Advancing Community Digital Collections through Minimal Computing: The Lakeland Digital Archive

Digital Humanities Advancement Grant, Level II

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Project Summary

*Advancing Community Digital Collections through Minimal Computing* was a two-year research project that set out to explore whether a specific set of technology practices—called “minimal computing”—might help community heritage groups. The project looked at ways to organize, share, and keep safe a variety of local treasures like maps, photos, documents, and oral history testimonies. One of the partners, the Lakeland Community Heritage Project (LCHP), uses these materials to strengthen community bonds, advocate to local government, and educate the broader public. All of the partners in this project believe that these materials can also help researchers who want to better understand topics in African American history and culture including segregation, suburbanization, education, and urban renewal, as well as civic associations, politics, and activism.

The project team included people from LCHP as well as from several units at the University of Maryland: the Maryland Institute for Technology in the Humanities (MITH), the Department of American Studies, and the College of Information Studies (ISchool). To explore how minimal computing approaches might help community heritage groups like LCHP, the team built four trial versions of a website for sharing Lakeland community history. Each version had different features and levels of completeness. The team generated ideas for this website, tested them with other community members as well as with students, and then, for each version, thought about what worked well and what didn’t. Members of the team also undertook significant work to improve and correct the data used in these trial versions. The digital collections will be made available from the LCHP website, https://lakelandchp.com/. This white paper summarizes research findings from the project.
Key Findings

- Community heritage projects need to be community-led. People involved in these projects need to train in and learn equitable models of governance. The skills to enact such partnerships are critical to the success.
- Broadening the common practices of minimal computing would increase the usefulness of these approaches for building community heritage projects. The working definition of minimal computing is too narrow to serve these projects well at present.
**Key Team Members (listed alphabetically)**

Katrina Fenlon, Assistant Professor, College of Information Studies  
Maxine Gross, Chairperson, LCHP  
Violetta Sharps Jones, Vice Chairperson, LCHP  
Trevor Muñoz, Director, MITH  
Stephanie Sapienza, Digital Humanities Archivist, MITH  
Mary Sies, Associate Professor, Department of American Studies

The project team is also grateful for contributions from: Pamela Boardley, Abigail Cohen, Fiona Dolan, Andrew Fellows, Malcolm Ferguson, Asya Hemsley, Diane Ligon, Maggie Pelta-Pauls, Ioie Rogers-Archer, Carolyn Robbins, Andrew Smith, Ed Summers, Courtnie Thurston, Keith Webster, and many more contributors to the Lakeland collections over the years.
Community Heritage

The main topic of this research is technology projects that help preserve and celebrate local heritage. More precisely, these are projects that are defined and controlled by community members for the benefit of their own community, as well as for the use of others like researchers and students.

This research makes a distinction between projects led by the community itself and those led by larger organizations like universities or institutions such as libraries, museums, and archives. Even if both kinds of projects have to deal with budget constraints and limited staff, community-led projects have their own set of challenges. One of these is finding the right balance between the expertise of community members and that of outside professionals.

Developing the “Brain Trust”

A central question for any project like this one becomes: Who can build a community heritage technology project?

Lakeland is a small, 130-year-old African American community located just outside Washington, DC. It was central among a group of other small, interconnected African American communities along U.S. Route One. These vibrant places were sustained by intergenerational family ties, friendships, religious association, commerce, and social interaction, from inception through the period of segregation of African Americans. With Lakeland’s central geographic location and easy access to train and trolley transportation, it was chosen by the consortium of communities as the site for their region’s Rosenwald high school. (Rosenwald schools were philanthropically-funded schools for African American children during segregation.) As home to the school as well as to two prominent churches, Lakeland became a natural gathering place for African American social and recreational activities. It thrived until its self-contained cultural traditions and sense of place were undermined by social change and a devastating urban renewal program. A federal urban renewal grant destroyed two-thirds of the physical community during the 1970s and 1980s. Urban renewal forced the removal of 104 family homes, as well as familiar landmarks and community institutions, to make way for student apartments and the expansion of the Washington Metropolitan Area Transit Authority (WMATA) Metro line to D.C. for city commuters.

In the face of all these challenges, Lakeland community leaders have worked for more than 20 years to document, preserve, and share their cultural heritage through LCHP. LCHP’s mission is:

\[To\text{ collect, preserve, interpret, and honor the heritage and history of those African Americans who created, lived in, and/or had association with the Lakeland community of Prince George’s County, Maryland from the late 19th century to the present}\]

These projects have always been technological. Community scanning events were among the early activities promoted by LCHP. Several years of annual “Heritage Weekends”
demonstrated their belief in the connection between documenting history and local culture and strengthening community ties. In 2009, LCHP published a book based on their research and collecting. As a partner, LCHP brought deep expertise to this project, not only in the content, but also in using technology to save and share local treasures and in a reparative model of community governance over heritage.

After decades working to steward and share their heritage, Lakelanders decided that a digital collection website bringing together and expanding what they had collected was the next project on which to focus their energies. The key team members identified above formed a community-university steering group for the project. Members of this group had previously worked together on heritage-related projects but it quickly became clear that a digital archive represented an additional level of challenge.

LCHP maintains a Wordpress blog for project news and initiatives. And several classes of Dr. Sies’ students contributed a website for exhibiting digitized heritage materials built on the Omeka platform, a content management system specialized for digital history. For community governance and community-university collaboration to be meaningful for a complex technology project like a digital collection website that worked in service of LCHP’s mission, the community-university steering group (fondly named the “Brain Trust”) needed to learn to work together in new ways. Even quite specific choices about technology and infrastructure could not be left wholly to the “technical expert” members. Everyone on the steering group needed to at least be able to understand what aspects of the current tools made them difficult to fit to purpose, what avenues of change were practical, and how various possible technical approaches served the larger, mission-focused goals of the project. Importantly, this is not the same as asking every member of the steering committee to understand every detail of a technology implementation. Nor does it require completely flattening and equalizing expertise across a team. The development, training, and operation of the “Brain Trust” represents a significant project outcome.

Minimal Computing

When the Lakeland digital archive project began in 2019-2020, a number of people who work with technology in the fields of history and culture were expressing interest in an approach called “minimal computing”. Minimal computing is a way of choosing which technologies to use in projects like building a website. (There are many kinds of computing but because the web is such a dominant medium, discussions of minimal computing have centered around web development.) And the interest in minimal computing has persisted, even grown. These approaches are now the subject of a special issue of the flagship digital


Minimal computing approaches have been applied to building a variety of research projects, scholarly journals, and even digital collection websites.

One appeal of minimal computing to technologists was a response to how complex software for managing online content can become. This type of software, “content management systems” (CMS), often runs on servers but provides a word processor like interface for creating content, which is then stored in a database and turned into a webpage when someone requests it. By contrast, static site generators, a prominent example of a minimal computing technology, produce all the files needed to publish a website ahead of time and remove the need for frequent updates or security patches to server-based software; they often do not come with a specific interface for creating content. Members of the community-university steering group had successfully employed minimal computing techniques as part of several past projects.

**Broadening Minimal Computing for Community Heritage**

Adapting minimal computing patterns to the task of building a digital collections website for Lakeland revealed several areas where minimal computing, as it has come to be practiced, does not serve community heritage projects as well the research team initially hoped. And yet, solutions the research team found to challenges in these areas can still be understood as minimal computing and as meaningful contributions to community heritage practice.

Two of the most notable projects using minimal computing approaches like static site generators to produce digital collections websites, Wax and Collection Builder, both use the same software library, called Jekyll, to do so. The research team for this project

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experimented with several additional software libraries over the course of several trial versions of the Lakeland collection website. In terms of this research, these software packages all work the same way: they take the content intended to make up the website, fit it into a series of preset structures and designs (“templates”) and generate all of the files necessary for publishing a site online. (This is also generally how content management systems work—except that the generation of a page from underlying content happens on a server each time the page is requested.) The promise of a minimal computing approach is that a community heritage project member could have access to all of the collection data and then run the software to generate a new or updated version of the website when needed. As explained above minimal computing approaches to static site generation avoid running more complex software like a database. Content for a website is stored as a spreadsheet or a set of plain text files. Also, these approaches promote the idea that most people can learn the “simplified” template-building language for a project but do not need to engage in computer programming.

Four major shortcomings emerge from applying these approaches to the case of Lakeland’s digital collection website. Each is discussed below along with the how this shortcoming was addressed.

**Sometimes a spreadsheet is more complex than a database.** To store and organize the project’s data about Lakeland’s heritage collections, the research team initially used a series of connected spreadsheets (specifically, a software-as-a-service product called Airtable). It quickly became apparent that certain types of information the project wanted to represent were not a good fit for the flat, tabular structure of a spreadsheet. For example, members of the team wanted to assign a vocabulary of terms to items in the collection to indicate their principal subject: “baseball”, “urban renewal”, etc. To aid future users of the website, the team wanted to be able to group these terms into hierarchies. Hierarchical structures are complicated and error prone to represent in a spreadsheet. Also, in many cases, an image might represent one page of a larger document scanned individually. Representing the whole-part relations between a page and the document it came from is also not simple in something like a spreadsheet. More vitally than this, however, spreadsheets do not provide built in ways to validate that data values match what is expected for a certain field. They also do not provide automated ways to modify the structure of data after it has been created. In these challenges, the experience of this project

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closely matches that reported by the digital humanities team collaborating on the Princeton Ethiopian Miracles of Mary (PEMM) project.  

Rather than trying to imitate some key features of databases—data validation, changing data structures—the team ultimately resolved to use a relational database engine, SQLite, that can be stored in a single file and does not require a separate server process. This is not common minimal computing practice because it adds some complexity and some perceived unfriendliness to non-technical users. In terms of portability, support across multiple operating systems, and documentation, this implementation choice still follows the core intent of minimal computing approaches.

**Website functions that minimal computing approaches often make complex to implement are functions that community heritage projects usually need.** Because tools like static site generators produce all the files needed for a website and do not require running a dedicated web server to publish, common features of websites are available “out of the box.” Two are particularly important in the context of community heritage projects: authentication and full-text search. Community members quickly wanted to be able to search across all the content in the collection to find materials for events, build exhibits, share with researchers or family members, etc. In many statically-generated websites, a search function can only be provided with the inclusion of application code created by a programmer or by sending data to and contracting with an external software service to provide search. The same is true for authentication, which gives community members control over who can access certain items in a collection for example.

Both authentication and full-text search functions can be enabled if a database is incorporated into the project architecture.

**In practice, minimal computing sits atop and depends on systems like cloud-based file storage and computing.** Under appreciated by those who use websites but do not build them is the large quantity of computer files that go into making a website. This is even more true for a site like a digital collection, whose primary goal is to provide access to photographs, documents, and audio recordings. To make these available means storing them somewhere. Despite working for many months with the goal of avoiding a dependency on large-scale file storage in a commercial software “cloud”, for example Amazon Web Services, the project team members determined that access for community members to their data would be enhanced if this specific minimal computing tenet were relaxed. Future work in this area might explore community-owned or consortial alternatives but, at this time, the finding of this project is that certain features of the larger computing landscape and economy like “cloud computing” (with all of its attendant drawbacks) is unavoidable.

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In some critical areas where minimal computing approaches rely on broader web development conventions, better practices would rely on standards developed specifically for cultural heritage use cases. Closely related to the finding above, the work of managing the images and audio files that the research team wanted to serve through the Lakeland digital collection website calls attention to another area where minimal computing practice can be improved specifically for community heritage collections. Large cultural heritage institutions have developed a suite of standards, the International Image Interoperability Framework (IIIF), for sharing images, and more recently audio and other media, across collections. Awareness of, training in, and software tools for using IIIF standards in community heritage sites could all be improved. This would bring the benefits of these standards to community-based collection creators.