Cover page

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Narrative description

Project activities

Photogrammar - a web-based platform that makes it easy for users to organize, search, and visualize over 170,000 photographs from 1935 to 1945 - demonstrates how historical archives, particularly archives of visual culture, can be digitally reimagined to increase scholarship, visibility and usability. With Photogrammar, users can now follow photographers’ paths across the country and retrace their steps over time, explore the collection’s historical archival systems, and organize the photographs in new and informative ways.

Physically housed in the Library of Congress, the photographic archive—which was commissioned by the United States Farm Security Administration and Office of War Information (FSA-OWI) to document American life—serves as an important visual record for scholars and the public-at-large. In the public domain, the collection contains over 170,000 monochrome and color photographs and offers a unique snapshot of the nation during the Great Depression and World War II. Prior to Photogrammar, users interested in the archive contended with limited filtering options; they either had to wade through the massive print collection or they could use the online site the Library of Congress provides, which only allows for basic searching due to government restrictions. When building Photogrammar, the team worked closely with the collection’s curator to develop creative new approaches to the collection using computational methods. The innovation of Photogrammar is in augmenting, re-framing and re-visualizing a substantial public archive from the Library of Congress, in turn allowing new and unprecedented access and research.

By standardizing the archive’s metadata, the Photogrammar team increased entry points into the historical collection. Extensive metadata accompany a majority of the photographs, capturing such features as dates, captions, locations, photographers’ names, and a uniquely identifying call number. However, the metadata was inconsistently recorded; dates, for instance, were written in a number of styles (“Aug 1943”, “Aug. 1943”, “August 1943”, “Summer 1943”). The Photogrammar team cleaned and transformed the metadata on a case-by-case basis, standardizing the fields. In the process, the team discovered latent information that allowed them to add metadata to 34% of the photographs. FSA-OWI photographers sent their 35mm film to be processed in Washington D.C. The staff would then cut the film into strips of 4-6 frames to print the images. This film structure was formerly hidden as the suffix in the Reproduction Number field associated with each image in the Library of Congress’s digital catalogue. In a novel approach, the Photogrammar team reconstructed the strips of film, allowing attributes to be algorithmically assigned to the photos (Fig 1). For example, the first and last photograph in a strip includes the same photographer, date, and location. Therefore, we know that the three shots in between have these same attributes. As a result of the standardization and new metadata, users can now map photographs over time (Fig 2), run faceted searches (Fig 3), and see the order in which photographs were taken.
Figure 1. Reconstructed strip from the work of John Vachon (Chicago, 1941).

Figure 2. Map by county in 1936 vs. Map of photos from 1935-1945

Figure 3. Faceted searching.

The mapping interface Photogrammar’s team designed facilitates new discoveries about the FSA-OWI collection. Over half of the photographs were tagged with county geographic
information. The Photogrammar team added longitude and latitude coordinates, added a time slider and mapped the photographs over historic county boundaries. The result is a new understanding of the collection. The popular and scholarly characterization of the archive hitherto argued that the photographs chiefly depict rural poverty in the American South and the Dust Bowl. Photogrammar’s map challenges this characterization by showing the national breadth of the archive, which was apparent virtually immediately and increased over time. (Fig 4). Beyond looking at the collection at scale, there is a wealth of information that can be learned and questions that can be posed about each photograph or sequence of photographs by putting them in context through use of this interactive map.

Figure 4. National reach of the FSA-OWI collection

Photogrammar also makes the archival system that organized the physical archive at the Library of Congress available digitally. At the Library of Congress, filing cabinets contain approximately 88,000 printed photographs from the collection. In 1942, Paul Vanderbilt developed two pioneering archival systems for cataloging the photographic prints: a classification system and a lot system. For the classification system, he assigned each photograph to a three-tier hierarchy based on the photograph's themes or subjects, a process that today would commonly be referred to as tagging. With the lot system, he put photographs into groups based primarily on the photographer’s shooting assignment. Vanderbilt’s archival systems persist today as the method for organizing the photographs at the Library of Congress: the classification
system is used for managing prints, while the lot system is used for the microfilm copies of the photographs. Vanderbilt's two systems serve as an object of study themselves via Photogrammar and are an exciting way to explore the archive and thoughts about it from the early 1940s. Digitally reconstructing the categorization scheme greatly simplifies the process of analyzing Vanderbilt's cataloging project; it was previously possible only when visiting the physical FSA-OWI archive and in that case required substantial effort to look at several categories at once (Fig 5 and 6).

Figure 5. Vanderbilt’s Classification and Lot Number systems are reconstructed and searchable in Photogrammar.
Figure 6. Interactive visualization of Vanderbilt’s archive system.
Photogrammar also created three new ways to search the collection using text analysis and image analysis. The first is using Term Frequency-Inverse Document Frequency to identify captions that are most similar. It allows users to search photographs by shared semantic information, finding patterns of similarity and difference across the entire archive that would be virtually impossible to establish otherwise. (Fig. 7). The other two search methods use image analysis. The first is using color analysis to search the color photographs in the collection by frequency, hue, saturation and brightness (Fig. 8). The second is using facial analysis to identify the faces in
individual photographs (Fig 9). The two searches based on image analysis and facial detection will be released this spring once the user experience is tested.

Figure 8. Color-based search of the color photographs in the FSA-OWI.
Accomplishments and Audiences

To measure impact, Photogrammar maintains analytics. Since the site’s launch in October 2014, almost 600,000 users visited the site with over 8 million pageviews. Photogrammar has a global reach with users from over 145 countries and 6 continents. Citing the innovative approach to visual culture, it was named by Slate as one of “Five of 2014’s Most Compelling Digital History Exhibits and Archives” and featured in national publications such as NPR’s Morning Edition and BBC World News. Acclaim has also come from museums and universities, with invited talks at institutions such as Columbia University, Pitzer College, the University of Pennsylvania, and Rice University. Recently, the Museum of Modern Art in New York City used Photogrammar as a model for the digital component of the exhibition Object: Photo. Responding to users, who have sent hundreds of emails offering new information about the photographs, the team is now developing a crowdsourcing component for the project’s next phase.

We have also made a lot of headway in publicizing the project to a wide academic audience. Specific presentations, including future scheduled talks, include:

- Southern American Studies Association, February 2011
- New England American Studies Association, November 2011
- Modern Language Association Annual Conference, January 2012
- American Historical Association Annual Conference, January 2012
- Policy History Conference, June 2011
- New England American Studies Association, October 2012
- American Studies Association, November 2012
- International Center for Photography, April 2013
Classroom use of Photogrammar is robust and growing, in both K-12 and post-secondary environments. Audiences have also been very interested in the specific kinds of information made accessible by the project, such as the expanse of the country that was covered by the photographers and the specific paths some of them took on their journeys. They have been interested as well in the applicability of the Photogrammar techniques for re-envisioning other large sets of documentary photographs. As the FSA photographs are very well known in a general kind of way, people have been fascinated not only to see how new kinds of information can be extracted from the canonical images but also to see new images beyond the usual iconic subset. Already we can tell that the Photogrammar project will generate information that will allow scholars to challenge common preconceptions of the FSA archive, such as that it was overwhelmingly concerned with rural life, or that it produced very little photography in northern states. We predict that it will also allow connections to be made more evident between the FSA and the OWI periods. As very little scholarship has been done on the OWI work, this is an interesting new facet. And finally, the Smithsonian Institution has approached us with an offer of partnership, currently under consideration, between Photogrammar and the S.I.’s Public Sculpture archive. We speculate that should this proposal develop further, exciting new aspects of mapping large cultural heritage archives along the Photogrammar model will emerge.

Members of the Photogrammar team are planning to teach a new course at Yale University in 2016-2017 about public sculpture, in order to fill in scholarship and context needed for such a plan. Since the start of the granting period, the Photogrammar project group has met together virtually every week to discuss techniques and strategies. By now our disparate talents have been very successfully melded into a true team effort. Indeed, the team itself is one of the achievements of the project so far, as we have become quite aware of things that we have been able to do that we could not without the skills of each team member.

For the code related to Photogrammar, see https://github.com/statsmaths/photogrammar.
Continuation & Long Term Impact

The Photogrammar team is actively maintaining the current infrastructure of the public-facing website. We have also applied for a second round of funding to enhance two areas of Photogrammar. In this proposed extension, Photogrammar will create links across archives in order to place the FSA-OWI in the larger federal effort to document America during the Great Depression. We will incorporate the Federal Writers Project (FWP), which recorded the lived experience of Americans, and bring together over 4,000 life histories from the University of North Carolina Libraries (UNC) and the Library of Congress (LOC). Interviews will be plotted on a new geographical layer allowing search by space and time. Users will be able to search the new layer independently or along with the geographical layer of FSA-OWI photographs. The new and cleaned transcripts created over the next year will also allow for refined search functionality including faceted browsing and full text search. Users will be able to explore the FWP and FSA-OWI spatially, temporally, and through faceted searching, allowing the public to explore the broader documentary record of the era relationally.

Photogrammar will also expand and deepen knowledge about the work of individual photographers. The two proposed additions are: adding audio files of photographer oral histories that were conducted by the Smithsonian's Archives of American Art (AAA), and rebuilding and making available the photographer's film rolls, an innovation made possible through Photogrammar’s innovations. These additions will augment Photogrammar's current faceted searching by date and photographer, a feature that already allows users to track individual photographers on assignment across the country. The new combination of interactive resources will allow users to hear and read transcripts of what the photographers themselves thought about their experience with the FSA-OWI as well as to see the photographer's rolls of films in shooting order revealing individual photographers’ ways of seeing and capturing through the camera. The expansions will offer source materials for some of the most famous documentarians of the 20th century including Dorothea Lange and Walker Evans as well as new insights into some of the lesser-known photographers.

The proposed extensions of the project will broaden Photogrammar's reach and facilitate the use of digital scholarship in research and teaching. By linking disparate archives held by the AAA, LOC, and UNC. Photogrammar will promote new avenues for inquiry across the academy and in public venues collaboratively. Scholars working on the lives of individual photographers can move seamlessly between their images, their photographic journeys and their narrative accounts. Studies on the history of particular cities or states can easily juxtapose photographic evidence and personal accounts from both the people who lived there as well as the photographers who documented them. Scholars will have new access to a large, curated humanities dataset. The federal government's role in recording American life during the Great Depression and World War II can be analyzed for large-scale patterns, including questions of demographic representation in the FSA-OWI (photographic) and the FWP (written) archives. In addition to increasing the visibility of and access to the AAA, LOC, and UNC archives, Photogrammar (in its extended form) will also be of interest to a diverse public audience. Visits to Photogrammar's website and wide coverage in popular press publications indicate interest from a large and international audience comprised of a variety of age groups and backgrounds. The combined collections, coupled with the faceted search and customized visualization options, will offer
scholars and the public an easy-to-use digital platform for further exploration, research, and teaching the documentary expression of the 1930s and 1940s.

**Grant products**

The primary grant product is the public website, accessible at http://photogrammar.yale.edu. We have also drafted a paper entitled “Uncovering Latent Metadata in the FSA-OWI Photographic Archive”, which is currently accepted contingent on minor revisions for publication in an issue of the peer-reviewed journal *Digital Humanities Quarterly* (DHQ).

**Accomplishments**

In our original grant proposal submission, 23 February, 2011, we hoped to complete the project in three phases, as follows:

“Phase I: The initial phase of the project aims to deliver a working website which will have a minimal working version of all the core aspects of the expected final website. To accomplish this, we will acquire historical maps, georeference the digital maps, build a core LAMP server with wordpres management system, develop a graphical interface with processing and javascript (http://processingjs.org), and create the sites textual content (i.e. about page, introductory text). Expected to start October 2011 and conclude by the end of October 2012.

Phase II: During the second phase, we will introduce the beta version of the website to a limited audience which will include the classrooms of advisory board members and conference workshop groups. In parallel, we will continue to improve the structure of the website. In particular, we will allow for user generated content and visualization of user generated content. Additionally, the Photogrammar team will start the process of writing up academic reports pertaining to the project. By the end of Phase II we expect to have a version of the website which is ready to go “live” to a general audience. Expected to start September 2013 and conclude by the end of May 2013.

Phase III: In the final phase of the project, we will concentrate on promoting the website to a wide audience. This will take the form of both speaking at conferences to promote the site as well as submitting academic papers which both use and discuss the website’s contributions to the digital humanities. We will also continue in this phase to address our new users’ suggestions and concerns both methodologically and technically. Expected to start May 2013. It will technically conclude with the grant by the end of September 2013, although Yale IT will continue to host the project in perpetuity and the team members expect to continue working on it and other extensions in the future.”

Looking back, we can say that we hit the mark and beyond with the website itself, and our associated scholarly contributions and public speaking, and fell somewhat short of collaborating on teaching with our board of advisors. We lost one core team member along the way, Ken Panko, who moved to Singapore, but managed to hold onto another, Stacey Maples, despite his move to Stanford. We also added Peter Leonard, Librarian for Digital Humanities Research, and Trip Kirkpatrick, Senior Instructional Technologist, both at Yale
University, to the core team. We requested and received three no-cost extensions, ending the grant period on November 30, 2015. We came in at the original budgeted cost, although the awarded amount was supplemented significantly by in-kind contributions of resources from Yale and donated time of the entire team.

We are enormously grateful to the NEH for the opportunity to make Photogrammar, and we are undiminished in our enthusiasm for continuing to build and explore the site.
Appendix A:


account, Ministère CultureCom Verified. “#Photogrammar : 170.000 Photos de La Grande #crise économique de 1929 Aux États-Unis @Yale > Http://photogrammar.yale.edu/ pic.twitter.com/rtk6sCu5QY.” Microblog. @MinistereCC, October 10, 2015. https://twitter.com/MinistereCC/status/652806567549628416.


https://www.reddit.com/r/InternetIsBeautiful/comments/3nusqi/photogrammar_browse_a_map_of_170000_photos_from/.


http://www.reddit.com/r/InternetIsBeautiful/comments/2hydr1/photogrammar_depression_era_photo_collection/.


“Photogrammar - From Here to There.” Accessed September 8, 2014.


photogrammar-place-170k-depression-era-photographs-on-searchable-interactive-maps-and-more/.


