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Visual Resource Reference

Collaboration Between Digital Museums and Digital Libraries

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Abstract

The Information Institute of Syracuse at Syracuse University is engaged in a project designed to build collaborative digital museum and digital library reference services. To that end, the project team is currently developing, testing, and evaluating procedures and mechanisms that will enable museums and libraries to work together in providing reference assistance over the Web to support patrons' image information needs. The user-centered project is based upon a successful model for digital reference that has been widely embraced in the digital library community. This approach is expected to yield new insight into users' image seeking behavior that will help museums and libraries provide transparent access to visual resources across collections and institutions. This article presents an overview of the project and discusses the challenges involved in helping users find appropriate images on the web.

Introduction

The world has grown increasingly visual as the boundaries for television, graphics, videos, movies, computer games and educational multimedia blur, and the proliferation of wireless networks, intelligent agents, and handheld devices drives the need for anytime, anywhere access to multimedia information. Images in this milieu have the potential to become an even more dominant means of cultural communication and education as they provide more immediate, global, easily understood, and powerful ways for communicating than ever before.

For many people, however, online tools and resources for locating images and other non-textual materials may be unfamiliar, difficult to learn, or insufficient to answer their image information needs. Moreover, finding and selecting appropriate images on the web is problematic due to the disconnect between what is depicted in an image and what the actual subject of that image is, as well as the difficulty that users have in expressing information needs in general and image needs specifically [Goodrum & Spink, 2001]. Until automated systems can resolve these issues, expert human intermediation is necessary. Visual resource professionals from museums, educational institutions, and libraries are well positioned to mediate between patrons and Web-based multimedia resources, but they may require additional tools and training to handle questions and provide solutions to users with non-textual information needs.

The question faced by libraries, museums, and other cultural heritage institutions in this world of visual information is how to respond to a growing public demand for 'round-the-clock' networked accessibility to multimedia, images and image collections. Moreover, how can they provide access to resources that cross institutional boundaries and disciplines? It is impractical to assume that a single institution will have resources for all needs, or to expect that one expert would be knowledgeable about all collections. It is also impractical to assume that the public will necessarily know how to locate appropriate image collections or how to search for image information.

Will these institutions see themselves as media managers? As media mediators? As media authenticators? As media educators? More importantly, will diverse institutions be able to work together to craft collaborative networked access to media and information in ways that are transparent to users? One approach to answering these questions can be found in an emerging digital museum and library

(DML) project at the Information Institute of Syracuse (IIS). The IIS has spearheaded a project to provide media mediation within the framework of a collaborative network of experts from a diverse range of museums and libraries. The conceptual framework for this network is built upon a successful digital reference model that has been widely embraced by the digital library community. The digital reference model was created by the Virtual Reference Desk ℠ (VRD) project [VRD] at the Information Institute of Syracuse (IIS), and development and testing of the model was funded by the United States Department of Education and the National Science Foundation. The current project extends this model to support interoperability, integration, and seamless access to images on the web, as well as to networked collaboration between museums and libraries.

Visual Reference Practices in Libraries and Museums

Visual resource collections have been around for hundreds (perhaps thousands) of years, and the practice of providing visual resource reference in these collections is at least as old as documented library reference practice—perhaps older. The first academic slide libraries date back to the late 1800s, at about the same time that librarianship and general reference practice began to emerge as areas of professional practice and study. The *reference interview* is a central focus of this work and consists of the librarian interacting with the patron to clarify an information need, determining appropriate resources and collections to search, crafting appropriate search strategies, and assisting the user in assessing the relevance of the search results. There is a large body of literature pertaining to the reference interview, but little that addresses the unique aspects of conducting the reference interview for an image information need.

Museums have also existed for hundreds of years. (The oldest existing museums in Europe date to the 1600s.) Museums, of course, have always served as the access point to their specific visual resource collections, and the practice of offering museum library reference has long been valued. The core difference between visual resource reference in libraries and visual resource reference in museums has primarily been one of standards for resource description and the granularity of access. For example, a natural history museum may choose to describe a large collection of artifacts at the collection level rather than the individual artifact level for purposes of patron information-seeking. Moreover, while libraries have a long history of working in consortia to standardize resource description across institutions, this has only recently emerged as a focus for museums. The Consortium for the Interchange of Museum Information (CIMI) and the Canadian Heritage Information Network (CHIN) are notable in their work to develop standards for museum resource description. Finally, the approach to reference provision is quite distinct within these two communities. The focus of libraries has been to create tools for users to gain access to information for themselves and to view that information in whatever manner best supports their information needs. The tradition in museums has been to mediate access to objects within the collection and to present a variety of mediated views of the collection at different times. Despite these differences, both communities play an important role in their patrons' lifelong learning and recognize the value their collections bring to users with visual resource needs.

Until very recently, the work of these two visual resource communities has been, on the whole, independent of one another. With the emergence of the first digital libraries and digital museums, however, we have begun to see the promise of libraries and museums working collaboratively to provide access to their collections. Projects such as the Museums in the Online Archive of California (MOAC), and the Colorado Digitization Alliance demonstrate the incredible potential for digital museum-digital library cooperation in terms of resource description and presentation. Missing, however, is an understanding of how to work together to provide visual resource reference assistance in the digital environment.

The Digital Reference Model

The VRD digital reference model is a general process model developed through an empirical study of high-capacity digital reference services [Lankes et al., 2000]. The model consists of 5 steps:

1. *Question Acquisition* is a means of taking a patron's questions from e-mail, web forms, chat, or embedded applications. This area of the model concerns best practice in "online reference

interviews" and user interface issues.

2. *Triage* is the assignment of a question to a process or topic expert. This step may be automated or conducted via human decision support. Triage also includes the filtering of repeat questions or out of scope questions.
3. *Answer Formulation* details factors for creating "good" answers such as age and cultural appropriateness. Answers are also sent to the patron at this point.
4. *Tracking* is the quantitative and qualitative monitoring of questions for trends. Tracking allows the creation of "hot topics", and may indicate where gaps exist in the collection(s).
5. *Resource Creation* concerns the use of tracking data to build or expand collections and better meet patron information needs.

Currently, every text-based digital reference system uses this simple model. However, the important question is whether the model can be extended to enable digital museums and libraries to provide reference assistance in the retrieval of images and other visual resources. Experts who provide visual resource reference assistance within digital museum and digital library environments may require additional tools and training to handle questions and provide solutions to users with non-textual information needs. To address this, our research team is engaged in developing, testing, and evaluating procedures and mechanisms for the exchange of questions and answers that support the retrieval of images on the web and intermediation by both museum and library professionals.

Project Design

The DML project goal is to extend the VRD digital reference model to the digital museum community in order to support integration, interoperability, and seamless access to shared visual resources. Therefore, a central focus of this research is to explore how human expertise mediates between image needs and image resources in the digital museum and digital library environments. As a first step in this research, it is important to develop a model and some metrics for examining users' image needs, the sufficiency of image resource description on the web, the role of collaboration and triage, and the work of human intermediators. A number of issues are currently being explored during Phase One of this project including:

- How is digital library triage affected by expanding the existing model to include museum reference services?
- What does "out of scope" mean in this environment?
- What types of functionality do patrons need to assist them in asking for images?
- What tools do experts need in providing image answers?
- Are elements relating to museum reference missing from the existing digital library reference model?
-

Current Research Tasks

- Survey digital museums with existing digital reference services to examine how they perform routing of, and collaboration in, answering image queries.
- Interview museum-based, visual resource professionals who provide reference assistance to investigate how they conduct digital reference interviews and question negotiation.
- Analyze image requests to model image-seeking behavior on the Web. Analyze the content of reference requests to create taxonomy of image needs.
- Analyze reference responses to create a refined model of digital reference for image retrieval. Perform content analysis of answers to image-related enquiries from multiple perspectives.
- Analyze disconnects between the language patrons employ to describe image needs, and the language museums and libraries use to describe images in their collections. Identify opportunities to create metadata automatically.
- Build iterative models. Create a model that incorporates findings, including unanticipated but required elements unique to supporting image intermediation in the DML environment.

The second phase of this project will be to incorporate the results from Phase One into an operational system and software that will support the performance of reference tasks for the DML community. The software will be built on open standards and designed to support a distributed system. This will allow the DML community to accomplish two things: First, the DML reference desk software will coordinate emerging and anticipated digital reference networks as they develop. Second, the DML

reference desk software will insure portability to other organizations wishing to host their own digital reference networks.

Evaluating the System

Evaluations of the effectiveness of the operational system will be conducted in a multi-method, iterative approach utilizing both qualitative methods and quantitative metrics. The four primary methods of evaluation will be:

- Unobtrusive log analysis
- Tracking of question assignment patterns
- Survey of patrons at the point of access
- Survey and interviews with experts (DML professionals).

Data will present a picture of how patrons seek help in retrieving images in the DML environment and will drive iterative improvement to the DML reference desk software. Results will also demonstrate: (a) general benefits of collaboration among museums and libraries in providing digital reference, (b) benefits for the DML Reference Desk participants in answering image questions, and (c) benefits to patrons seeking help with their image information needs.

A fundamental goal of this project is that it will serve as a catalyst to produce an active, self-sustaining digital museum and library reference community. A number of libraries, museums and AskA services currently participate in the VRD Network. These include:

Ask A MAD Scientist
AskERIC
Internet Public Library
Morris County Public Library (NJ)
National Museum of American Art
Library of Congress' American Memory
Center for School Safety
Eisenhower National Clearinghouse for Mathematics and Science Education

Partners in this project benefit from access to an already-established consortium of over sixty digital reference services, and sponsors affiliated with the IIS (including the U.S. Department of Education, the National Library of Canada, and the Education Network of Australia). Our project partners are committed to developing long term collaboration and extending the model for digital reference used by the VRD project into the digital museum community.

Conclusion

The results of this research have the potential to make several significant contributions. The DML project will advance the digital reference research capabilities of the digital library community and will extend the model for digital reference used by the VRD project into the digital museum community. Results of this research will also expand greatly what we know about image seeking behavior and image intermediation. By building upon well grounded methods of providing digital reference and incorporating this directly into the capabilities of digital image reference software, patrons will be better served when they seek assistance in fulfilling their image information needs.

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