The Puerto Rico Disaster Archive: Preserving the Cultural Legacy of Puerto Rico

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According to a recent U.N report, "climate change is running faster than we are – and we are running out of time" (Gutteres n.p.). Already we are beginning to see its effects—the melting of the ice caps, the rise of sea levels, and the heightened intensity of natural disasters. Although these effects are generally relegated to areas near the equator and the poles, climate scientists predict that all individuals will experience the effects of climate change within the next 20 to 30 years, as the frequency and severity of hurricanes and other climate crises are expected to increase.

Due to its unique geography, Puerto Rico is at the forefront of climate catastrophe. Over the course of two weeks in September 2017, Puerto Rico was successively impacted by two category 5 hurricanes, Hurricanes Irma and María. In theory, Puerto Rico's devastating experiences during and after these events should provide nations around the world with insight into impending climate fluctuations and effective disaster response strategies. But, as my research reveals, the global disaster-response methods being used by governments and contractors tend to be underpinned by power, greed, and discrimination. Most troubling, they encourage corruption by propping up the powerful, exploiting the vulnerable, and enacting state-sanctioned violence.
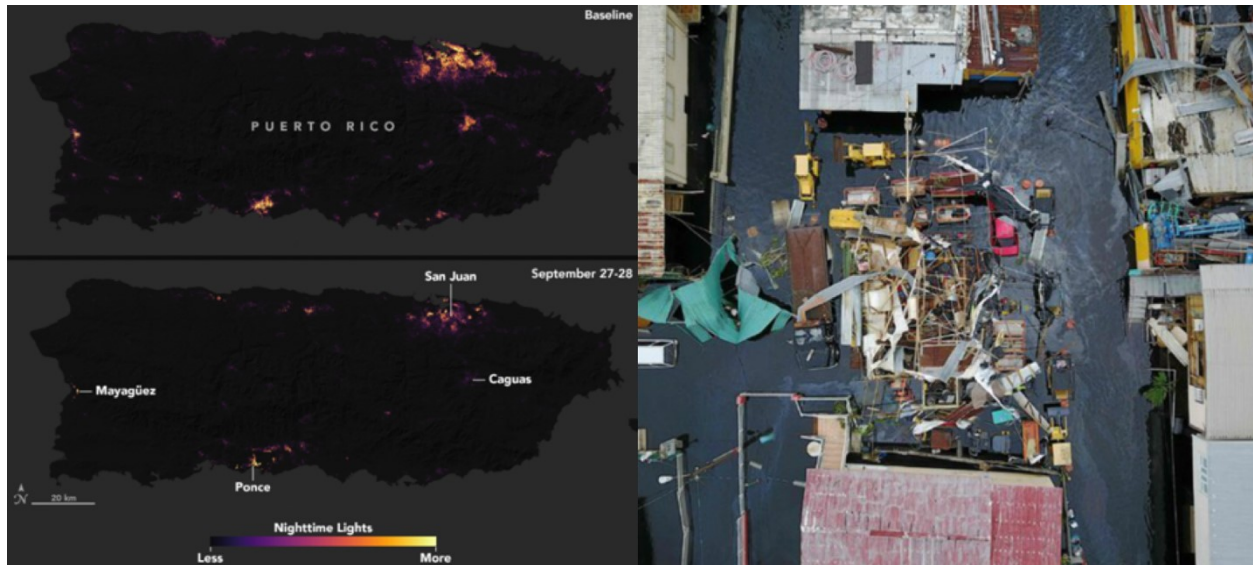
Figure 1: The photo on the left shows the effect of Hurricane María on the electrical grid of Puerto Rico. The photo on the right demonstrates the severity of flooding and damages experienced throughout the island.

The disaster, however, was not simply the hurricanes but also the events that followed. Notably, the disaster-response methods used—prioritization of urban centers, slow distribution of resources, and limited communication with those in need—placed the cultural legacy of Puerto Rico and the Caribbean under duress by leaving migrants, the elderly, and other marginalized and vulnerable communities to fend for themselves. Local residents were left to pick up the pieces on their own; as a result, the island largely depended upon community-based groups and their use of local traditions, oral knowledge, and community organizing. Some examples include developing community-based health infrastructure, meal distribution, and check-in strategies; sharing family and community recipes for bug spray and low-ingredient meals; and relearning agricultural methods that are most suitable for Puerto Rico's land and climate. These knowledge systems were key to surviving the conditions lived and experienced in Puerto Rico, and they serve as powerful resources for future natural disasters and other climate events.

Since 2017, Puerto Rico has experienced additional disasters, including a series of devastating earthquakes (2020) and the COVID-19 pandemic. To document the innovative knowledge systems developed and implemented by Puerto Rican community organizations in the wake of these events, I am working with a team of scholars and activists across Puerto Rico to develop the Puerto Rico Disaster Archive, a digital open access repository of oral history interviews and disaster-related artifacts. Collaborators include Drs. Mirerza Gonzalez Velez and Nadjah Ríos at the University of Puerto Rico-Río Piedras, Dr. Ricia Chansky at the University of Puerto Rico-Mayagüez, and the following community organizations: Casa Dominicana, the Colectiva Feminista en Construcción, the Centro de Apoyo Mutuo, PAReS, the Comedores Sociales de Puerto Rico, El Puente – Latino Climate Action Network, and the Digital Library of the Caribbean (dLOC).

Many organizations, including the Institute of Puerto Rican Culture and the Museo de Arte de Puerto Rico, acknowledge the loss of cultural heritage since the arrival of Hurricane María in 2017, but their focus is largely on historical materials. The Puerto Rico Disaster Archive expands on these initiatives by highlighting the value of recently developed disaster-related cultural heritage artifacts, particularly those that can provide inspiration, insight, and information to other organizations seeking to implement effective disaster response protocols. Not only do these materials have the potential to save lives, but also they are imperative to developing future emergency protocols that are based on local knowledge and community action. In essence, the Puerto Rico Disaster Archive compiles a set of best practices for disaster-stricken communities, especially those experiencing low bandwidth, limited digital infrastructure, and climate vulnerability. By acknowledging, promoting, and appreciating the unique knowledge developed in Puerto Rico during and after these disasters, this project seeks to intervene in climate colonialism by advocating for climate justice.

To that end, we are developing an innovative and collaborative archive of disaster response strategies implemented during and after Hurricane María in Puerto Rico. This will facilitate our ability to continue building relationships with community partners, particularly by providing the technology and training necessary to collect, record, and preserve disaster-related materials in their communities as well as the infrastructure needed to develop their own long-term sustainable archiving practices.

Other deliverables of this project include:

- An open access digital repository built in Omeka S
- Transcription and translation for videos in both English and Spanish
- Bilingual metadata for artifacts and videos in both English and Spanish
- Copycat collections housed at the Digital Library of the Caribbean and Michigan State University's digital repository
- Meaningful data packages for each participating organization. These packages are comprised of copies of the Puerto Rico Disaster Archive's data set on multiple external hard drives
- A white paper outlining best practices for humanities researchers to engage in effective and ethical disaster preparedness and response

We cannot fully determine the content or objects to be collected by the Puerto Rico Disaster Archive, but we foresee these collections being used by scholars working in the fields of digital humanities, indigeneity and kinship, cultural studies, Caribbean studies, gender studies, history, political science, digital media, environmental humanities, community organizing, and grassroots activism. We look forward to exploring these connections in more detail throughout the development of this project.

History, Scope, and Duration

This project began in 2017 when I began studying the effects of Hurricane San Felipe (1928), a disaster very similar to Hurricane María. At that time, I learned that this historic hurricane had caused significant and long-lasting damage in both Florida and Puerto Rico. As with María, recovery was made even more difficult due to the limited availability of resources, the lack of communication regarding disaster response protocols, and the inefficiency of many groups providing aid and support.

To intervene in these harmful processes, I began collecting oral history interviews with survivors of San Felipe in March 2017 and expanded the project to include survivors of María after September 2017. These early interviews offer a model of data collection, transcription, translation, preservation, and publication for the Puerto Rico Disaster Archive.

Figure 2: These sample screenshots exhibit the variety of oral history interviews collected in the early stages of this project. Bilingual captioning provides accessibility in both English and Spanish.

Since March 2017, I have been building relationships with communities across Puerto Rico and the Caribbean, including the University of Puerto Rico-Río Piedras, the University of Puerto Rico-Mayagüez, Casa Dominicana, the Colectiva Feminista en Construcción, the Centro de Apoyo Mutuo, PAReS, the Comedores Sociales de Puerto Rico, El Puente – Latino Climate Action Network, and dLOC. These relationships make the Puerto Rico Disaster Archive possible by fostering collaboration with local communities and organizations as well as providing the infrastructure needed to develop this project.

In the first year of the project, the organizations listed above will receive technological equipment and training materials in both English and Spanish to facilitate story collection events. The training materials are modeled after those of the Bracero History Archive, which provide crucial information for interviewers about collecting, recording, and interviewing participants. They also offer historical context to interviewers to ensure that they are well-versed in the issues discussed in the archive. These materials will not only facilitate community partners participation in The Puerto Rico Disaster Archive, but also will provide them with broader skills in the areas of data collection and preservation.

Moreover, the Puerto Rico Disaster Archive's training materials—supplemented by in-person training events and access to technologies like Omeka S and Domain of One's Own—bestow participating community organizations with the knowledge, tools, and literacies needed to document and preserve disaster-related materials on their own. As such, our partners have the option to develop and maintain their own communal archives both with and apart from this project using Omeka S's multi-site functionality. Following the recommendations of Architecting Sustainable Futures, which outline grassroots strategies for community-based archiving projects, this exchange of skills and knowledge is crucial to building meaningful and mutually- beneficial relationships with our community partners and advocating for new archival practices.

Methodology

A Post-Custodial Archiving Model for Ethical & Sustainable Engagement with Puerto Rican and Caribbean Communities

Our model is post-custodial, which the Society of American Archivists defines as "the idea that archivists will no longer physically acquire and maintain records, but that they will provide management oversight for records that will remain in the custody of the record creators" (n.p.). This means that all participants will retain the rights to their own data, but they will have the option to license this data to our project for the purposes of preservation and dissemination. We believe this is the most ethical model of engagement with communities across the Caribbean, as it resists colonial notions of ownership and creates opportunities for ethical, horizontal collaboration.

We take as procedural precedent the Bracero History Archive, which is a bilingual community collecting initiative built around post-custodial archiving processes. Like the Puerto Rico Disaster Archive, the Bracero History Archive interrogates the significance of a historical moment both to complicate our notions of federal response mechanisms, migration, and community and to highlight the need for humanistic approaches to these issues.

We take as thematic precedent the Hurricane Digital Memory Bank (HDMB), which archived oral histories of Hurricanes Katrina and Rita. As Sheila Brennan and T. Mills Kelly note, "Maintaining control over their personal story turned out to be much more important for our contributors than we

had expected. Following the hurricanes, many residents of the Gulf Coast felt that their lives had been taken over by others acting on their behalf and so it was very important to many of them that they retained ownership over their personal histories" (n.p.). To ensure that we treat our participants and their stories with the greatest of care, we similarly will have interviewees retain rights to their contributions.

As Purdom Lindblad notes,

> There is an inherent violence in archival work — silencing and obscuring of people and sources, creating and sustaining hierarchies through collection practices that value some voices and experiences over others, through naming practices, controlled vocabularies, and description, as well as hiding/devaluing the labor involved in this work [...] How can we deconstruct this silencing and archival violence, to build an anti-violent, anti-racist, woman-ist, practice instead? (n.p.)

One such strategy is through post-custodial archiving, which provides an ethical approach to archiving and meaning-making that is grounded in social justice. Michelle Caswell, Alda Allina Migoni, Noah Geraci, and Marika Cifor view post-custodial archiving as a way

> to conceive of and build a world in which communities that have historically been and are currently being marginalized due to white supremacy, patriarchy, capitalism, gender binaries, colonialism and ableism are fully empowered to represent their past, construct their present and envision their futures (6).

Post-custodial archiving addresses these concerns by establishing collaborative, horizontal relationships between participants and archivists, keeping records locally accessible to invested communities, and focusing on human rights, community development, and social justice.

Data Collection

Artifact collection, digitization, and dissemination will occur with each of our community partners, including the University of Puerto Rico-Río Piedras, the University of Puerto Rico-Mayagüez, Casa Dominicana, the Colectiva Feminista en Construcción, the Centro de Apoyo Mutuo, PAReS, the Comedores Sociales de Puerto Rico, El Puente – Latino Climate Action Network, and the dLOC.

Each of these organizations has a collection of materials pertaining to disaster response; however, they have limited time and resources with which to organize and digitize them. In fact, each of our non-academic partner organizations is predominantly reliant on volunteer efforts to operate. As such, their efforts are focused on day-to-day operations—political organizing, community support, energy infrastructure, et cetera—rather than on documenting their responses to recent disasters. The Puerto Rico Disaster Archive will provide support and guidance on organizing and storing materials, as well as

funding for graduate and undergraduate students to assist with preservation and digitization efforts. Moreover, our work plan includes frequent check-ins that will ensure any questions or issues are addressed in a timely manner.

Recording Equipment

Each site will receive a mobile digitization and oral storytelling kit, which includes the following:

- 1x Epson Perfection V850 Pro Scanner
- 1x Panasonic Lumix G7 DSLR Camera
- 1x 46mm UV filter and sunshade
- 1x Pixel channel lavalier microphone kit
- 2x Sandisk 128gb SD card
- 1x Sandisk 32gb SD card (provided with camera)
- 1x Mactrem PT55 Tripod
- 1x Impact Turtle Base C-Stand Kit
- 1x Matthews MICROgrip Head
- 1x CowboyStudio Photo Studio Lighting Kit
- 1x Pelican iM2975 Storm Trak Case for Epson V850 Scanner
- 1x Sony LCSU21 Soft Carrying Case
- 1x Grey Muslin Backdrop Cloth
- 1x Kodak Color Separation Guide and Gray Scale 1x Interview Setup Guide
- 1x Digitization Standards Guide
- 1x Dell Inspiron 14 7000 Laptop

These tools were selected to achieve high image, audio, and video quality while maintaining portability and ease-of-use. The selected equipment list includes tools for oral history interviews, oversize scanning, and flatbed image and document scanning. In addition to digitization and recording materials, these kits include one Dell Inspiron 14 7000 laptop, which provides community partners the tools needed to run the Epson scanner, process scanned documents, log metadata for materials, and communicate with the project team. Additionally, these laptops can be used with Pixel lavalier microphones to film interviews if the user encounters an equipment issue or failure with their kit.

Permissions

Each participant will be asked to sign a consent form licensing their content and/or interview to the Puerto Rico Disaster Archive for the purposes of preservation and dissemination. These consent forms are written in both English and Spanish to ensure that the project is accessible to all participants and interviewees. As the Puerto Rico Disaster Archive will serve as the custodian, rather than owner, of

this data, participants will have the option to make their content and/or interview fully available, to make it available only on-site at Michigan State University, or to embargo their record.

Project participants also will have the option to sublicense their content to future collections using a Creative Commons BY-NC license, which allows non-commercial entities to share content as long as credit is attributed to the originator. Our consent forms were informed by conversations with David Bliss, the Digital Preserving Archivist at the University of Texas Libraries, as well as by standards developed by Mukurtu, a "grassroots project aiming to empower communities to manage, share, and exchange their digital heritage in culturally relevant and ethically-minded ways" (n.p.). Additionally, participants will have the option to review interview content and/or revoke consent at any time. These choices align with both the post- custodial archival model and the Oral History Association's recommendations for best practices.

These options will give interviewees control over their contributions and provide flexible options for participation that are grounded in an ethic of care.

Post-Interview Preservation and Access

Upon collection, artifacts and interviews will be uploaded to Omeka S via a Domain of One's Own account affiliated with Michigan State University. Omeka S is an open access tool used to develop digital cultural heritage collections. The S version is particularly beneficial because it enables us to develop multi-site collections using the same data sets. As such, community organizations would have the opportunity to create a separate mini-collection of oral histories using the infrastructure of the larger project.

This platform is dedicated to social justice and is staffed with individuals knowledgeable about the technical and theoretical components of the project. The Omeka site will be synced to Michigan State University's cloud storage provided by Amazon Web Services (AWS). According to DLT Solutions, the provider of Michigan State University's Amazon Web Services, DLT will operate as a "school official" as defined by FERPA, and, as such, they

> shall not use such data for its own benefit and, in particular, will not engage in 'data mining' of Customer Data or Customer Content or the sale of Personal Data, including, without limitation, the sale of End User e-mail addresses. Notwithstanding anything in this Agreement to the contrary, DLT will not decrypt Customer Data or Customer Content or access or read unencrypted Customer Data or Customer Content (5).

Using this framework for our data ingestion processes will ensure that participant data is kept safe and secure and will not be used for malicious purposes by third-party enterprises.

Once interviews are ingested, they will be transcribed and translated in both English and Spanish by students at the University of Puerto Rico-Río Piedras and the University of Puerto Rico-Mayagüez. Once transcriptions and translations are complete, interviews will be made available via the public-facing features of Omeka S. Redundant copies of all content will also be made available by the dLOC and the Michigan State University Library's Digital Repository to ensure that project data is widely accessible to a variety of audiences including residents, communities, and activists across the Caribbean as well as scholars and researchers in fields such as Digital Humanities, Caribbean Studies, Cultural Studies, Political Science, History, Environmental Humanities, and more. Both entities will comply with the licensing providing by participants; in other words, interviewees will retain ownership of their data both in the original and redundant collections.

Sustainability of Project Outcomes and Digital Content

To ensure the sustainability of the project, we selected the MODS metadata standard, which is suitable for preservation, administration, publication, and archiving. The Samvera repository community has created a mapping for MODS so it can be converted to existing published linked open data (LOD) vocabularies, which will make it compatible with Omeka S. It also will allow us to develop bilingual metadata so that the project is accessible across languages.

All participating organizations will receive training in both interviewing and filming at the start of the project to ensure that our workflows and processes are consistent and compatible. They also will receive training in preservation and archiving so that materials are documented and stored in suitable ways. We will ensure that interviewers are familiar with trauma-informed interviewing strategies, such as stopping the interviews and/or referring the interviewee to local mental health organizations. On the technical side, we will ensure the metadata will be extractable so that future researchers can use it to analyze the collection; Omeka S's native JSON data format and accessible API will help facilitate this process. Interviewers will enter metadata into a Google form, which will be accessible by the project manager and the technical team.

All digitization work will follow the recommended scanning standards and specifications laid out by the Society of American Archivists Museum Archives Section's Standards and Best Practices Resource Guide, with master image files saved at a minimum of 600 pixels per inch (ppi). All digitized documents and images will be saved in the lossless .TIF file format, with derivative images made available in .JPG. All standards will comply with those recommended by the Institute of Puerto Rican Culture and the Puerto Rico Archive.

 All videos will be recorded in 4k/30p, high-resolution professional quality recording standards. They also will be recorded and displayed in .MP4 to ensure that they are compatible across platforms, including Apple and PC tablets and computers as well as Apple and Android phones. Additionally,

.MP4 files are compatible with the greatest number of video editing software programs, providing our community partners and members of our team with the option of using and editing videos for local events, community work, and future research.

We also will make lower resolution videos available to ensure that the collection is accessible to communities with low bandwidth and limited internet access. Similarly, we will select an accessible and responsive theme for the public interface of the site. We see this project as furthering the goals of minimal computing, as developed and implemented by communities such as Global Outlook::Digital Humanities, the dLOC, and the Hurricane Digital Memory Bank. Each community organization also will receive multiple hard drives of their data. This way, community partners will have back-ups of relevant data and will be able to access disaster response strategies without an internet connection.

By using Omeka S, we can automatically create derivatives of our files to ensure that we don't edit or erase the originals. Copies of all original files also will be kept on redundant external hard drives. Additionally, we will maintain a meaningful data package that includes metadata and videos that do not require the site to run. That way, our project is protected if our data, platform, or the internet are no longer operable.

Dissemination

Our project will be disseminated in a variety of ways. All of our collaborators and partners will have the right to present, use, and share the resources made available by our project, which will help disseminate the project to our communities of influence.

We also plan to enhance our site's discoverability through search engine optimization as well as by posting links to the project on the websites of our partners, including the University of Puerto Rico, Michigan State University, and the dLOC. We also will post links to the Puerto Rico Disaster Archive in relevant digital spaces, including Humanities Commons and the HASTAC blog.

Additionally, we will house redundant collections with the dLOC and Michigan State University's digital repository. Doing so will ensure that our project is not dependent upon one institution or infrastructure. Given the risk to our infrastructure posed by climate change, we find it particularly important to model best practices for ensuring the sustainability of both our collection and future collections.

We also will develop a meaningful data package that doesn't require internet access. This would allow communities who are interested in the project to have access to the project's artifacts, videos, and metadata without being dependent upon internet service. With the unpredictable availability of internet service following a disaster, this will enable communities with limited or weakened digital infrastructure to engage with the project as desired.

Lastly, while we do not want to reduce this project to a text mining project, but we do recognize the value of making captions available for study. As such, captions will be separable from the video files and made available for future analysis. We do, however, plan to anonymize transcripts to protect participant data. We also will embargo transcripts for three years so as to encourage users, communities, and researchers to engage with the human experience portrayed in the videos prior to working with anonymized and de-humanized data. This decision both places value on the humanistic elements of our collection and aligns with the recommendations of the Oral History Association, which states, "[i]nstitutions charged with the preservation and access of oral history interviews should honor the stipulations of prior agreements made with the interviewers or sponsoring institutions including restrictions on access and methods of distribution" (n.p.).

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