September 24, 2023. Acc <https://www.sfmoma.org/read/send-me-sfmoma/>.

"Move Mirror." Experiments with Google. <https://experiments.withgoogle.com/move-mirror>.

"Open Archief." 3 x institutions. Accessed 24 September, 2023. <https://www.openarchief.com/>.

National Film and Sound Archive of Australia. Accessed 24 September, 2023. <https://www.nfsa.gov.au/>.

National Gallery. "Curate Your Own Art Collection as a Keeper of Paintings." Press release, July 2022. Accessed September 24, 2023. <https://www.nationalgallery.org.uk/about-us/press-and-media/press-releases/curate-your-own-art-collection-as-a-keeper-of-paintings-national-gallery-creates-immersive-experience-for-families-on-roblox>.

National Library of Australia. "Trove." Accessed 24 September, 2023. <https://trove.nla.gov.au/>.

Nieuwe Instituut. "The Future through Artificial Eyes." Accessed 24 September, 2023. <https://nieuweinstituut.nl/en/projects/tegenlicht>.

NTR Publieke Omroeporganisatie. Het Water Komt [app]. Apple App Store. Accessed September 24, 2023. <https://apps.apple.com/nl/app/het-water-komt/id6444627056>.

Olesen, Christian. "SEMIA Artist Projects and Alien Visions (Pablo N. Palma & Bram Loogman, 2020)." The Sensory Moving Image Archive, May 17, 2020. <https://sensorymovingimagearchive.humanities.uva.nl/>.

"Past Visions." Urban Complexity Lab, Potsdam University of Applied Sciences. Accessed September 24, 2023. <https://uclab.fh-potsdam.de/fw4/en/>.

Photographers' Gallery. "Screen Walks." <https://thephotographers-gallery.org.uk/photography-culture/screen-walks>.

Pilka, Lukas. "Digital Curator." <https://digitalcurator.art/aboutproject>.

"Public Access Digital Media Archive." Accessed 24 September, 2023. <https://pad.ma/home>.

Rodighiero, Dario. "Surprise Machines for Harvard Art Museums." Accessed 24 September, 2023. <https://darioodighiero.com/Surprise-Machines>.

Schema Design Studio. "Visualizing Collections Using Generous Interfaces." June 2, 2019. Accessed September 24, 2023. <https://medium.com/schemadesignstudio/gist-visualizing-collections-using-generous-interfaces-b9da44341c66>.

Schultz, Derrick & Tim Moore. Scream Scenes. Accessed 24 September, 2023. <http://screamscenes.com/>.

Somerset House. "A Decentralised Archive." Accessed 24 September, 2023. <https://decentralise.somersetthouse.org.uk/>.

"SOOT." Accessed September 24, 2023. <https://soot.com/>.

Spaan, Bert & The Sensory Moving Image Archive (SEMIA). Accessed 24 September, 2023. "The Sensory Moving Image Archive." <https://bertspan.nl/semia/#/>.

suslib. "Autonomous Libraries." Accessed 24 September, 2023. <https://suslib.com/research/autonomous-libraries/>.

VPRO. "Archief van de Toekomst." Accessed 24 September, 2023. <https://www.vpro.nl/programmas/tegenlicht/kijk/archief-van-de-toekomst.html>.

UNSW Library. "Unstacked." Accessed September 24, 2023. <https://exhibitions.library.unsw.edu.au/unstacked>.

"Untold Stories Lab". Storytellers United. Accessed September 24, 2023. <https://storytellers.link/events/untoldstorieslab/>.

"X Degrees of Separation." Google Arts & Culture. Accessed September 24, 2023. https://artsexperiments.withgoogle.com/xddegrees/8gHu5Z5RF4BsNg/BgHD_Fxb-V_K3A.

Zawacki, Selina Chang-Yi & Sarah Waldorf. "How to Build an Art Museum in Animal Crossing." Getty, April 16, 2020. Accessed September 24, 2023. <https://www.getty.edu/news/how-to-build-an-art-museum-in-animal-crossing/>.

Tools/Software to Explore

AR Code. Accessed September 24, 2023. <https://ar-code.com/>.

Archival Consciousness. Biblio-Graph website. Accessed September 24, 2023. <https://biblio-graph.org/public/>.

Artivive. Accessed September 24, 2023. <https://artivive.com/>.

Digital Humanities Lab, Yale University. "PixPlot." Accessed 24 September, 2023. <https://dhlab.yale.edu/projects/pixplot/>.

Fuchsgruber, Lukas. "Luna Nane, Isa Teichmann: Art Doc Viz – Interactive Visualization of Artist Documentation." Hypotheses, updated July 13, 2023. Accessed September 24, 2023. <https://reclaim.hypotheses.org/1054>.

Google. "Tab Maker." Accessed September 24, 2023. <https://tabmaker.withgoogle.com/>.

Krautli, Florian. "Timeline Tools." Accessed 24 September, 2023. <http://www.kraeutli.com/index.php/2016/04/08/timeline-tools/>.

Overly. Accessed September 24, 2023. <https://overlyapp.com/>.

ResearchSpace. "What Is a Knowledge Graph?" Accessed 24 September, 2023. <https://researchspace.org/knowledge-graph-and-patterns/>.

Schema Design Studio. Gist website. Accessed 24 September, 2023. <https://www.gistapp.com/>.

Schema Design Studio. "Visualizing Collections Using Generous Interfaces." June 2, 2019. Accessed September 24, 2023. <https://medium.com/schemadesignstudio/gist-visualizing-collections-using-generous-interfaces-b9da44341c66>.

Slices. "Your Archive Brought to Light." Accessed September 24, 2023. <https://slices.co/solutions/archives>.

Additional Resources

Albrecht, Kim. "Watching Machines Loving Grace." Accessed September 24, 2023. <https://watching-machines.kimalbrecht.com/>.

Colavizza, Giovanni, Tobias Blanke, Charles Jeurgens, and Julia Noordegraaf. "Archives and AI: An Overview of Current Debates and Future Perspectives." *Journal on Computing and Cultural Heritage* 15, no. 1 (February 2022): 1–15. <https://doi.org/10.1145/3479010>.

"AI in Relation to GLAMs." EuropeanaTech Insight, last updated March 18, 2020. Accessed September 24, 2023. <https://pro.europeana.eu/project/ai-in-relation-to-glams>.

Haskiya, David. "An Evaluation of Generous Interfaces." EuropeanaTech Insight, last updated March 18, 2020. Accessed September 24, 2023. <https://pro.europeana.eu/page/issue-11-generous-interfaces#an-evaluation-of-generous-interfaces>.

Jaillant, Lise, ed. *Archives, Access & Artificial Intelligence: Working with Born-Digital and Digitized Archival Collections*. Digital Humanities Research vol. 2. Bielefeld, Germany: Bielefeld University Press. Accessed September 24, 2023. <https://library.open.org/bitstream/ndle/20.500.12657/54299/9783839455845.pdf?sequence=1&isAllowed=y>.

King, Lindsay and Peter Leonard. "Crowdsourcing Theater History Metadata from the Archives." Coalition for Networked Information. Accessed September 24, 2023. https://www.cni.org/wp-content/uploads/2017/01/CNI_Crowdsourcing_Leonard.pdf.

Murray, Brittany, Elsa Falkenburger, and Priya Saxena. "Data Walks: An Innovative Way to Share Data with Communities." Accessed September 24, 2023. <https://www.liprc.org/wp-content/uploads/2023/08/2000510-data-walks-an-innovative-way-to-share-data-with-communities.pdf>.

Pilka, Lukas. "Digital Curator website." Accessed September 24, 2023. <https://digitalcurator.art/aboutproject>.

Ruggeri, Giorgio & Simone Ellero. Open History Archive website. Accessed September 24, 2023. <https://www.openhistoryarchive.com/>.

Steinbruck, Alexa. "On the Modes of Representation of AI and How to Teach it." Interview by Francis Hunger. *Training the Archive*, March 31, 2023. Accessed September 24, 2023. <https://trainingthearchive.ludwigforum.de/en/interview-8-en/>.

Stevenson, Jane. "Machine Learning with Archive Collections." *Archives Hub*, February 28, 2022. Accessed September 24, 2023. <https://blog.archiveshub.jisc.ac.uk/2022/02/28/machine-learning-with-archive-collections/>.

suslib. "Autonomous Libraries." Accessed September 24, 2023. <https://suslib.com/research/autonomous-libraries/>.

Appendix I: Methodology, Performed Research Activities, & Avenues for Future Research

The research employed a variety of methodologies to ensure comprehensive data collection and analysis. These methodologies included case studies, qualitative interviews, generative working sessions, desk research, initial input from a selection of VUC members, and guidance from a peer review board.

The research project adopted a case study approach, examining various projects from within and beyond cultural heritage institutions that embrace creative exploration in their collection interfaces. Detailed descriptions, analyses, and reflections on these examples served as the primary/leading methodology throughout the research.

The case studies were collected through various means, including desk research, existing references, interview inputs, online curations from other researchers (such as Philo van Kemenade's are.na board on Generous Interfaces, and a presentation by **SEMIA**), and an **open call** for input shared with the researcher's and organizations' networks, such as FIAT/IFTA, IASA, AMIA, SEAPAVAA, etc. Over 20 case studies were submitted. The selection process considered the availability of project information, online accessibility, and alignment with the selected themes.

One notable limitation of this study is the researcher's status as an outsider to the industry under investigation. While this perspective allowed for a fresh analysis of the subject matter, it also introduced potential bias due to a lack of in-depth familiarity with the intricacies, nuances, and internal dynamics of the archival field. The researcher's status as an outsider may have influenced the interpretation of findings and the depth of insights gathered from participants. However, this perspective was also advantageous, as it prevented preconceived notions from coloring the analysis.

While efforts were made to collect case studies globally, there was a limitation in obtaining a diverse range of examples, resulting in an overemphasis on cases from Europe, the USA, and Australia, leading to an incomplete and Eurocentric depiction of the archival landscape. Due to the challenges and limited time and resources, the geographical spread of the case studies is not as globally diverse as intended and desired. Moreover, a bias towards larger and well-funded institutions was inadvertently introduced due to the accessibility of comprehensive case study documentation. This bias may have skewed the analysis and prevented a holistic representation of archival practice, neglecting the unique practices of smaller and less-documented entities.

Collected case studies were intuitively clustered around similar ideas. These clusters, along with insights from interviews and validation from the peer review board, led us to arrive at four themes that provide the narrative framework for the report.

Semi-structured qualitative interviews were conducted to gather insights from creative practitioners involved with archives. A sample of four individuals was selected based on the researcher's personal interests and the interviewees' unique approach to archive-related work outside of traditional archival contexts. These exploratory interviews aimed to expand the conceptualizations of archives and collect interesting case studies. The interviewees were Mariana Lanari (**Archival Consciousness**), Simon Browne (**Varia**), Bert Spaan (**AllMaps**), and Lukas Pilka.

The research incorporated exploratory desk research and a literature review of existing papers, blogs, and relevant resources related to the research topics to provide a broad understanding of the subject matter.

The researcher developed and ran an online working session with FIAT/IFTA's VUC early in the research (March 9, 2023) to test initial thoughts and receive input/feedback from the FIAT/IFTA community.

Additionally, a focus group was conducted (July 28, 2023) with a sample of five individual archival practitioners who responded to an open call for participation across the networks of the commissioning organizations. The key objective of this session was to gain an understanding of archivists' day-to-day realities and ensure the research findings and presentation aligned with their context and provided value to them. The attendees were Maarten Brinkerink, Elsa Garzón, Annella Mendoza, Dave Lewis, and Ilse Assmann.

The researcher met three times (on May 9, June 22, September 14) with a Peer Review Team of experts in the archival field, first to offer initial insights on the topic, followed by 2 sessions to offer feedback on report drafts. The Peer Review Team played a crucial role in providing feedback on the research direction, validating relevant themes, and proofreading drafts of the report. Their expertise and insights were invaluable, particularly regarding structure, content, and cross-checking against the cultural heritage industry.

The Peer Review Team consisted of Elsa Garzón, Dale Grayson, Jaime Silva, Johan Oomen, Louise Broch, Maja Drabczyk, and Philo van Kemenade, with coordination and input from Rachel Somers Miles.

It is important to note that the scope of the research project was bounded by constraints of time and resources, resulting in a surface-level exploration of the topic. Consequently, certain aspects of the industry and its practices may not have been fully uncovered

or comprehensively examined. A more extended timeframe would allow for a more in-depth investigation, facilitating a deeper understanding of the complexities in the industry.

In conclusion, while this research contributes valuable insights and, especially, inspiration into the archival industry, it is essential to recognize its limitations. These limitations provide context for the interpretation of the results and offer avenues for future research, resulting in a more comprehensive and accurate understanding of the space.

With the above in mind, avenues for future research (some of which have of course already been taken up elsewhere) could include:

- Auditing the landscape of tech partners for cultural heritage institutions
- Adaptable tools for archives
- Copyright around community archives and user contributions to existing collections
- Developing sensitive approaches to using AI metadata for indexing collections
- Open-source tools and tech for building generous interfaces
- Participatory practices online: crowd annotation and users' curations
- Subjectivity in the archive: polyvocality and the validity of plural perspectives
- Practical implementation of any of the four identified themes
- Lean research & development for cultural heritage institutions
- Onboarding best practices for new users in archival interfaces

Appendix II: Peer Review Team

Elsa Garzón

(Quinta de Bolivar Museum, Colombia)

Elsa Garzón is a historian from the Javeriana University (Colombia) who specializes in Public Management. She has an MA in Visual Culture from The University of Nottingham (UK). She worked as Research Leader at Señal Memoria, the Colombian Public Media Archive, and led many projects aimed at disclosing the research results from documentary films and books. Currently, she is the chief curator at the Quinta de Bolivar Museum, in Bogotá (Colombia).

Dale Grayson

(All3Media Group and Northbound TV, UK)

Dale is joint Head of Rights and Policy for the All3Media Group. He chairs the Royal Television Society's Archives group, is a Trustee of the Yorkshire and North East Film Archives, and is Chair-elect of the International Federation of Television Archives' Value Use and Copyright Commission.

Jaime Silva C.

(Señal Memoria, Columbia)

Jaime Silva C. is a historian with a Master's degree in history from the Javeriana University. He has specialized in governance, human rights and the culture of peace at the University of Castilla - La Mancha, as well as narrative creation at the Central University. With experience and focus in public policy around memory reconstruction, pedagogical tools, consulting and advice on the management of cultural strategic plans, and historical and heritage management of archives, he has been the Director of Señal Memoria since 2018.

Johan Oomen

(Sound & Vision, The Netherlands)

Johan works at the Netherlands Institute for Sound & Vision as manager of the Department of Research and Heritage. He is a researcher at the User-Centric Data Science research group at Vrije Universiteit and is secretary of the PublicSpaces foundation, co-initiator of the Culture and Media workgroup in the National AI Coalition and chairperson of the EUscreen Foundation. He is a member of the National Heritage Research Council and the advisory board of the Europeana Foundation.

Louise Broch

(DR Danish Broadcasting Corporation, Denmark)

Louise has more than 20 years of experience doing research and archiving at DR. She is a researcher in a cross-media task force that helps DR producers/journalists with TV, radio, and text research. She also works with the curation of archival materials on different platforms intended for end users. She has been a member of the FIAT/IFTA VUC commission since 2018.

Maria Drabczyk

(Centrum Cyfrowe, Poland)

Maria is chair of the board and head of policy and advocacy at Centrum Cyfrowe. She is a sociologist, researcher, and manager of cultural projects in the field of heritage and new technologies. She is a board member of the EUscreen Foundation, member of the Europeana Association Members Council, and the inaugural Chair of the FIAT/IFTA Value, Use and Copyright Commission (active until 2023).

Philo van Kemenade

(Sound & Vision, The Netherlands)

Philo van Kemenade creates tools, stories and things to amplify human connection with arts and culture. He co-founded the digital arts & culture festival Sensorium and is initiator of the Storytellers United network. During his time at the Netherlands Institute for Sound & Vision he focused on innovative user interfaces for its audiovisual collection. Currently, he works as senior front-end developer at the data design & technology consultancy Clever Franke.



audiovisual
research
alliance
for archivists &
cultural heritage
professionals

Beyond Search: Exploring Creative
Approaches to Interfacing with Cultural
Heritage Collections (A Case Study
Analysis)

avra #2
October 2023
<https://doi.org/10.18146/avra2>

For more info:
www.beeldengeluid.nl/avresearchalliance