Contextual Presentation and Navigation of Historical Artifacts in a Digital Library Design

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Abstract. A digital library has been designed to present a historically significant collection of World War II letters in both temporal and geographical context. Working closely with historical scholars, over 800 WWII historical records have been made publically available for the use of researchers and historians on the web. Digital library design issues encountered as part of this effort dealt with the development of a website from original artifacts and the rendering of this historical content in a visual, geographical, and temporal context, increasing and extending the reach of information previously available only to on-site historical researchers. The current digital library prototype can serve as a model for other developers that are interested in multimodal presentation of varied content.

Keyword: Digital library database user-centered design contextual presentation

1 Introduction

Historical archives are valuable resources for researchers, while also providing support for collective memory, historical context and recall. In order to review and work with such archives, which can include a range of artifacts, researchers must often travel to the location where the artifacts are housed, or settle for a small traveling subset collection to work with locally. Both solutions are not ideal, as travel to the site limits access, while a local subset collection limits the range of artifacts which can be consulted and examined. In an effort to address both these concerns, a research project was undertaken to overcome the limits of time and space in addressing and identifying correlations in historical collections.

Over 800 letters written by World War II soldiers from the New York and New Jersey region in the northeastern United States have been preserved and successfully incorporated into a digital library, designed to provide contextual information. The soldiers, students at New Jersey State Teacher's College, were contacted by the college librarian during their military service with a request to provide information for an alumni newsletter. The letters received in response to this request for information, serve as the

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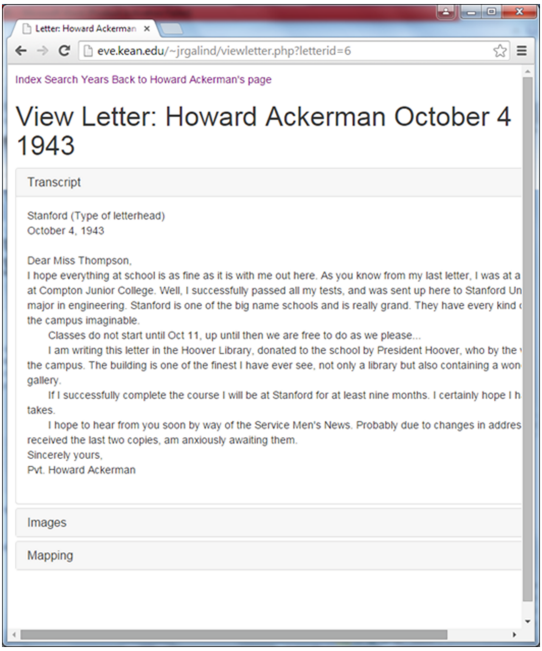

Fig. 1. On retrieval, Transcript (top), Images and Mapping (bottom) links are shown

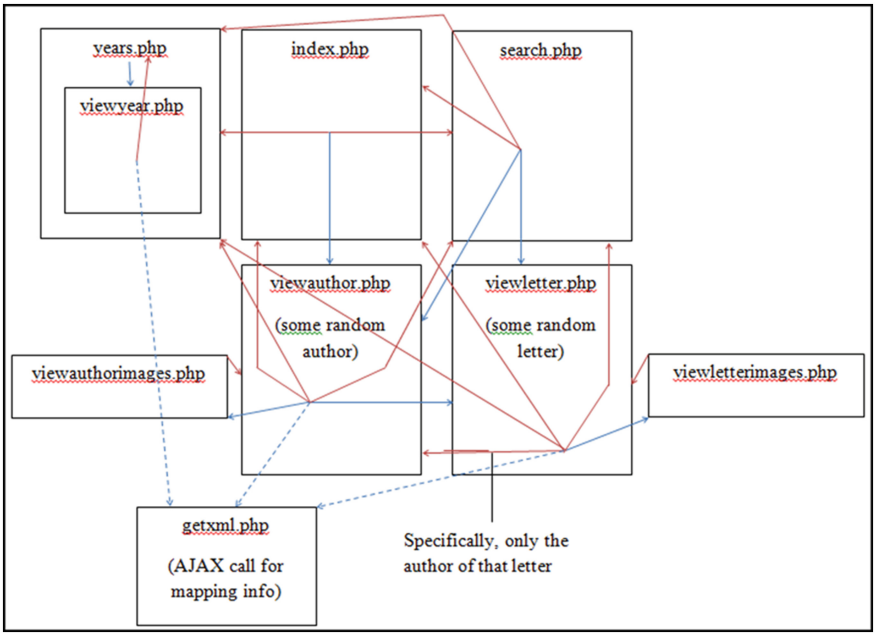

Fig. 2. Detailed digital library design schematic

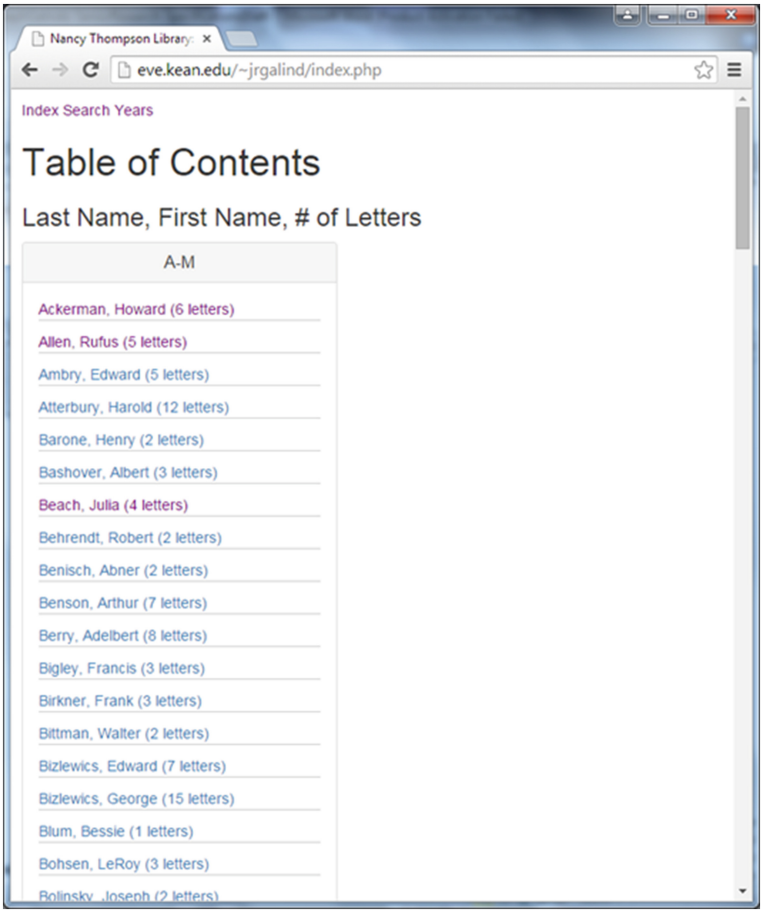

Fig. 3. A drop-down list of letters, ordered by author, and number of artifacts

basis for the digital library developed, and provide insights into the experience of regular individuals traveling away from home during wartime, facing fears, and commenting on both routine and extraordinary events.

As a collection, this material is a set of historically significant first-person accounts of domestic and international events, as not all soldiers were stationed overseas. Working with historians, this repository was first digitized, with the artifacts then made accessible on the web, ordered for retrieval through search functions, and placed on a map by geographic location, which can be viewed over time. The resulting digital library repository has made the collection widely accessible, while also providing historians and researchers with new insights based on visual presentation of the historical information.

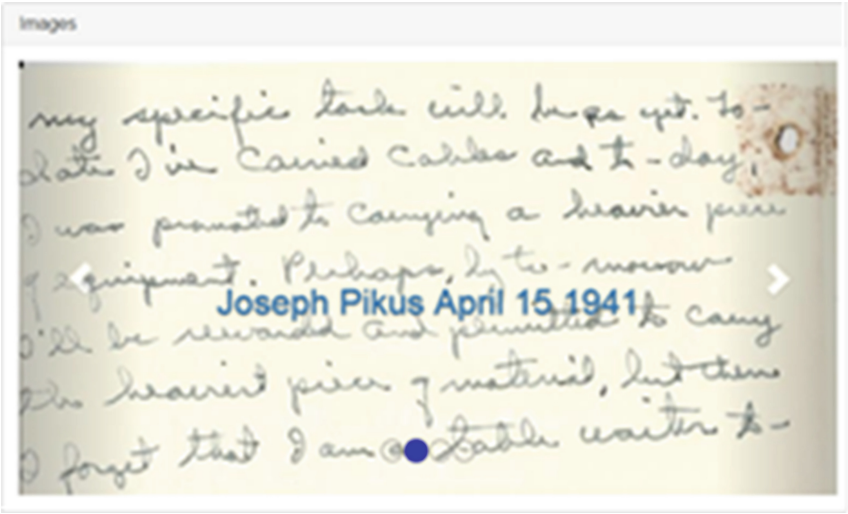

Fig. 4. A letter from Joseph Pikus, April 15, 1941, a scanned artifact, retrieved from the library

Fig. 5. The same letter from Joseph Pikus, in searchable plain text, from the library

2 Previous Work

Literature about similar geo-historical mapping projects was reviewed before starting this project. In particular, an article on the Stanford mapping project (known as Mapping the Republic of Letters) gave a strong model not only of smart implementation choices, but also of the interaction needed between developers and historians [1, 2, 4]. Prior work concentrated on the migration of physical archives to digital renderings, with temporal context provided by timelines accompanying the images [3, 6, 7]. Full geographical and temporal context, with the images, was not presented in collections of the magnitude or significance presented here.

3 Implementation

Due to the anticipated use of the records, the enabled features revolved around searching, content display (transcripts and images), and map display (Fig. 1). This project utilized the scripting language PHP for the back-end work, with JavaScript, HTML, and CSS used to support front-end content. MySQL was used for the database. The resulting design provided the functionality needed (Fig. 2), with the design features supporting search (Fig. 3) and display.

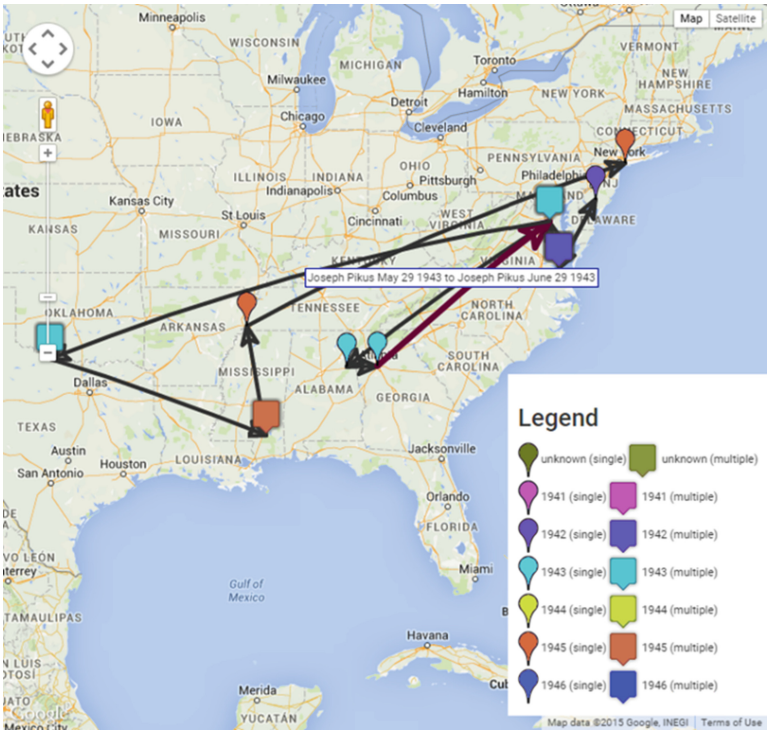

Fig. 6. Letters of Joseph Pikus in the digital library, in temporal and geographic context

In support of the desired user-centered designed, developers worked closely with the anticipated user community to determine how the digital library collection would be used. After detailed discussions with historians, the scanned historical artifacts were placed in a database by author order, for user retrieval and review. The overall design of the digital library was done in multiple iterations, with feedback provided by the historians on how the collection was to be navigated.

4 Features

Once an artifact is selected, users view the actual artifact (Fig. 4), searchable text (Fig. 5), or view the image in a geographical context with added temporal context (Fig. 6) [5, 8]. The use of colored icons (Fig. 6) to denote the progression of years, as well as correlating artifacts in the collection from the same author in the same year is a powerful visual illustration which permits users to understand the chronological development of the materials in the digital library.

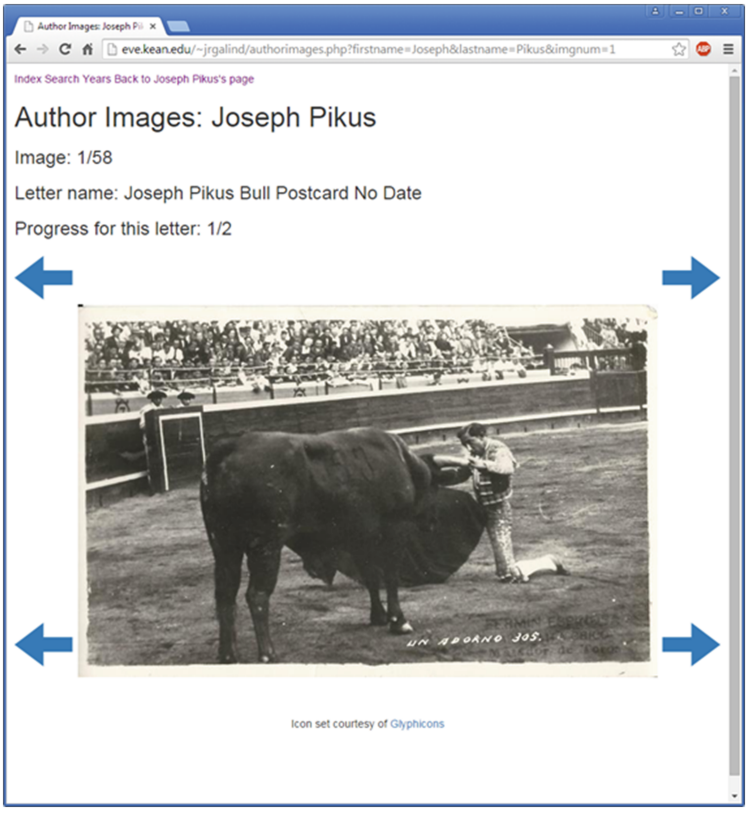

Fig. 7. Postcard from Joseph Pikus in the digital library, with lateral navigation arrows

Users can navigate seamlessly from one view in the digital library to another and from one artifact to another, using lateral display navigation to move through the collection (Fig. 7). The design of the digital library supports identifying correlations or contrasts in the historical record which may not have been identified or clearly understood before.

5 Conclusion

Through close collaboration with historians, this project created a stable digital repository, which can be widely used and remotely accessed in the years to come by both casual users and academic historians. It also provides an active example to other multimedia and digital library developers pursuing similar projects.

Additional materials are being added to the repository and the design will evolve as more information is gathered from user studies, particularly regarding the interactions which historians, researchers, and other members of the public have with the materials. The prototype digital library discussed here demonstrates user-centered information design techniques which illustrate the viability of this proof-of-concept implementation. The historical artifacts in the collection are organized and displayed in an appropriate digital environment designed to support user access and control.

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