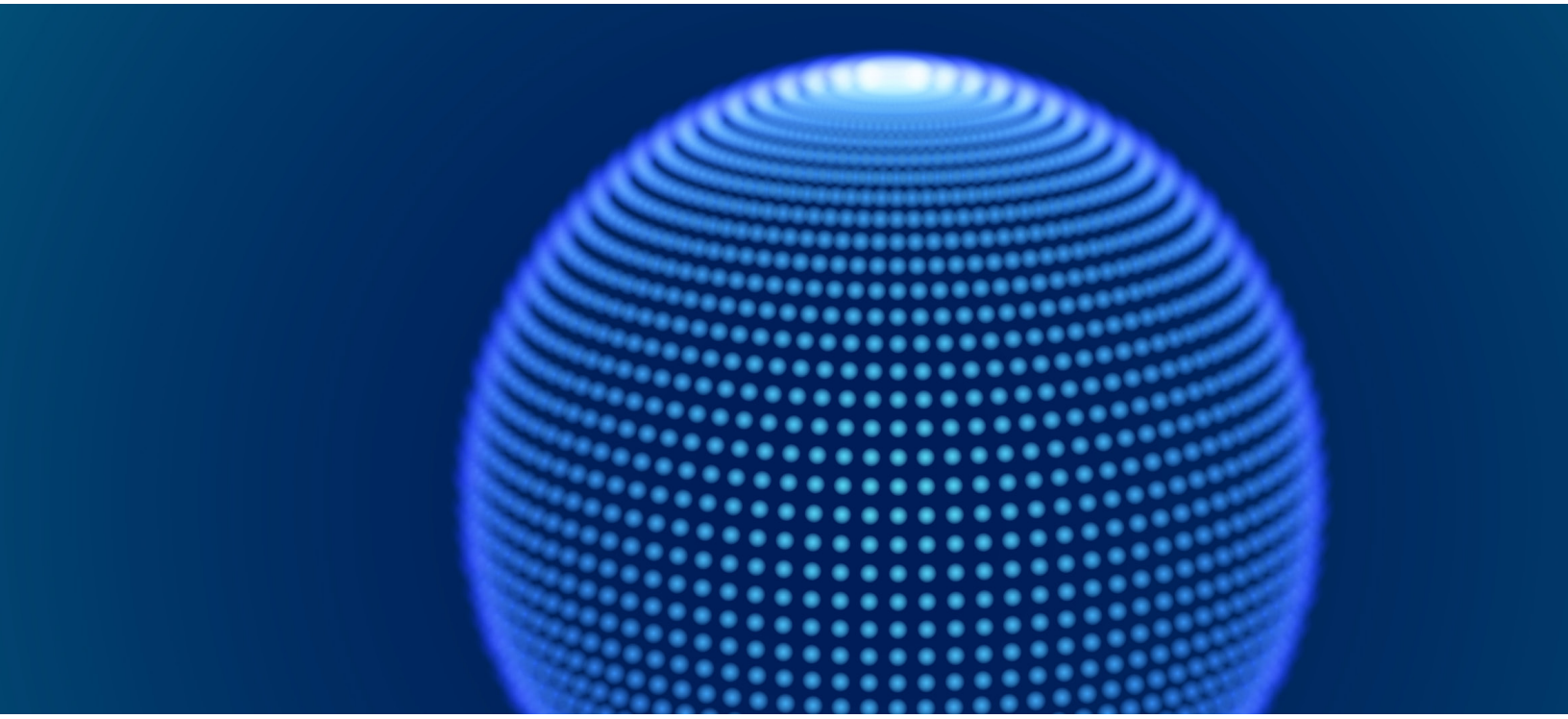
Modeling Sustainable Futures

Proposing a Risk Assessment and Harm Reduction Model for Community-Based Archives Using Decentralized Digital Storage



A Shift Collective Report | **December 2023**

SHIFT Collective
equity by design

historypin

Filecoin Foundation for the Decentralized Web

Contents

1. Executive Summary

Community-based archives hold vital materials documenting the lives of historically marginalized people while mostly existing outside of the bureaucratic and governance structures of more traditional academic or government-run cultural heritage institutions. Unfortunately, this usually also means existing outside of resource streams that benefit more traditional institutions. While we continue to collect and preserve these histories, many of us face difficulties growing our operations, keeping our doors open, and enhancing our programming.

This project explores the ethical, cultural, and technical needs for small cultural memory organizations who steward uniquely important historical collections for communities around the world. More specifically, this project will focus on long-term preservation and storage, and explore how a decentralized storage network might offer a viable solution for the tens of thousands of these diverse organizations. Our goal is to design and test an early prototype for community-centered, non-extractive, affordable, and accessible long-term decentralized digital storage, using Historypin as the use case and front-end interface. While this research is in some ways specific to this project, we hope this guide will benefit community-based archives considering the use of decentralized storage or other technologies to carry out their work to preserve uniquely important and endangered collections.

We see opportunities in this technology to offer a potential solution to the growing digital storage needs of community-based archives. We also seek to put the needs of communities that have been historically marginalized at the center of use cases and efforts of ethical design. Many individuals and communities have been left behind in technological divides, and worse: directly harmed by technologies that may have seemed universally beneficial to humanity, only to be co-opted by agents of state-sponsored surveillance and violence, and to be appropriated and sold. We approach this endeavor with great caution.

If community-based archives are going to design, test and utilize decentralized storage solutions, we must first define what it means to be a part of a trusted network, in real life. While the technology presents the possibility of a “trustless” information network—meaning the digital materials submitted cannot be altered and all actions are recorded, therefore third party trust is not necessary—it still must reside for us within the context of our community realities, and that will always require systems of trust. We’ve mapped out our own community and ethical considerations that inform our approach to decentralized technology.

Based on the needs of our different communities, we have identified what we call harm reduction design requirements for technical development. We’ve developed these principles for this specific project, but believe they can be applied more generally to other projects seeking to center community-based archives as well. These principles will guide us in drafting the technical specifications for the prototype development phase we move into in year two of the project.

This project focuses on the long-term preservation and storage needs of small cultural memory organizations who steward uniquely important historical collections for communities around the world.

2. Introduction

This document serves as a guide for community-based archives to assess risks before utilizing decentralized digital storage for archival collections, as well as reduce potential harms from such use. Additionally, this document serves as guidance for institutions, community-based archives, and users as they engage with this technology and each other. While no platform developed and maintained by corporations or other institutions can ever operate completely outside of existing power relations and histories of violent dispossession, this document aims to provide a path for community-based archives who are new to technologies like blockchain and the decentralized web a means of assessing the value of adoption within such inequitable contexts.

As technologies continue to evolve, it is imperative that community-based archives engage with and inform the development of these ecosystems. If these organizations do not have input in the early stages of implementation and adoption, they may end up dependent on technological systems that at best are insufficient for, or worse, antagonistic to, their needs. This document should be viewed as a map for navigating the use of blockchain and decentralized technology to benefit marginalized communities for whom these same technologies may increase threats and vulnerabilities.

The following information is offered to support the development of strategic uses or refusals of blockchain and decentralized technologies in memory work and to reduce harm for organizations and communities represented by community-based archives while engaging with these technologies and associated institutions. This document is meant to be a dynamic guide, one that is subject to periodic review and adaptation, with the overarching goal of fostering ethical and sustainable community-based archival practice. The intention of this document is to reinforce the commitment to documenting the voices, histories, and cultures of marginalized communities while minimizing potential harm and maximizing access and engagement.

As technologies continue to evolve, it is imperative that community-based archives engage with and inform the development of decentralized digital storage systems.

While concerns about protection, privacy, and harm are both shared and reoccurring, we all have varying relationships to power, resources, and histories of violence. As such, we encourage that a range of frameworks, informed by the communities we document, work with, and care for, are employed to determine which considerations are most appropriate to apply and that potential users consider both the risks and benefits of engaging in such a platform.

3. Defining Community-Based Archives

There are a myriad of definitions of community-based archives.[1] For this document, community-based archives are defined as grassroots initiatives that aim to preserve, document, and share the history and cultural memory of marginalized groups. These archives are established and maintained by the communities themselves, rather than by traditional institutions such as museums, universities, or government organizations–although there may be significant partnerships between community-based archives and larger institutions. These organizations play a critical role in addressing historical gaps, amplifying marginalized voices, and challenging incomplete dominant narratives. They act as memory keepers and generational storytellers within and outside of their communities. Additionally, these archives often save materials and knowledge that is endangered due to being targeted by state violence, historical erasure, or intentional destruction of records.[2]

At the heart of community-based archives is the idea of self-determination and empowerment. These initiatives arise from a need to reclaim and assert agency and control over the historical narratives of communities that have been overlooked, marginalized, or outright erased by mainstream institutions. By actively involving and centering community members in archival practices, these archives ensure that the history and experiences of these groups are more accurately represented, validated, protected, and celebrated.

Community-based archives are founded on their commitment to fostering accessibility, equity, and care. They strive to overcome barriers that historically marginalized groups face when accessing archives, such as language, physical accessibility, or limited resources. Community-based archives often employ strategies like digitization, translation, transcription, and community outreach programs to ensure that the historical materials are widely accessible to community members, researchers, and the general public.

These archives also play a vital role in fostering intergenerational connections and knowledge transmission within marginalized communities. By collecting and preserving the stories, traditions, and cultural practices of older generations, community-based archives enable younger members to learn about their heritage, understand the struggles and triumphs of their ancestors, and strengthen their cultural identity.

We acknowledge that there are many definitions for what constitutes community-based archives. Likewise, the partners that helped author this guide also identify in ways that are situated in intersecting and asymmetrical relations to power and privilege. These varying ways of knowing ourselves and experiencing the world match the different ways we understand what community-based archives are and what our ethical practices can be. Despite the differences, our partners are all bound together by a persistent desire to improve conditions of living for themselves and those they love. They enter this labor as memory workers documenting and sharing the histories and cultures of specific communities and/or subject matter.

---

[1] Diversifying the Digital Historical Record, Michelle Caswell, Christopher Harter, Bergis Jules, D-Lib Magazine, Volume 23, No. 5/6, 2017. http://www.dlib.org/dlib/may17/caswell/05caswell.html, Shift Collective, 2019, Architecting Sustainable Futures: Exploring Funding Models in Community-Based Archives, https://architectingsustainablefutures.org/reporthttps://architectingsustainablefutures.org/report, We Already Are, Yusef Omowale, Sustainable Futures, 2018. https://medium.com/community-archives/we-already-are-52438b863e31

[2] Solis, G., (201). Documenting State Violence: (Symbolic) Annihilation & Archives of Survival. KULA: knowledge creation, dissemination, and preservation Studies 2(1): 7. DOI:https://doi.org/10.5334/kula.28

4.
Defining the (Digital Storage) Problem

Community-based archives are increasingly integrating born digital materials into their collections and growing the number of items that are digitized to facilitate increased public access, but at the same time these archives continue to face significant funding shortfalls[3] that limits their access to long term digital storage technology,[4] which in turn hinders future growth of digital collections. As born digital materials, and digitization practices increase, identifying ethical and accessible solutions for digital storage needs for community-based archives that typically have limited technology infrastructure and expertise is an urgent concern. In addition to unstable financial budgets and lack of physical storage space, these archives face other issues that make stewarding digital collections more challenging, including increasing attacks by the state and other political attacks on the content of their collections, and sensitive materials that require additional safety measures. Additionally, these community-based archives desire greater control of their collections in response to histories of extraction, erasure, and exploitation. In the future, community-based archives will need user-friendly, safe, affordable and sustainable solutions for the digital storage of their cultural assets.

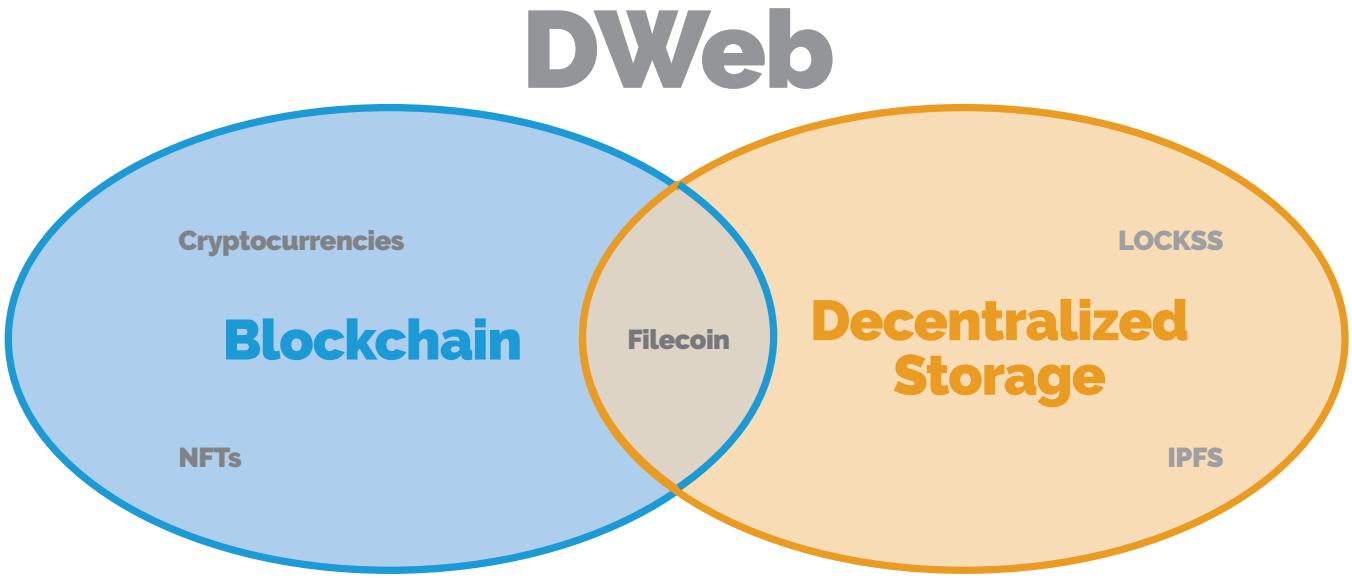
[3] Shift Collective. (2019). Architecting Sustainable Futures: Exploring Funding Models in Community-Based Archives, https://architectingsustainablefutures.org/report

[4] Shift Collective. (2022). Increasing discovery of archives: A project to provide better pathways to archival records in cultural heritage collections. UC Office of the President: California Digital Library. Retrieved from https://escholarship.org/uc/item/0kd7d5m0

5.
Defining Decentralized Web, Blockchain, and Decentralized Storage

If community-based archives attempt to use decentralized storage to carry out their work, it is essential that they have a basic understanding of the underlying technology, the political and social history of the development of this technology, and some of its current uses related and unrelated to archives. Knowledge of this technology and how it works is useful for explaining to the communities you serve; how the materials they entrust to your archive is being stewarded in these new ways.

Blockchain, Decentralized Web (DWeb or Web3), and decentralized storage can be confusing concepts for people working outside of spaces where terms defining new technology are frequently used. Additionally, these terms are used in a combination of ways that confirm the fact that they are anything but established ideas and have universally accepted meanings. The idea of decentralization itself is complicated and has different meanings in various cultural and social contexts including politics, computing, and community engagement.[5] But the most common use of the concept of decentralization in contemporary tech culture is in relation to how the internet can be used differently for all kinds of activities such as finance, social networking, and user privacy and safety.[6]



[5] Schneider, N., (2019) Decentralization: an incomplete ambition, Journal of Cultural Economy, 12:4, 265-285, DOI: 10.1080/17530350.2019.1589553

[6] Stackpole, T., (2022) What is Web3. https://hbr.org/2022/05/what-is-Web3?ab=seriesnav-bigidea. Accessed November 8th, 2023.

The Decentralized Web (aka DWeb aka Web3)

Also often referred to as DWeb or Web3, the Decentralized Web is the product of a technological movement that aims to distribute the internet (including data and applications) across a network of connected devices as opposed to large, centrally controlled entities.[7] These phrases are often used interchangeably, and can refer either to a paradigm shift in the way the internet can be used, or as an umbrella term to encompass specific technologies we describe below.

This new vision of the World Wide Web differs from early iterations–Web1 was largely a publishing platform, or read-only web, and Web2 was a massive shift starting in the early 2000s marked most notably by the prominence of social media and user-generated content, or a read/write network. One of the other key defining features of the evolution of the Web up until now is the centralization of ownership by a small number of massive technologies. While the ubiquity of the internet has changed how society works in many fundamental ways–like increased collaboration, disruption and evolution of entire business models like the music industry, and increased access to information–there has also been an explosion of centralization and wealth inequality on a massive scale. The perhaps utopian vision and hope for Web3 is that this new paradigm offers an opportunity to return to a more egalitarian and equitable World Wide Web that is *not* controlled by a small number of corporations and individuals.

Blockchain Technology

The main underlying technology of this new Decentralized Web is called blockchain, *a record of the transactions* within a database that is decentralized, meaning instead of being hosted on a single computer, the database is hosted by a network of servers that can communicate with each other. The idea being that this distribution of hosts makes the technology less vulnerable to failure or data loss because there is not a single point of failure.

Decentralized blockchain technology, when applied to digital archives, presents an emerging system for storing and sharing information. Decentralization means that data is not owned or controlled by a single entity but is instead distributed across a network of individual computer nodes. These nodes collaborate to verify and record transactions in a ledger using complex mathematical puzzles. Each new block of information in the blockchain is timestamped and given a unique code, ensuring the immutability and security of the ledger.

This technology allows for the simultaneous sharing of information across the network, promoting trustworthiness, and reducing the risk of fraud. Importantly, it eliminates the need for a central authority to validate or authenticate information, relying instead on computer algorithms and multiple users. By creating a trustless system that does not require a central trusted authority, the idea is that you can create increasingly complex transactions while also removing intermediaries, be they banks, governments, or university libraries. Once a transaction is recorded on the blockchain, it becomes permanent and irremovable, resulting in an immutable and time-stamped record.

There is the potential for utilizing blockchain technology to provide an important element of authentication, provenance, and ownership of various forms of media, particularly with the rising prevalence of AI-generated or modified misinformation. We see great value in the possibility of proving authenticity[8] and ownership of media related to the history of our communities, or in the crowd-sourcing of media related to our communities that we work to preserve and archive.

[7] What is the Decentralized Web, https://github.com/CaravanStudios/PublicGoodAppHouse/blob/main/AcceleratingMakers/DwebExplainers/WhatIsTheDecentralizedWeb.md

[8] C2PA Specifications https://c2pa.org/specifications/specifications/1.4/

Three primary concepts to understand about this technology are:

IMMUTABILITY

Items uploaded to this system cannot be edited, deleted, nor altered in any way.

PERMANENCE

Items uploaded to this system are permanent and cannot be removed from the system in any way.

TRANSPARENCY

Items uploaded to this system have a means in which users can trace wherein the materials originated which cannot be altered in any way.

Decentralized Storage Technology

Relatedly, the idea of decentralized storage follows this same concept of decentralization. That is, instead of hosting a single piece of digital content on a single server, where if that server fails then the piece of digital content is lost, copies of this piece of digital content, for example a digital photograph, is hosted on several different servers, so that if one server goes down then that photograph is not lost forever.

Filecoin is an example of a peer-to-peer network utilizing blockchain technology that stores files, with built-in economic incentives and cryptography to ensure files are stored reliably over time. Archives like the Shoah Foundation and the Internet Archive are leveraging Filecoin to backup their contents.[9]

There are other decentralization technologies and protocols that are not necessarily dependent on blockchain, and may allow for decentralized storage without the requirement of immutability.

For instance, many decentralized storage platforms, including Filecoin, utilize or are built upon the **InterPlanetary File System (IPFS)**, a peer-to-peer (P2P) distributed file system that seeks to connect all computing devices with the same system of files.[10] As a distributed file storage protocol, IPFS allows computers all over the globe to store and serve files as part of a giant peer-to-peer network. Any computer, anywhere in the world, can download the IPFS software and start hosting and serving files.[11] This decentralized storage technology is a strong candidate for creating a limited trusted network of cultural memory institutions to provide affordable long-term digital storage to Historypin in the pilot phases.

Another, much older, decentralized storage technology was originally developed at Stanford Libraries in 1999, called **Lots of Copies Keeps Stuff Safe (LOCKSS).** LOCKSS is a "general-purpose digital preservation technology and solutions provider," as well as "a research-based, open-source software application providing for robust, peer-to-peer digital preservation," as well as a collection of institutions and networks using the software.[12]

[9] From What Is Filecoin? https://docs.filecoin.io/basics/what-is-filecoin. Accessed December 11, 2023.

[10] Legault, M. (2021). A Practitioner's View on Distributed Storage Systems: Overview, challenges and potential solutions. Technology Innovation Management Review, 32–41. https://doi.org/10.22215/timreview/1448

[11] From Cloudflare Developer Documentation, https://developers.cloudflare.com/web3/ipfs-gateway/concepts/ipfs/. Accessed December 11, 2023.

[12] From What is LOCKSS. https://www.lockss.org/about/what-lockss. Accessed December 11, 2023.

6. Risks

Scott Smith and Lina Srivastava summarize the reservations many of our communities have about the promises of a Decentralized Web well in their article *Web3 and the Trap of 'For Good'*:

> *Exploitation—especially of those who have historically been marginalized—has taken place in many forms on existing web platforms, examples of which include: surveillance; unchecked hate speech, harassment, and calls for violence; failure to protect vulnerable users; attempted silencing of critics of the tech industry; extraction and manipulation of data without informed consent and for profit; appropriation of work product and processes without compensation or attribution; among others. Why should we automatically trust those who have historically profited off processes, products, and pain of communities, especially when the exploiters of Web3 look so much like the exploiters of Web2, or in some cases are the same people?*[13]

Furthermore, there is a potentially severe environmental cost to a trustless network that relies on complex mathematical puzzles proven by computers (this method is called Proof of Work) and that incentivizes the use of more computing power, more power consumption and more carbon emissions and electronic waste.[14] These environmental costs are most often paid disproportionately by the historically marginalized communities that we seek to support.

In addition to the broader ethical, environmental and safety concerns of blockchain technology, there are three key elements that present risks and opportunities specific to decentralized storage for community-based archives, seen in the table below.

	Needs	Benefits	Risks
Permanence	Assure long-term preservation, redundancy and scalability of data storage.	Decentralized storage assures permanence through data existing on multiple geographically diverse storage nodes.	Misinterpretations, factual errors, or sensitive information might be locked in, presenting new threats, conflicts and vulnerabilities for the society and stakeholders.
Immutability	Prevent data tampering, corruption, degradation and censorship over time.	Storage on the public ledger means data remains unaltered (immutable), through both intended or unintended purposes.	Details that interviewees wish to retract or amend later for personal or security reasons can't be altered, potentially leading to harm or misinformation.
Transparency	Establish and maintain a clear chain of custody for materials, documenting how items were acquired and handled over time.	Public Ledger transparency allows for internal and external accountability and access.	Sensitive information related to asset custody on the ledger could be extracted and used to target organizations or individuals.

[13] Smith, S., & Srivastava, L. (2022). Web3 and the Trap of 'For Good.' Stanford Social Innovation Review. https://doi.org/10.48558/7DCG-RT42

[14] Wendl, M., Doan, M.H., & Sassen, R. (2023). The environmental impact of cryptocurrencies using proof of work and proof of stake consensus algorithms: A systematic review. Journal of Environmental Management, Volume 326, Part A. https://doi.org/10.1016/j.jenvman.2022.116530

While we see potential in this technology to offer a solution to the growing digital storage needs of community-based archives, we also seek to put the needs of communities that have been historically marginalized at the center of use cases *now.* Our aim is to consider the unintentional and intentional side effects of technology, and to include these efforts in ethical design in the early phases of development, rather than having to attempt to retrofit them later, often when it is too late.

Given these concerns, community-based archives may seek to engage with blockchain and decentralized technologies with these questions in mind:

- **Social Justice:** Is the design of this technology (hardware and software) determined by equitable and participatory processes that promote safety, care, and prosperity for historically marginalized people?
- **Environmental Justice:** Has this technology considered the environmental impact of the design, who may be impacted by it, and how it can reduce or reverse the effects of climate change through the design?
- **Systems Change:** Are these technologies designed to alter existing relations to power and transform structures that co-constitute our lives?
- **Sustainability:** Does this technology go beyond increasing efficiency toward establishing sustainable practices?
- **Sovereignty:** Is the use of and access to this technology oriented towards increasing the ability to live free of dependence on dominant technological systems, institutions, and philanthropic resources?

7.
Building Trusted Networks, In Real Life

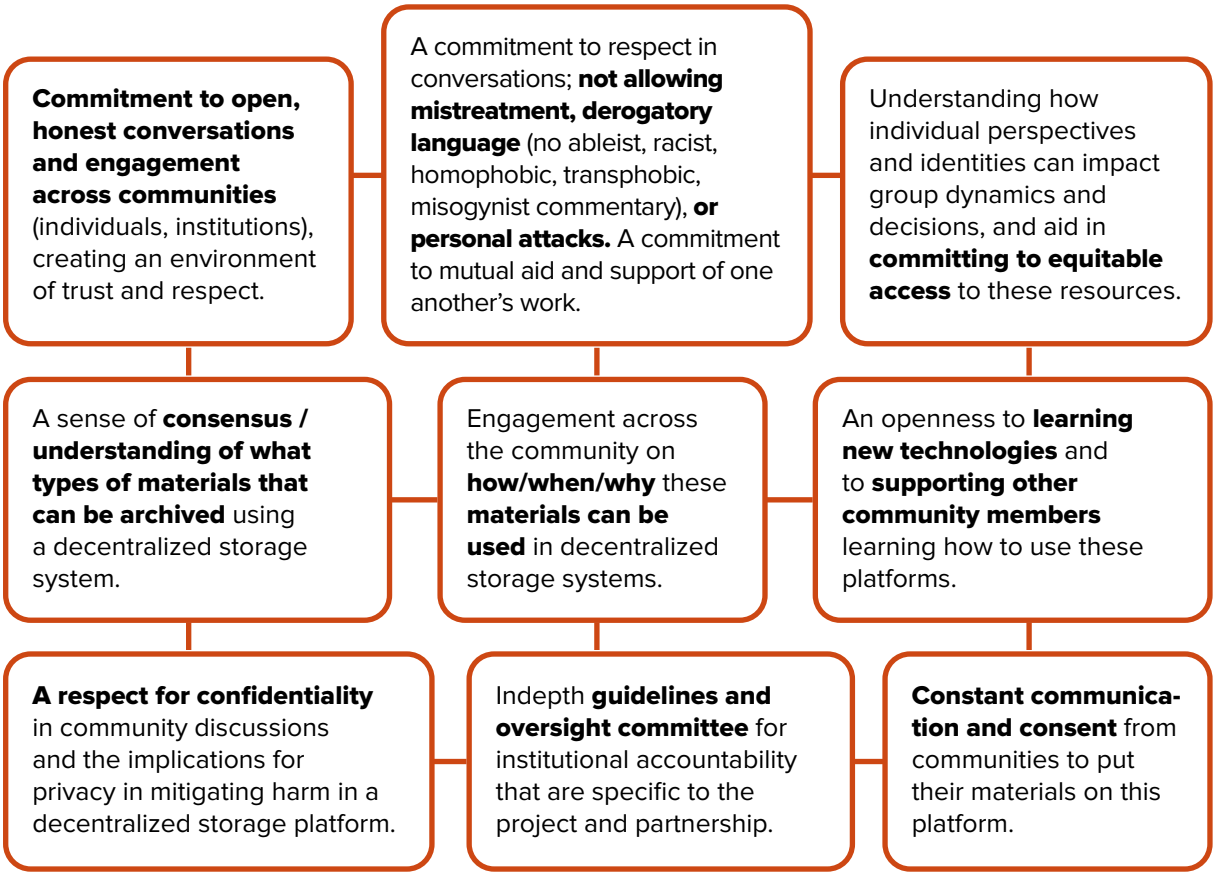
If community-based archives are going to design, test and utilize decentralized storage solutions, we must first define what it means to be a part of a trusted network. While the technology presents the possibility of a trustless information network, it still must reside for us within the context of our community realities, and that will always require systems of and commitment to trust.

For this project, we've mapped out our own community and ethical considerations that inform our approach to decentralized technology, but it should be noted that they are not and cannot be technical solutions. Instead, we've identified nine considerations necessary for working together in community on this project–a prerequisite of exploring technical projects, be they trustless or not.

We also recognized that these considerations are ideals we aspire to together, but that are situated in realities that may require us to find flexibility and nuance with one another.

Considerations and commitments to building trusted networks:

These considerations serve as the foundation for shaping our technical specifications and the design of a prototypical decentralized storage network.



8.

Harm Reduction Design Requirements for Technical Development

Based on the needs of our different communities, we have identified what we call harm reduction design requirements for technical development. We've developed these principles for this specific project, but believe they can be applied more generally to other projects seeking to center community-based archives.

While blockchain and decentralized technology are not new, they have yet to gain widespread usage and understanding within archiving spaces. Below are principles of harm reduction priorities for creating and engaging with a collaborative decentralized storage system.

Mitigating harm: Creation of language/education/training to create awareness of potential harms.

Support: Institutions and community-based archives partner for assessment and engagement about these platforms—what works, how to improve/grow.

Physical accessibility: What can be done to ensure diverse users can have access to these digital platforms even if they don't have direct access to the technology?

Privacy Implications: Understanding potential harm to community members and risk of sharing information broadly in the digital landscape.

Take Down Policies: The need for/creation of take down policies for digital content and how/who makes those decisions.

Financial accountability: Ensuring these platforms can be low cost and cost effective for communities by not having expensive software and/or hardware needs.

Universal Design: Develop platforms and interfaces that adhere to universal design principles to ensure accessibility for all users, including those with disabilities. Implement features such as alt text, screen readers, and adaptable fonts and colors.

Multilingual Support: Recognize and support multilingualism, enabling diverse communities to access materials in their preferred languages. Implement translation features and ensure metadata and navigation are available in multiple languages.

User Education: Provide user education and training to ensure that users can navigate and use archives effectively. Offer tutorials, guides, and responsive user support.

Cultural Humility: Ensure that platforms and user support teams have cultural competency to assist users from diverse backgrounds. Engage in ongoing cultural competency training and awareness initiatives.

Environmental Impact: Ensure that there is measurement and awareness of the environmental impact and examine alternatives.

9.
Considering Use Cases for Community-Based Archives

As part of our research for this project, we examined the needs and considerations of community-based archives around digital storage. Based on interviews and actual community-based archives we are familiar with, we then sketched out use cases that help map out both generally and specifically the needs/goals, benefits, and risks associated with decentralized technologies.

Decentralized Public Ledger Storage Analysis for 7 Sample Community-Based Archival Collections:

EXAMPLE 1: **INDIGENOUS KNOWLEDGE COLLECTIONS**

Community-based archive focused on preserving local Indigenous cultural heritage through oral histories, artifacts, traditional practices etc.

Needs and Goals

Goals are to preserve knowledge for future generations and maintain community control.

Materials include sensitive cultural knowledge only intended for community members.

Benefits

Decentralized nature prevents data deletion or manipulation, preserving authentic records.

Can facilitate access and sharing of knowledge within community across distances.

Provides failsafe against loss of physical records to natural disasters etc.

Can timestamp and verify provenance of cultural artifacts.

Risks

Permanence of data on blockchain means culturally sensitive knowledge, even if uploaded accidentally or without proper consent, cannot be removed. This could lead to appropriation and misuse.

Community may lose control over knowledge management and dissemination.

Public and transparent nature of blockchain ledger may allow external parties access to internal cultural matters.

EXAMPLE 2: **LGBTQ+ COMMUNITY ARCHIVES**

Archive established to document local LGBTQ+ history and current issues, run by community members.

Needs and Goals

Goals are preserving narratives often excluded from mainstream historical records and making them accessible both within and outside the LGBTQ+ community.

Materials include newsletters, photographs, oral histories and artefacts from LGBTQ+ spaces and events.

Benefits

Permanence ensures records are preserved even if opposing groups attempt to suppress or erase LGBTQ+ history. This protects against repeating historical marginalization.

Timestamping verifies provenance of materials and establishes order of events, countering attempts to rewrite narrative.

Widespread redundant copies on decentralized network protect against losing archives due to discrimination, censorship, or funding issues.

Facilitates access and sharing of historical LGBTQ+ materials among community members and allies worldwide to raise awareness.

Risks

Immutability and permanence mean that if laws and social attitudes become more hostile towards LGBTQ+ communities, archives on public ledgers can't be deleted or modified to remove sensitive identifying details. This may put individuals at legal or safety risk.

The transparency of the public ledger may inadvertently "out" individuals who expected privacy or anonymity in what they shared to the archive.

EXAMPLE 3: **HUMAN RIGHTS ORGANIZATIONS**

International NGO documenting human rights violations against vulnerable groups like migrants, refugees, and minority communities.

Needs and Goals

Goals are preserving evidence to seek social justice and document human rights violations.

Materials include testimonials, legal documents, audio and video evidence gathered from 3rd party sources and field investigations.

Benefits

Public timestamping establishes authenticity of documentation, enhancing evidentiary value for prosecuting rights abuses.

Decentralization provides security against confiscated files and makes censoring human rights documentation impossible.

Widespread copies facilitate global collaborations between investigators and rights advocates.

Risks

Transparency means that personal details of whistleblowers and informants could be exposed, putting them in danger. This can occur even when proper steps are taken in preparing files if anonymity systems fail or encryption proves inadequate.

Immutability means identifying details or sensitive testimony accidentally made public can't be redacted. This endangers sources.

Storing confidential information or trauma testimony on public ledgers raises ethical concerns around privacy and consent.

EXAMPLE 4: **ORAL HISTORIES PROJECTS**

Local historical society focused on recording and preserving community memories and stories through recorded interviews

Needs and Goals

Goals are to create an inclusive people's history and make it accessible to all.

Materials include audio/video oral history interviews with long-time residents and community leaders, covering personal topics.

Benefits

Establishes provenance and integrity of oral histories as primary source material for qualitative research.

Widens access and visibility of overlooked narratives and topics missing from official historical accounts.

Secures backups against loss of recordings to technical failures or physical damage.

Risks

Immutability of blockchain means interviewees cannot redact any sensitive personal details they shared but later prefer to be private. This erodes consent and agency.

Public nature means stories could be taken out of context, edited deceptively, or used against vulnerable interviewees if there are no controls.

Permanence ties interviewees indefinitely to what they shared in their interview, even if perspectives evolve personally.

EXAMPLE 5: **LEGAL HISTORY PROJECTS**

Grassroots organization archiving local court cases and serving as a witness for legal events relevant to marginalized community issues

Needs and Goals

Goals are preserving communal legal memory and making it accessible for education and advocacy.

Materials include legal documents, case files, exhibits and community observations on proceedings.

Benefits

Establishes authenticity of case files as verified primary source documents for research.

Enables temporal tracking of systemic issues through court cases over decades.

Allows wider access to materials often obscured by legal bureaucracy.

Risks

Immutability means details within complex older cases, if taken out of proper context, could negatively impact interpretations or rulings in related current legal battles.

Public visibility of court materials could enable harassment of involved parties, judicial criticism by bad actors, or other repercussions.

EXAMPLE 6: **EXTERNAL RESEARCHER**

Academic historian researching protest movements in marginalized communities

Needs and Goals

Goals are accurately representing community narratives in published work.

Needs to substantiate provenance of primary sources like photographs, diaries, interviews etc.

Benefits

Allows genuine verification of origins and timestamps on historical documents, countering claims of fabrication.

Strengthens credibility when citing community-sourced artifacts as critical references.

Enables universal access to and corroboration of sources.

Risks

Potentially amplifies exposure and circulation of documents without consent from original community sources.

Could set expectations that communities must hand over documents for external validation.

Hard to track usage by external researchers once assets are on public decentralized storage.

EXAMPLE 7: **AUTHORS AND ARTISTS**

Independent filmmaker creating documentaries highlighting social justice issues

Needs and Goals

Goals are retaining creative control and being compensated for distribution.

Wants to make public timestamped raw footage and source materials for other researchers while protecting ownership.

Benefits

Allows provable attribution across derivative works, protecting creator rights and preventing unauthorized use.

Enables timestamping to establish precedence in case of disputes over origins of intellectual property.

Withstands attempts to discredit ownership claims by validating provenance.

Risks

Permanence means unfinished cuts or clips get permanently recorded before final edits, posing issues around distribution and privacy.

Public accessability opens the door for plagiarism, idea theft and unauthorized distribution.

Immutability results in decreased flexibility for iterative creative endeavors that evolve over time.

10. Conclusion and Next Steps

The ideals of the Decentralized Web and decentralized technology offer a possible solution to digital storage needs faced by community-based archives. There is certainly a real possibility of creating a small network of community-based archives with digital storage needs, and like-minded institutional partners with storage space. Projects like LOCKSS have already shown that this type of network can benefit library networks, and if the harm reduction principles developed here can be applied to this sort of technical design with a limited pilot network, we're hopeful it will yield positive results in our next phase of design and testing.

Our research in Year 2 will move toward technical specification of a prototype design for decentralized storage and how this may work as part of the Historypin development stack. We'll also be testing the full cycle of the user journey of community-based archives through the work to see where there is friction between the communities and the technology. We'll be considering several decentralized storage options based on the technical requirements, the needs of community-based archives, and the matrix of opportunities and risks that will be factored into the workflow.

11.
About Shift Collective

Shift Collective is a non-profit consulting and design group that helps organizations better engage, collaborate with, and reflect their local communities. We strive to create measurable and lasting social change by developing inclusive cultural memory experiences that give voice to unheard narratives and perspectives. We help communities tell and amplify their own stories, so that incomplete dominant narratives do not persist. We are focused on inclusive narrative and historical representation in order to support social, cultural and resource equity.

Our digital history platform, Historypin, serves over 4,000 community memory organizations worldwide, and has generated over $9 million in investments to humanities research and community history projects globally since 2009. Major partnerships and initiatives utilizing the platform have included Stanford University, the BBC, American Experience, the US National Archives and Records Administration, the National Library of Colombia, the State Library of Queensland, and many more.

We have designed and facilitated dozens of convenings in the cultural memory field, including Reimagining Descriptive Workflows and Architecting Sustainable Futures, funded by the Mellon Foundation, and the Culture Lab Cooperative, together with the Smithsonian Asian Pacific American Center. Our convenings help institutions and entire fields come together to address major issues through human-centered design and collaborative creativity. We've provided strategic planning support for organizations like the Bay Area Video Coalition, StoryCorps Archives, the Furious Flower Poetry Center/JMU Libraries, and many more.

12.
About This Project

This paper is the product of the first year of a three-year research project supported by a grant from the Filecoin Foundation for the Decentralized Web. Shift Collective, together with a team of research faculty and technical advisors, seeks to research and model how decentralized storage technologies can benefit community-based archives.[15] We are exploring the ethical, cultural, and technical needs for small cultural memory organizations who steward uniquely important historical collections for communities around the world. More specifically, this project will focus on long-term preservation and storage, and explore how a decentralized storage network might offer a viable solution for the tens of thousands of these diverse organizations. Our goal is to foster ethical and sustainable community-based archival practice through effective and safe design and implementation of a decentralized storage network design. Using this methodology, we aim to create an early prototype for community-centered, non-extractive, affordable, and accessible long-term storage, using the Historypin platform as a front-end interface.

In this project we are:

YEAR 1	YEAR 2	YEAR 3
• **Working with a small group of diverse community-based archives** and utilizing existing research to map a variety of needs around long-term preservation and storage that might be addressed by a decentralized storage network in the Gallery, Library, Archive, and Museum ("GLAM") sector. • **Documenting ethical and cultural needs** that such a storage network could be centered on.	• **Using the Historypin.org platform** as a basis—already in use by over 4,000 cultural memory organizations globally—we will design a technical framework for a pilot decentralized storage network amongst small and large memory organizations.	• **Testing the pilot storage network** by working with three cultural memory networks to add content through an entire life cycle of digitization to storage to discovery. • **Assessing the technical, ethical, cultural** possibilities and limitations of a decentralized storage network. • **Sharing our findings** with the field and working to advise on potential steps forward.

[15] Read more about the project at https://www.shiftcollective.us/ffdw.

13. Authors

This guide was prepared by Shift Collective in collaboration with partners representing a diverse group of community-based archives.

Shift Collective Team:

Jon Voss, Lynette Johnson, Bergis Jules, Zakiya Collier, Erin Glasco

Research Faculty:

Paulette Brown-Hinds, PhD, *Black Voice News/Voice Media Ventures*

Beth Castle, PhD, *Warrior Women Project*

Samip Mallick, *SAADA*

Yusef Omowale, *Southern California Library*

Teressa Raiford, *Don't Shoot Portland*

Chris Sherertz, *Warrior Women Project*

Holly A. Smith, *Spelman College Archives*

Gabriel Solís, *Texas After Violence Project*

Maigen Sullivan, *Invisible Histories Project*

Technical Advisor:

Ed Summers, *Stanford University*

14. Bibliography and Other Reading

A People's Archive of Police Violence in Cleveland (2023). Retrieved from https://www.archivingpoliceviolence.org/

Black Archival Practice I (2022). The Black Scholar, Volume 52, Issue 2. https://www.theblackscholar.org/

Black Archival Practice II (2022). The Black Scholar, Volume 52, Issue 4. https://www.theblackscholar.org/

Beller, J. (2020) Economic Media: Crypto and the Myth of Total Liquidity. Australian Humanities Review, 66. https://australianhumanitiesreview.org/2020/05/31/economic-media-crypto-and-the-myth-of-total-liquidity/

Beller, J. (2017). The message is murder: Substrates of computational capital. https://library.oapen.org/bitstream/20.500.12657/30759/1/642743.pdf

Benet, J. (2014). IPFS - Content Addressed, Versioned, P2P File System. arXiv (Cornell University). https://arxiv.org/pdf/1407.3561

Brilmyer, G., Caswell, M., & Cifor, M. (2021). Radical Empathy in Archival Practice Poster and Postcards. Journal of Critical Library and Information Studies, 3(2). https://doi.org/10.24242/jclis.v3i2.169

Carter, J. A., & Scriven, D. (2023). Insurrectionist ethics radical perspectives on social justice. Palgrave Macmillan. https://doi.org/10.1007/978-3-031-16741-6

Charles, W. (2022) Blockchain in Life Sciences. Springer. https://doi.org/10.1007/978-981-19-2976-2

Chen, Y., Ding, S., Xu, Z., Zheng, H., & Yang, S. (2018). Blockchain-Based Medical Records Secure Storage and Medical Service Framework. Journal of Medical Systems, 43(1). https://doi.org/10.1007/s10916-018-1121-4

Da Silva, D. F. (2014). Toward a Black feminist poethics. The Black Scholar, 44(2), 81–97. https://doi.org/10.1080/00064246.2014.11413690

Dennis, B., & Elfreich, A. (2022). Methodologies of possibility: feminist ethics as justice-oriented research. International Journal of Qualitative Studies in Education, 35(10), 1067–1084. https://doi.org/10.1080/09518398.2022.2061735

Drake, T. S., Conner-Gaten, A., & Booth, S. D. (2022). Archiving Black Movements: Shifting Power and Exploring a Community-Centered Approach. Journal of Critical Library & Information Studies, 4(1). Retrieved from https://journals.litwinbooks.com/index.php/jclis/article/view/170

Drescher, D. (2017). Blockchain Basics: A Non-Technical Introduction in 25 Steps. APRESS. https://link.springer.com/content/pdf/10.1007/978-1-4842-2604-9.pdf

Florian, M., Henningsen, S., Beaucamp, S., & Scheuermann, B. (2019). Erasing Data from Blockchain Nodes. 2019 IEEE European Symposium on Security and Privacy Workshop. https://doi.org/10.1109/eurospw.2019.00047

Fritsch, K., Hamraie, A., Mills, M., & Serlin, D. (2019). Introduction to special section on CRIP Technoscience. Catalyst, 5(1), 1–10. https://doi.org/10.28968/cftt.v5i1.31998

Furlong, D. E. (2023). Enabling CRIP time with digital tools in qualitative inquiry. Qualitative Inquiry, 107780042311635. https://doi.org/10.1177/10778004231163534

Gonzalez, C. M. F. (2022). A call for a Black feminist liberatory ethics in criminological research on Black women and girls' offending and victimization. Crime & Delinquency, 001112872211310. https://doi.org/10.1177/00111287221131009

Gray, L. (2020). Empowered collective: Formulating a black feminist information community model through archival analysis. Proceedings of the Association for Information Science and Technology, 57(1). https://doi.org/10.1002/pra2.425

Gunn, A. (2021). Voice, counterspaces, and ethical care in research with Black women with trauma and incarceration histories. Health Education & Behavior, 48(3), 276–284. https://doi.org/10.1177/10901981211012273

Hampton, L. M. (2021). Black Feminist Musings on Algorithmic Oppression. Conference on Fairness, Accountability, and Transparency (FAccT '21), March 3–10, 2021, Virtual Event, Canada. https://doi.org/10.1145/3442188.3445929

Hamraie, A., & Fritsch, K. (2019). CRIP Technoscience Manifesto. Catalyst, 5(1), 1–33. https://doi.org/10.28968/cftt.v5i1.29607

Hanemaayer, A. (2022). Artificial Intelligence and Its Discontents. https://doi.org/10.1007/978-3-030-88615-8

Haywood, C. (2022). Developing a Black Feminist Research Ethic: A Methodological Approach to Research in Digital Spaces. Retrieved from https://doi.org/10.37514/PRA-B.2022.1664.2.10

hooks, b. (1992) "Eating the other: Desire and resistance." In Black Looks: Race and Representation, pp. 21–39. Boston: South End Press.

Ishmaev, G. (2020). Sovereignty, privacy, and ethics in blockchain-based identity management systems. Ethics and Information Technology, 23(3), 239–252. https://doi.org/10.1007/s10676-020-09563-x

Ishmaev, G. (2019). The ethical limits of Blockchain-Enabled markets for private IoT data. Philosophy & Technology, 33(3), 411–432. https://doi.org/10.1007/s13347-019-00361-y

Jutel, O. (2021). Blockchain imperialism in the Pacific. Big Data & Society, 8(1), 205395172098524. https://doi.org/10.1177/2053951720985249

Kirchschläger, P. G. (2021). Ethics of blockchain Technology. In Nomos Verlagsgesellschaft mbH & Co. KG eBooks (pp. 185–210). https://doi.org/10.5771/9783748924012-185

Kučera, J., & Brückner, T. (2019). Blockchain and Ethics: A Brief Overview of the Emerging Initiatives. Faculty of Informatics and Statistics, University of Economics, Prague, 129–139. http://ceur-ws.org/Vol-2443/paper12.pdf

Lapointe, C., & Fishbane, L. (2019). The Blockchain Ethical Design Framework. Innovations, 12(3–4), 50–71. https://doi.org/10.1162/inov_a_00275

Legault, M. (2021). A Practitioner's View on Distributed Storage Systems: Overview, challenges and potential solutions. Technology Innovation Management Review, 32–41. https://doi.org/10.22215/timreview/1448

McTighe, L. (2017). This Day, We Use Our Energy for Revolution: Black Feminist Ethics of Survival, Struggle, and Renewal in the new New Orleans. ProQuest. https://doi.org/10.7916/d8x35902

Meth, M. (2019). "Blockchain in Libraries" Library Technology Reports. https://doi.org/10.5860/ltr.55n8

Ninkova, V. (2021). Towards decentralized anthropological scholarship: Some ethical considerations. Anthropology Today, 37(6), 3–4. https://doi.org/10.1111/1467-8322.12684

Rider, K. and Revoy, S.L. (2022). "Centering Race in Analyses and Practices of Counter surveillance Advocacy: Mythologies of the Racialized Other in the Crypto Wars." In Privacy: Algorithms and Society (ed. M. Filimowicz). New York: Routledge.

Rosenthal, D. (2018). "Blockchain: What's Not to Like?," DSHR's Blog. https://blog.dshr.org/2018/12/blockchain-whats-not-to-like.html. Accessed December 11, 2023.

Schneider, N. (2019). Decentralization: an incomplete ambition, Journal of Cultural Economy, 12:4, 265-285. https://doi.org/10.1080/17530350.2019.1589553

Scott, K. A., Britton, L. E., & McLemore, M. R. (2019). The ethics of perinatal care for Black women. Journal of Perinatal & Neonatal Nursing, 33(2), 108–115. https://doi.org/10.1097/jpn.0000000000000394

Shift Collective (2019). Architecting Sustainable Futures: Exploring Funding Models in Community-Based Archives. Retrieved from https://architectingsustainablefutures.org/report

Shift Collective (2022). Increasing discovery of archives: A project to provide better pathways to archival records in cultural heritage collections. UC Office of the President: California Digital Library. Retrieved from https://escholarship.org/uc/item/0kd7d5m0

Smith, S., & Srivastava, L. (2022). Web3 and the Trap of 'For Good.' Stanford Social Innovation Review. https://doi.org/10.48558/7DCG-RT42

Stackpole, T. (2022) What is Web3. https://hbr.org/2022/05/what-is-Web3?ab=seriesnav-bigidea. Accessed November 8th, 2023.

Steingo, G. (2017). African Afro-futurism: allegories and speculations. Current Musicology, 2017, 45–75. https://doi.org/10.7916/cm.v0i99/100.5344

Steele, C. K. (2021). Digital Black feminism. In New York University Press eBooks. https://doi.org/10.18574/nyu/9781479808373.001.0001

Steingo, G. (2017). African Afro-futurism: allegories and speculations. Current Musicology, 2017, 45–75. https://doi.org/10.7916/cm.v0i99/100.5344

Thier, H. (2022). Cryptocurrency Will Not Liberate Us: Deflating the egalitarian fantasies of digital currencies. Dollars & Sense, January/February 2022. Retrieved from https://www.dollarsandsense.org/archives/2022/0122thier.html

Walcott, R. (2018). Freedom Now Suite: Black Feminist Turns of Voice. Small Axe 22(3), 151-159. https://www.muse.jhu.edu/article/710219

Wendl, M., Doan, M.H., & Sassen, R. (2023). The environmental impact of cryptocurrencies using proof of work and proof of stake consensus algorithms: A systematic review. Journal of Environmental Management, Volume 326, Part A. https://doi.org/10.1016/j.jenvman.2022.116530

Zepeda, L. (2018). Queering the Archive: Transforming the Archival Process. disClosure: A Journal of Social Theory, 27, Article 17. https://uknowledge.uky.edu/disclosure/vol27/iss1/17/