

# Drips Gallery: A Community-driven Graffiti Library & Archive

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**Abstract:** This paper explores the possibilities of using digital technologies in an archival setting. The hypothesis examined and investigated was: street art can be preserved and archived through archival websites and mobile applications. In order to explore this problem a community driven digital archive, Drips Gallery, was created. Drips Gallery is a new archive consisting of graffiti photograph collections and is available through a website and mobile application. The database, website, and mobile application was created, coded, and programmed specifically for the archival and community needs of Drips Gallery. Drips Gallery allows the community to drive the archive and changes the role of the archivist from record keeper to facilitator. By creating an archival mobile application and website, new and immediate ways of capturing and preserving culture as it is being created and consumed is now possible.

## Introduction

Designedly displayed yet outlawed and elusive, graffiti is more complex than scrawled drawings and painted letters on city buildings and streets. It is a representation of a neighborhood; a voice of its inhabitants speaking to the public, to each other, and to themselves. Graffiti is a worldwide subculture. It is political activism. It is art. Although the concept of graffiti dates back as far as Ancient Egypt, the art movement developed its roots and notoriety in 1970s New York City. Strategically glazed over subway cars were canvasses that travelled from the neighborhoods throughout the city. As city officials labored over the whitewashing of vandalism, advertisers adopted the style to sell clothes and music. The art form became popular and trendy. Since then, graffiti has evolved into a more accepted and often commissioned form of art. Walls around the city have been adopted for intricate murals, paintings are sold in galleries, books and documentaries on the subject are available, and all in homage to street sign scribbles. It's clear that from the birth of the movement to its current place in culture, graffiti has tremendous archival value. There are countless reasons why graffiti should be preserved including its role in art history and New York City, the socioeconomic connotations, the political stance, the effect on consumer culture, the controversy, and the acceptance. Of course, this is no easy task for archivists as graffiti is a transient street art. For the most part, graffiti is fleeting, constantly changing. Graffiti artists take risk with their art, exposing it to the world without knowing how many people will see it and how long it will survive. Thus, this radical type of art requires an unconventional, proactive archival approach. The best way for archivists to document graffiti would be to apply the technology that matches the mobile nature of this movement as well as rely on participation from the community.

## Problem

The current state of the graffiti archive is a large gap of missed moments, much of it due to its original stigma of being vagrant misdemeanors dirtying city streets as well as its transient nature and elusiveness. Today graffiti is being embraced in the art world, by communities that are proud to see displays of their roots on walls, and by those who can identify with the politics of the movement. The archival gap will be regrettably obvious as the lack of documentation becomes more apparent. As previously stated, there are several challenges that face archivists in acquiring and preserving graffiti art. The greatest of which is its swift and simultaneous rate of creation, consumption, and destruction. Due to these challenges, a proactive approach will be necessary in the capture and documentation of this art form. The similarities between the nature of graffiti and the instantaneous use of mobile technology in today's culture suggest

that a merger of the two could successfully result in a digital archive of graffiti guided by the community for which it is intended.

The purposes of this project were as follows:

- Capture and preserve graffiti by creating a digital archive accessible via website and mobile application formats
- Encourage community contribution and usage by allowing users (creators and consumers) to create, edit, and share collections within the archive
- Introduce a radical archive fitting to its generation and subject matter – easily accessible and searchable, instantly updated
- Evolve the role of creators, consumers, and record-keepers by using emerging technology and supporting proactivity

## **Methodology**

The completion of this prototype depended on four key elements: acquiring and curating preliminary collections, creating a relational database for those collections, designing and programming a website which interacted with that database, and separately designing and programming a mobile application to interact with the database.

### *Image Collections*

Drips Gallery consists of images donated by Dennis Stumpo and Ray Mock. Dennis Stumpo a.k.a. Rare is a graffiti artist based in the Bronx, New York. He has been producing and documenting graffiti art since its emergence in the mid-1970s. His collection extends over 4,000 images, most of which he has personally digitized. Although he allowed Drips Gallery access to his entire collection, three collections were curated, shared and viewed via USB drives, DVDs, and Facebook, totaling fifty-three images. The collections contributed by Stumpo include Trains (photographs of New York City subway cars from the 1970s and 1980s), Subway Maps (images of tagged or stenciled transit maps), and Graffiti Universe. Graffiti Universe is the name given to a wall in the Bronx where Stumpo invites graffiti artists to come and display their work on private property owned by his uncle. The wall is buffed and the artwork is replaced with new pieces consistently on a weekly and bi-weekly basis. Dennis Stumpo has been documenting every piece of art displayed at Graffiti Universe since early 2011.

The other two collections in Drips Gallery, Brazil World Cup 2014 and Lisbon, were contributed by Ray Mock a.k.a. Carnage. Based in Brooklyn, New York, Mock is a writer, photographer, and independent publisher who has been documenting street art around the world for the past 15 years. The Brazil World Cup and Lisbon collections are two of the locales where he has documented the street art culture through his photography. The photos for the two collections, totaling 34 images, were shared and curated via Flickr.

Prior to proceeding with the project, multiple in-person meetings occurred with both contributors to explain the Drips Gallery mission and how they would be credited. At the request of Dennis Stumpo, the photos that he contributed were watermarked with either “Stumpo” or “Graffiti Universe” logos using Adobe Photoshop. All the necessary metadata for the database such as image titles, dates, locations, etc. were acquired from the contributors in these meetings. The images were given file names, organized into collection folders, and stored on two external hard drives and one USB flash drive.

### *Database*

The first step the creators of Drips Gallery took to create a community-driven digital archive involved designing the backend of the website and mobile application. The first decision was to determine the type of database in which the data would be contained. There were two ways to go about creating the database for Drips Gallery. The first option involved building a relational database from scratch and the second option comprised using a Content Management System (CMS). Systems reviewed include: Collective Access, Omeka, and Archivists' Toolkit. The types of data affiliated with Drips Gallery were taken into consideration when making this decision. Another aspect necessary to consider during the decision process was database accessibility. The connection and accessibility between the database and the mobile application is essential to Drips Gallery's web and mobile connection. Due to the type of data, the photographs, metadata, and mobile application accessibility Drips Gallery involved, the decision was made to create an original relational database with MySQL.

Before setting up the MySQL database, the creators began collecting all of the data and metadata for each image. Google Spreadsheets were used to organize the data because of cloud accessibility, multiple users, and CSV export features. The data was divided into tables based on metadata, keywords, collections, and browse capabilities in order to create a relational database. The tables created include: artist, collection, image origin, graffiti style, medium, Library of Congress Graphic Material Thesaurus, general location, exact location, file name, title, date taken, date uploaded, longitude, latitude, height, width, and pixels.

Once the tables on Google Drive were complete, the server location of the MySQL relational database needed to be determined. One option taken into consideration was Amazon Web Services (AWS). AWS is a cloud-based server available free of charge for the first twelve months followed by a monthly fee. This option would involve an entire server setup and software (PHP, SSH, Apache, MySQL) installation. The second option was donated Bluehost server space through DHALab.org. DHALab.org, Digital Humanities in Archives Lab, is a non-profit organization assisting archival students and archivists collaborating and experimenting with digital humanities. The DHA Lab server is located in the Bluehost Cloud and comes equipped with PHP, SSH, Apache, and MySQL.

Ultimately, Drips Gallery chose the Bluehost server because of its cost-effectiveness, capability of working with mobile applications, and the like-minded mission of DHA Lab. An additional benefit of collaborating with DHA Lab, and the archives housed within it, is increased visibility. Now that the server had been determined, the tables needed to be transformed into a database. The tables located on Google Drive were converted into CSV files in order to upload the data to MySQL on the server. As the upload was taking place, a few flaws in the tables were noticed. By nature, tables are constructed of "one to one" relationships. A relational database allows for "one to many" or "many to many" relationships. In order to achieve that structure, it is necessary to create additional tables that cross-reference each other. At this point, only the simple tables had been constructed resulting in redundancies and duplications. For example, if one image has four artists, a conventional table would repeat an image four times with a different artist. In order to fix the problem, three additional relational tables were created: relational artists (artist x image), relational image origin (origin x image), and relational style (style x image).

Once the tables were complete, they were uploaded to MySQL. Next, it was necessary to upload the images to the Bluehost server. Prior to doing so, the image file names were adjusted in a manner that could be easily recognized by the program and constructed automatically from the metadata for organization and future growth. An open-source File Transfer Protocol (FTP), FileZilla, was used to transfer the computer files (images) from one host to another host over a TCP-based network (aka Internet). This allowed the image folder to be transferred with its given structure rather than consequently reorganizing single files within the server. The image FTP upload was completed smoothly and all of the data related properly to the images without any hiccups.

## *Website*

The first step taken in creating the website was deciding whether to use a website builder or create the code via a developer tool. The creators decided the best way to tackle this decision was by investigating website builders. The conducted research included website builders such as Weebly, Squarespace, and LayoutIt! Ultimately, the creators decided on using LayoutIt!. The decision was based on financial terms, customization options, and ease of use. LayoutIt! uses Bootstrap, a front-end framework tool that specializes in developing websites that auto-adjust and transform for optimal viewing on mobile devices. Although Drips Gallery will offer a website and mobile application, it is beneficial that the website will be user-friendly on any mobile environment. Any additional level of access is considered a plus.

Before beginning to work on the website through LayoutIt!, the layout of the pages were sketched by hand. It was decided to place a menu bar at the top of each page with the Drips Gallery logo. The menu bar would include links to the following pages within Drips Gallery: Discover Drips, About Us, a search bar, Log In, and Register. In the future, Drips plans to include a Map Page with pins of all the locations of the graffiti. While this feature is not a priority for the website, it is an integral aspect of the mobile application. The original LayoutIt! design of the home page comprised one main image placed in the center of the page with two rows of smaller images below.

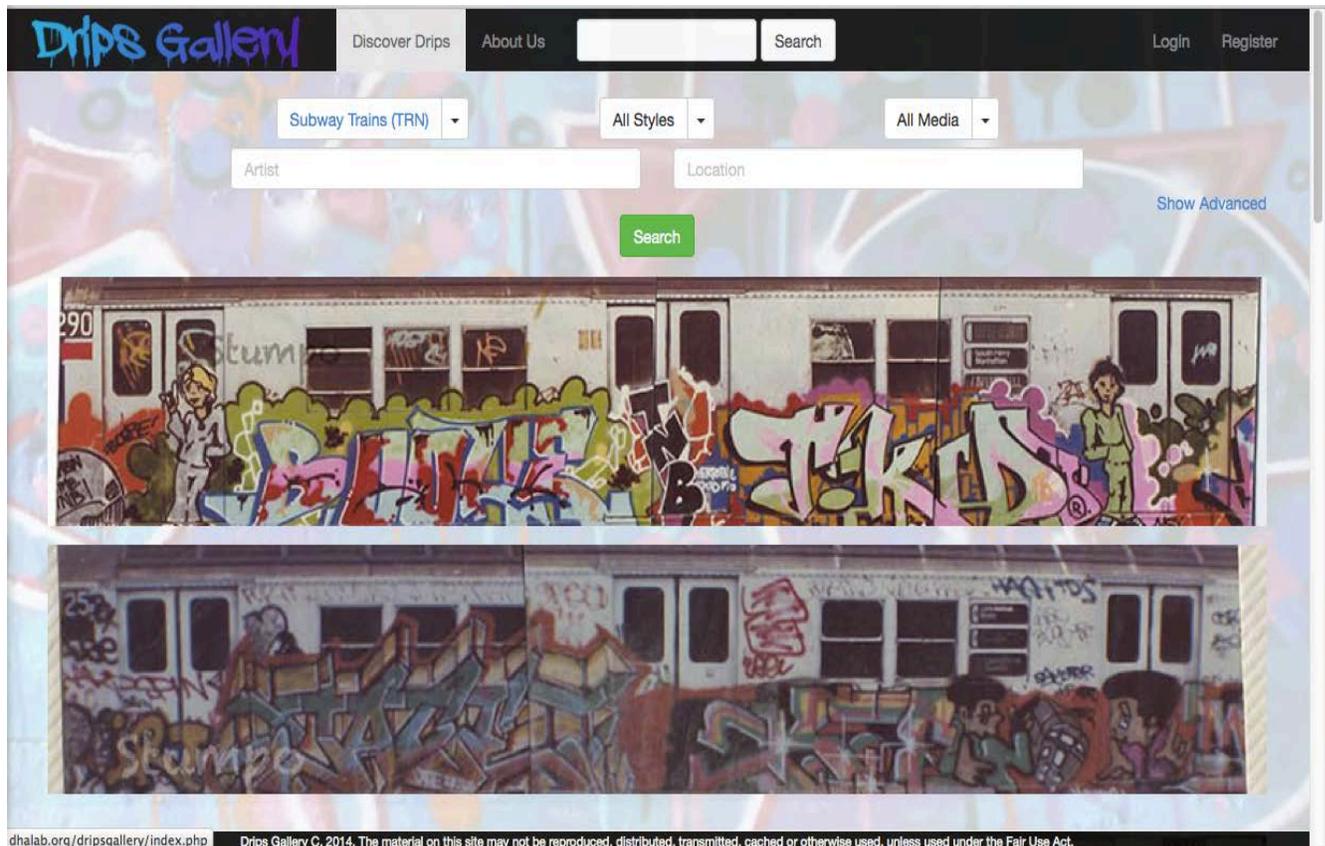
All of the images on the home page would be programmed to change whenever the site was refreshed. As the project actualized, the creators adjusted the home page to simply include one large centerpiece that cycled through each of the images on the database every few seconds. A loading speed issue presented itself with this change. As a result, all of the images were compressed and uploaded to the server in a low-resolution image folder from which the website was specifically programmed to pull the home page images. In the future, images that will be uploaded by users will automatically adjust to a size that works well for this purpose.

The pages created next included the Log In and Register pages. These pages are fairly standard, containing a username/email and password entry for the Log In Page and a form consisting of first name, last name, email address, username, password, and confirm password for the Register page. This was the least difficult part of the website building process because Bootsnipp.com, a resource for Bootstrap frameworks, provided the form builder code, equipped with text boxes and a submit button. It simply had to be customized and copy/pasted into the Drips HTML files.

The following page created was the Administrator page. The purpose of the Admin page is to allow the Drips Gallery creators and administrators to control and manage the database. Eventually, the database will no longer be accessed through MySQL, but rather through the Administrator page. This page will also allow the administrators to manage users and their contributions. In order to maintain the accessibility and accuracy of the archive, the images uploaded by users will be subject to a process of quality control. Although the Admin page has been created and uploaded to the server, it will not be programmed immediately. Because this preliminary process requires continuous interaction with the back-end, the utilization of the Admin page is not in the scope of this prototype project.

The most complex page, the Discover Page, is home to various search utilities. Drips decided that the easiest way for users to search is through drop-down search filters. The drop-down search filters are located at the top of the page and consist of: Collections, Artists, Medium, Location, Style, Photographer, Date Taken, User, Library of Congress Terms, and Image Origin (digital or analog). When the page is initially opened, the filters will not be set and all images can be viewed. The page will consist of four rows of one to four images, depending on size, with the remaining images separated by pagination. Each image will link to a landing page, which will include the singular image alongside its metadata. Clicking

the image again via its landing page will link to the original photo at its highest resolution. After considering the inevitability of expansion, the creators decided to vary the style of the search functions. For example, more specific search criteria such as photographer or date taken have been separated out into an “Advanced Search” option as to not overwhelm the user. Some criteria such as Artist and Location are available as text boxes rather than drop-downs because those have the potential to grow tremendously and would not display well via a drop-down menu. The Discover Page will require the most ongoing maintenance and analysis as it is essentially the actualized form of the database and the surrounding pages are its bookends (see Figure 1: Drips Gallery Discover page).



**Figure 1: Drips Gallery Discover Page (Finished Product)**

The final page created was the About Us Page, which includes the Drips Gallery mission statement and team description. The mission statement appears at the top of the page followed by the team member bios and headshots. Originally, the researchers, Farah Jindani and Alexandra Lederman, were the only team members to be displayed online. However, they decided to include Allan Pichardo, the Drips mobile application consultant. Also, during this process, the creators decided it would be necessary to include a copyright statement to protect the archive and its contributors. The copyright disclaimer states: “Drips Gallery C. 2014. The material on this site may not be reproduced, distributed, transmitted, cached or otherwise used, unless used under the Fair Use Act.” This statement appears as a static footer on the bottom of every page.

As previously stated, the frameworks of the pages were built in Layoutit! They were downloaded as zip files, which included the HTML files and the Bootstrap CSS. The files were then opened in Adobe Dreamweaver to be stylistically manipulated. This is when the specific design aspects were determined. Since the archive consists of colorful photographs of graffiti and street art, toned down backgrounds were

used. This ensures that the graffiti can speak for itself and boldly. Space, or padding, surrounds each image and everything is centered. The font type is Helvetica because of its natural easy to read on a screen characteristic. Following the initial alterations, the pages and corresponding CSS files were uploaded through Filezilla, thus making the website live. The PHP and Javascript code was programmed through Netbeans while accessing the live site via remote server, and synchronized repeatedly after testing each update.

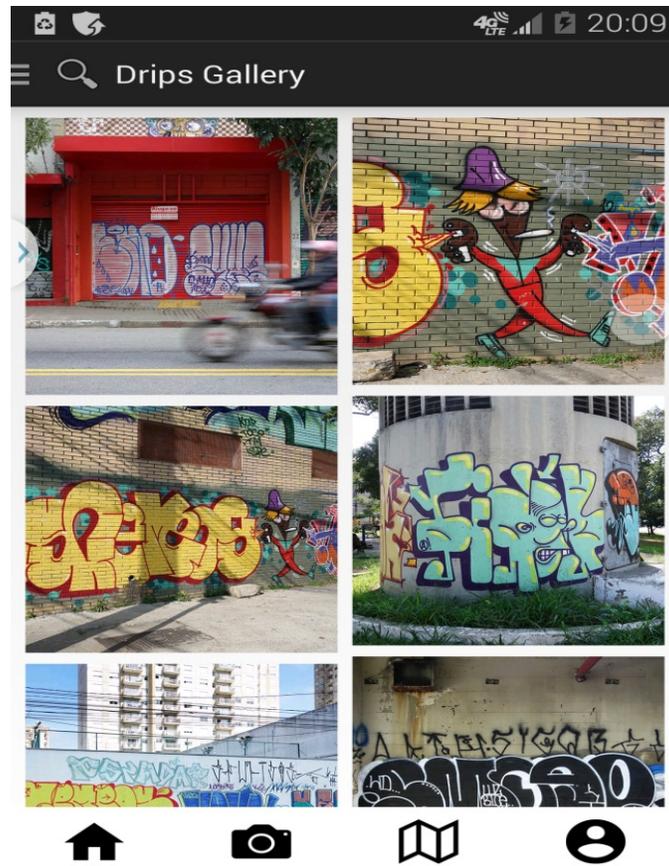
### *Mobile Application*

The Drips Gallery creators made a decision to produce an original relational database at the beginning of the process, resulting in a smoother experience in creating the mobile application. Before delving into the details, it is important to understand the basic mechanics of a mobile application and its relation to a website or a mobile website. A mobile application functions on a Model-View-Controller architectural pattern. The model is the database, where the information is located, the view is the user interface, and the controller layer is the link between the other two layers. The controller extracts information from the model at the request of the view or user interaction and interprets that information so it can be displayed by the view. Although a mobile website essentially works the same way, an application is significantly more straightforward as it is a singular platform downloaded to live on a user's device and its sole purpose is to transmit and interpret requests between the three layers. A mobile website is simply a smaller version of an existing website that needs to be accessed via a web browser on a server and involves complex layers through which requests have to pass in order to achieve responses.

Drips Gallery's decision to create a mobile application alongside the website was because of the simplicity of working with images via mobile applications. The idea of capturing the images within the same platform as the archive is conceptual as much as it is convenient. This concept was a significant factor when determining the user interface of the application. The interface was first sketched on paper, similar to the origin of the website. The home page consists of several rows of multiple images that will continue as the user scrolls down the page. Each page is bordered with static header and footer navigation bars. The footer includes four icons: a home icon, a camera, a map icon, and personal profile. The header includes a list icon that opens on the left when clicked to show the available search criteria such as collections and artists. After these initial designs were completed, they were actualized through Eclipse with Android Developer Tools software. This software has the ability to drag and drop style elements to complete a design, then program those elements in the same developer environment (see Figure 11: Drips Application Menu on Eclipse).

The coding was done in Java, the programming language for Android, and capable of interacting with the PHP scripts already written in the MySQL database for the website. As with the Discover Drips page of the website, the search criteria on the application filters the images available on the home page.

Each image leads to the larger resolution image with a list of metadata. The profile icon is not currently functional, but will be in the near future. The map icon leads to a map of the user's current location through the device's built-in GPS technology. As the archive grows and contributions are uploaded, the map will automatically generate pins of the various image locations. The camera icon offers the option of selecting an image from DropBox, the device's photo gallery, or taking a new image via the device's camera utility. Currently, these options are visible although the functionality is still in progress (see Figure 2: Drips Gallery Mobile Application Home Page).



**Figure 2: Drips Gallery Mobile Application Home Page (Finished Product)**

## Findings

The purpose of the Drips Gallery project, to create a digital archive on a website and mobile application that support user contribution, was proven successful. However, several limitations and necessities for further development were also identified. They are as follows:

- Drips Gallery will require constant maintenance which equals more time, finance, manpower
- Expanding the archive will require technical expansion i.e. servers, bandwidth, storage, file migration
- Archival expansion will raise aesthetic arrangement questions and possible reprogramming
- Analytical studies need to be conducted in order to determine user efficiency and contribution rates
- Develop mobile application availability across operating systems i.e. Apple iOS, Microsoft
- Determine preservation best practices and longevity of born digital content

## Conclusion

This project aimed to capture and preserve graffiti art through a community-driven archive with the use of a website and mobile application. The paper discusses the current state of graffiti art, the archivist's role, and the use of digital technologies in the archive. Graffiti art is currently becoming a more widely

accepted art form and the archivist's role is evolving from record keeper to facilitator. Digital technologies can be and need to be used in archives, libraries, and cultural institutions in order to stay relevant in this digital age. Research questions were asked in order to guide the investigation and analysis. The questions explored the value of archiving graffiti art, whether or not copyright is an issue, the existence of a digital archive in a website and mobile application, and if a mobile application can increase user engagement in an archive. The hypothesis specifically examined whether or not street art can be captured and preserved through a website and mobile application. The research questions and the findings helped define the design of the Drips Gallery website and mobile application. Drips Gallery was designed to empower and engage a community within a digital setting by capturing and preserving graffiti art through a website or mobile application. The end result of this prototype project culminated in a community-driven archive capturing and preserving graffiti art through a website and mobile application. Drips Gallery was designed to engage the graffiti community with archives, evolve the Archivists' role, and increase accessibility while preserving graffiti art.