

Digital Image Collections for Asian Religion and Art History in a Small-Sized Liberal Arts College

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【 Abstract 】

This paper reviews the establishment of a digital image library from 35mm slides to support faculty and student needs in a small-sized liberal arts college. The framework consists of central local resources, distributed faculty collections, and external resources. Standards and guidelines for digital preservation and access are also discussed. The pilot collections were multi-disciplinary resources in Middle East art and architecture and faculty slide collections in East Asian religions and Asian art history. Technical and management issues of integrating digital technology in the traditional slide library are also discussed.

1. Introduction

Kenyon College in Gambier, Ohio is a small-sized liberal arts college with 160 faculty members and an enrollment of about 1,570 students. The curriculum covers the humanities, natural sciences, social sciences, fine arts, and several interdisciplinary programs. There are also major courses of Asian languages, religion, history, and art history. The Library and Information Services (LBIS) supports the college's information and technology needs. Its library collection includes approximately 350,000 volumes, over 4,500 print or electronic periodical subscriptions, more than 150,000 slides and 5,000 films and videos.

In April 2000, LBIS embarked on its Slides and Images Database project to improve access to the 35mm slide collections by providing record information and digital surrogates of the slide image. This project stemmed from the growing interest among faculty and students in digital media, the increasing requests for access to digital resources, and assistance with scanning/imaging technology. Some faculty members were also interested in digitizing their course-related slide collections. This LBIS project plans to catalog the entire faculty slide collection to enable comprehensive access. It also has developed a framework for a range of projects to be processed for digital images with the optimum balance of cataloging and imaging standards and the constraints on time and staff resources. The result will be a digital image library comprising central resources in LBIS, distributed faculty collections, and access to external resources.

Providing the central resources, LBIS will also be able to establish guidelines and standards for similar digitization projects in order to maintain consistency and quality. By the end of September 2000, we had completed several iterations of the cataloging and digitization process for part of the LBIS slide collection as well as two faculty collections. Since then we have accepted several other collections for digitization and applied the same standards and guidelines successfully.

2. Literature Review

Digital image library projects have grown in number since the 1990s. The literature about such projects covers topics ranging from technical and managerial issues to impact and use. With the introduction of the Museum Educational Site Licensing (MESL) Project in 1994, widespread interest was generated in the academic community with its promise of high quality images with provenance information. Since then various libraries have also provided insights into the applications of the MESL project in art and art history education (McClung & Stephenson, 1998).

The American Library Association Survey of Imaging Projects compiled in 1994 (McClung, 1996) listed more than eighty imaging projects; however, only about ten mentioned digitization of slide images¹. A literature review showed that few publications were related to digital image library projects based on 35mm slides in a small college setting. Such projects or systems are mainly carried out by larger universities and predominantly based on special or thematic collections. For our project, based on local needs, we intended to provide record information for our entire collection with links to surrogate thumbnail and larger-sized screen display images where available.

The two systems similar to the one envisaged at Kenyon are the Digital Image Database (DID) instructional system at James Madison University (Pitt & Guthrie, 1999) and the University of California, Berkeley's SPIRO (Slide and Photograph Image Retrieval Online) database at the Architecture Slide Library. However, these are large-scale projects and difficult for us to emulate with available resources.

3. Visual Resources

LBIS has a main collection of over 150,000 slides on a broad range of subjects, as well as several smaller, special, and thematic collections. They were acquired through purchase, in-house copy-stand photography, and gifts. The collection is also growing at a steady rate of more than 5,000 slides a year and there is good usage by both faculty and students across various departments. However, there is no

organized catalog, although worksheets are prepared by the Slide Room Manager for student assistants to make slide labels and other filing aids.

Year	No. of slides circu-lated/refiled*	No. of new slides cata-logged
1993-4	11,189	7,653
1994-5	15,787	8,321
1995-6	13,178	8,845
1996-7	12,874	7,219
1997-8	11,271	5,472

*The usual check-out procedure is not applied to Art History faculty due to the heavy use of slides in their courses.

Extending beyond the main LBIS collection, many faculty members have their own collection of slides specific to their teaching needs. These are generally unavailable in the LBIS collection. Thus, the faculty collections are often untapped resources as there is no public record of the collections or ready access to them.

In terms of digital images, there is no organized collection within LBIS. There are a small number of compact discs (CDs) titles related to art but these are not used extensively. Some faculty use digital images but on a relatively small scale due to lack of relevant images and/or digitization resources to produce their own. Currently, our main source of digital visual resources is OhioLINK's Digital Media Center (DMC), which provides access to a range of digital image collections including the Art Museum Image Consortium (AMICO) library of art and architecture images. While that database is growing, the faculty have expressed concern about its insufficiently broad scope and lack of a critical mass of images for their specific subject areas. Despite state and local consortial efforts and growing availability of image databases, in-house and faculty slide collections will continue to be the mainstay for Kenyon faculty and students.

4. Framework

In our proposed framework, the digital image library based on 35mm slides is made of central local resources, distributed local collections (primarily

¹ Kenyon College is included in the list but that plan was subsequently shelved.

faculty course-based collections) and external resources. In order to develop a viable digital image library for the college, we need a critical mass of readily available images relevant to teaching requirements. This needs to be drawn from the slide collections in LBIS and from faculty supplemented by external resources.

Realizing that one model would not be efficient or effective, the proposed framework aimed to encompass a broad collection of resources but still retain control over the standardization for information organization and retrieval. The key points in the framework are:

4.1 A Network of Local and External Digital Visual Resources.

Locally, there will be central resources based on the LBIS slide collection and distributed resources based on faculty collections. This would better meet local teaching needs, and can be supplemented by external resources.

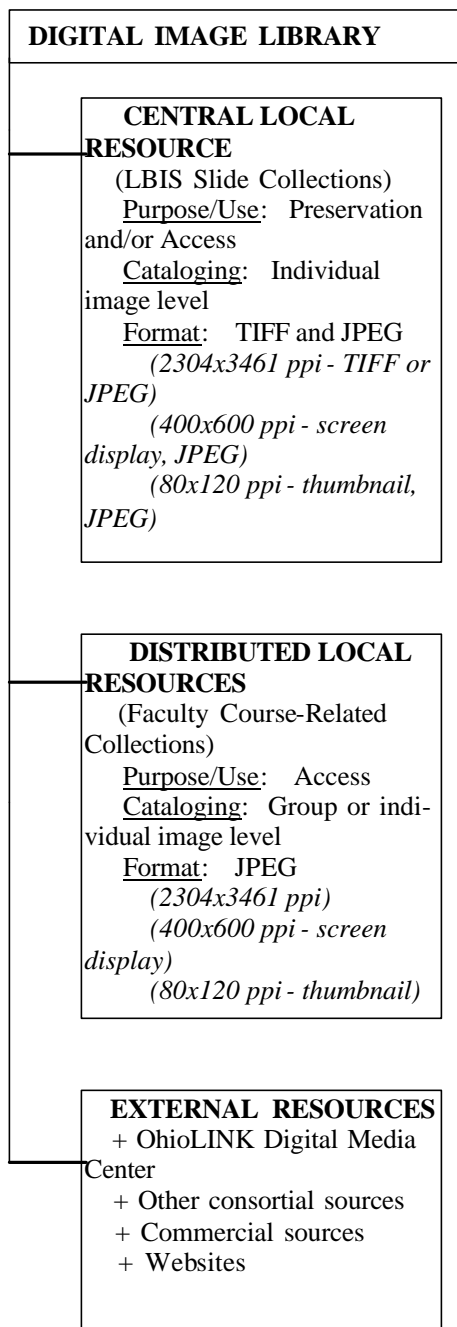
4.2 Digitization Standards Will Be Based on Purpose or Use; This Would Be Preservation and/or Access.

Some slide collections are unique to Kenyon and digital preservation is the preferred option over reproducing a second set. On the other hand, the main LBIS and faculty collections are mainly for lecture presentations and multimedia projects, and access is the priority.

4.3 Cataloging Standards Will Allow for Both Full and Basic Levels.

The LBIS collection will be cataloged at individual image level while faculty collections will be cataloged as a group of images. This allows for maximum input of records into the database with sufficient data to enable information access.

4.4 A Comprehensive Set of Guidelines will be established and promoted to ensure consistency and quality across collections.



DIGITAL IMAGE LIBRARY

CENTRAL LOCAL RESOURCE

(LBIS Slide Collections)
Purpose/Use: Preservation and/or Access
Cataloging: Individual image level
Format: TIFF and JPEG
(2304x3461 ppi - TIFF or JPEG)
(400x600 ppi - screen display, JPEG)
(80x120 ppi - thumbnail, JPEG)

DISTRIBUTED LOCAL RESOURCES

(Faculty Course-Related Collections)
Purpose/Use: Access
Cataloging: Group or individual image level
Format: JPEG
(2304x3461 ppi)
(400x600 ppi - screen display)
(80x120 ppi - thumbnail)

EXTERNAL RESOURCES

- + OhioLINK Digital Media Center
- + Other consortial sources
- + Commercial sources
- + Websites

5. Guidelines and Standards

As the digital image library is spearheaded by LBIS, we are in a good position to establish guidelines and standards to promote a consistent quality. This is especially important for faculty collections that may be digitized on an ad hoc basis with student

assistants outside of LBIS control. As a member of OhioLINK, we decided to broadly follow their recommendations for both cataloging and digitization standards for digital visual resources.

5.1 Cataloging

As stated by Sutcliffe (1995), "since the possible approaches to pictorial materials are manifold and the slide often requires indexing by many terms, automated methods are strongly desirable to provide effective retrieval". Given the size of the slide collection in LBIS and those of the faculty and the lack of any comprehensive guide or index, it was important and necessary to introduce an automated information retrieval system. This would make multi-disciplinary research easier and also reduce the dependency on staff mediation for basic inquiries.

Our options were to use the existing cataloging system, use an alternative database management or library software package, or to develop our own system using existing application software. We opted to develop our own web-based system using MySQL (a multi-user, multi-threaded Structured Query Language database server) and PHP (a server-side, cross-platform, HTML embedded scripting language). These are freely available and widely supported. They provide us the flexibility in interface and display design.

Our actions included:

Identifying the database structure (data fields listed in Appendix A).

Setting up a MySQL database and appropriate online data entry form.

Creating database entries as the catalog record for all slides (existing, new and circulating)².

Utilizing the database to produce labels, cards, and printouts as needed.

Designing an appropriate web-based search and display interface for users.

Common to many digital imaging projects reviewed is the use of the following tools, which we have also adopted (and adapted to suit local requirements):

The Visual Resources Association (VRA) Core Categories for Visual Resources - a set of twenty-eight elements intended as a guideline for developing local databases and cataloging records. It was designed to describe works of art, architecture, and other cultural works, and developed for visual resources presented and shared in a networked environment.

The Art and Architecture Thesaurus and the *Thesaurus of Geographic Names* - indexing reference tools.

The Union List of Artists Names - authority file for the names of artists and creators.

Our slide processing worksheets were modified to fit the categories defined in the VRA Core and to expedite data entry. All slides in the LBIS collection are cataloged, while faculty collections may be cataloged as groups of images. For example, in the case of one of the pilot collections, RELN270-Chinese Religions, there are 4 sets of images, each set with a number of images related to a particular subject. In Set 1, the groups are:

Image 01-06: Hangzhou, West Lake

Image 07-42: Rock sculpture across from Lingyinsi, Hangzhou

Image 43-58: Zhongshan Gate, Nanjing

Image 59-75: Mansion and neighborhood, Nanjing

These group level titles for the slides are entered in the database, and the set of images will be retrieved and displayed. The system also allows cataloging of the individual images in the group should faculty wish to do so. In this particular case, the professor chose not to catalog the individual slides due to lack of time, and his teaching method is to provide the narrative during his lectures. Allowing for this, group level cataloging would fulfill the need for basic information in order to organize and retrieve the information while addressing the issue of lack of time and resources to catalog individual images.

We also decided to catalog in English and Roman characters at this point. As the medium of instruction in the college is English, it was felt that campus-wide

² In the late 1980s, some cataloging of the slide collection was done using dBASE® but stopped in 1993 when hardware problems remained unresolved. As part of the current project, attempts were made to analyze and export the data but inconsistencies in data entry, lack of quality control, and non-standard fields across different files have made the task difficult.

access to information and the collections would be better served by this. As well, the slides in the LBIS and faculty collections are very diverse in terms of geographic and ethnic content, (the pilot collections alone cover the Middle East, China, and Pakistan/India). It would be a considerable strain on limited resources to translate and catalog the collection in the variety of non-Roman languages. The descriptive information provided by slide vendors and faculty is usually in English and tap on this for record information.

The beta version of the new cataloging system was finalized in late-September, and student assistants were trained for data entry. The process was monitored for feedback and fine-tuning, in particular the use of the various fields to suit local needs.

5.2 Digital Images

To quote Sutcliffe (1995), "With illustrations, there is no substitute for directly viewing the images required. All techniques designed to help the user be they storage methods, indexes or keyword searches are all directed to bringing about this all important contact between the eye of the user and the individual image". In practice however, the process is time consuming and labor intensive - users have to locate and remove the item to view it on a light box or hold it up against the overhead lights, and misfiling is a constant concern.

With digital images, a thumbnail version of the file can be linked to the catalog record and quickly previewed before selection. Digital images offer flexibility in access and presentation. For images with no copyright or vendor restrictions, we can offer open network access to multiple simultaneous users. For presentations and research, digital images offer the ability to zoom, crop, and otherwise examine and manipulate images in ways not possible with the traditional slide format. With the advantages of digital media and easier access to visual resources in mind, we aimed to provide quality digital images for screen display and projection, and quality of printouts would be a lesser priority. This is primarily

based on feedback from faculty regarding their current and potential use of visual resources in their curriculum.

Our actions included:

Establishing digitization standards and procedures.
Identifying priority (high-use) images for digitization in consultation with faculty.

Developing procedures for checking and writing to obtain copyright clearance.

Developing procedures for dealing with faculty and student requests for digitized images.

The slides are scanned at 2304x3461 pixels per inch (ppi), the maximum capability of the slide scanner. The usual recommendation is 1024x1536 ppi but we felt that we could take advantage of the higher dimensions with increasingly better computing equipment and faster networks on campus. The larger dimension will also more likely capture the grain of the film and can be used to create better print reproductions should the need arise. The original images are not edited or enhanced in any way. For digital preservation projects, the images are saved in uncompressed TIFF format. Two derivative images for general web access are then saved in the compressed JPEG format - a screen display size of 400x600 ppi³, and a thumbnail version of 80x120 ppi.

The TIFF images are recorded and stored off-line on CDs as the preferred archival medium to reduce strain on server resources. With a capacity of 650Mb, a CD can store 30 TIFF images (average 21Mb each) as well as the corresponding JPEG screen display image (average 100Kb) and thumbnail images (average 12Kb). An index file (table of content) for each CD is also included.

For collections that are primarily for lecture presentations and general web access rather than preservation, the images are also scanned at 2304x3461 ppi but are saved in a JPEG rather than TIFF format. It was also felt that the slides are generally current and replaceable. For the derivative 400x600 ppi images, some editing may be done, for example, sharpening the image and/or adjusting the brightness

³ The initial specification of 600x800 ppi was reduced to 400x600 ppi to enable better viewing over lower resolution monitors, and to accommodate printout on a single sheet of letter-sized paper (8½"x11").

and color balance. This is necessary if the original slide image is out of focus, too light or dark, or has turned pink with age. This editing enhances the projected image especially in a lecture presentation. For example, by increasing the brightness we were able to see beyond the dark temple doorways or mouth of caves, and sharpening or increasing the contrast brought out the details of carvings and intricate mosaic works. These features were not evident in the 35mm slide image, and digital enhancement is a boon in such cases. However, no attempt is made to graphically alter the image.

Every image has a unique image number, either the slide accession number or a specially assigned number for faculty collections, and is referenced in all search and display functions. This is done by including the relative directory path, physical location, of the folder with the image number variable in the PHP scripts for these functions. The added advantage is that we need not include the URL field in the database record.

All JPEG files are stored on the server and accessible over the campus network. Access to copyright images are restricted to the Kenyon College domain while non-copyright collections are freely accessible. Some non-copyright faculty collections are also recorded on CDs for their departmental use.

6. Copyright and Access Restrictions

In addressing copyright issues, we felt strongly the need to balance educational and teaching needs of faculty and students with the need to protect the copyright holders. The Copyright Act of 1976 sets forth the four fair use factors: the purpose and character of use, nature of the copyrighted work, amount and substantiality of the portion used, and the effect of the use upon the potential market for or value of the copyrighted work. Our other references included the Fair Use Guidelines for Educational Multimedia (1996) and the VRA Image Collection Guidelines (1999).

The Fair Use Guidelines For Educational Multimedia allow the use of copyrighted material incorporated in educational multimedia projects for up to two years after the first instructional use as per-

missions are being sought, and use beyond that requires permission for each copyright image used. The VRA Image Collection Guidelines is a series of suggested best practices covering the acquisition, attribution, display, and responsibility for visual resources such as slide and digital files. Although the guidelines are not legally binding, it proved to be a useful reference source.

To avoid further delays, we decided to start the digital imaging project with non-copyright collections or where faculty had given permission to digitize their personal course-based collections for campus use. With the main LBIS collection, however, we decided to only digitize selected slides based on faculty request rather than systematically digitizing every slide. As the main collection contains slides from a variety of sources and given the lack of good records, obtaining information on copyright holders is problematic. We are still working on improving the administrative procedure for checking and writing for copyright clearance, and attention is given to those slides purchased from commercial vendors. To date, faculty requested slides are predominantly prepared from in-house copy-stand photography for a particular course.

In the record, the copyright status is a mandatory field that also determines network access to the image. The thumbnail images are freely accessible on the network. Faculty course-related collections and other collections of non-copyright images are kept in a separate directory and are also freely available. Copyright images from the main LBIS slide collection are in a restricted access directory to prevent possible or unknowing infringement of copyright, and access is restricted to the Kenyon domain. The system will authenticate logon ID and password for access to these images. If required, faculty can select images to be placed in the electronic course reserve system for students to review. The students will require a network ID and password to view these images, which will be removed from the reserve system at the end of the course.

7. Pilot Collections

To test the framework and draw up a workflow chart, three diverse pilot collections were selected based on considerations for digital preservation

and/or access requirements, faculty needs, and limited resources of staff and time. We selected one collection for digital preservation and two others for lecture presentations and general web access. In selecting faculty collections, we were fortunate to have two enthusiastic faculty members who approached this author with their proposal to digitize their collections for teaching purposes. Coincidentally, both faculty collections were related to Asian culture.

7.1 Baly Slide Collection

In initial discussions with faculty interested in digital visual resources, the unanimous choice for digitization was the Baly Slide Collection of about 16,100 slides, a bequest from a former professor in the Religious Studies Department. The collection, dating from the 1950s-80s, mainly covers Islamic and Christian architecture and art history in the Middle East, and includes several hundred slides documenting endangered art objects in the region. As the subject of the collection is multi-disciplinary, faculty in the Religious Studies, History and Art History Departments are particularly interested in the project.

Unfortunately, the collection has not been cataloged and information retrieval is almost impossible. Many of the slides are also showing signs of age and deterioration. Despite the nature and importance of the collection and the fact that many of the slides are irreplaceable, it was felt that making a duplicate set was too expensive and infeasible in terms of storage and other considerations. With today's digital scanning and storage technologies, digital preservation was a more attractive option. The archival images and the collection of slides can be kept offsite in a safer and more conducive environment while the derivative images are made available on the campus network. The digitization of the Baly Slide Collection will be a two-to-three year project, which will digitally preserve the valuable and unique Kenyon resources, as well as enable campus-wide network access to an organized and searchable critical mass of more than 16,000 images.

7.2 RELN270 - Chinese Religions

Professor Adler in the Religious Studies Department, specializes in East Asian Religions, and

mainly uses his personal collection of slides for his lectures. He has traveled extensively in regions of interest in East Asia and taken many photographs related to his courses. When he first approached this author in Summer 2000, he was keen to have his entire collection digitized and made available on the campus network. After discussions and negotiation based on practical considerations, the scope was narrowed to a course-based collection (about 300 or 400 slides). His RELN270 course was selected as it was in the Fall 2000 program.

Digitization was completed by mid-August, and the images were loaded on the web server as well as recorded on a CD for his retention. A web page was also created for this collection on the LBIS website (screen shots are included in Appendix B). The images have been incorporated in his lectures, and Professor Adler has also repackaged the images into digital slide-show presentations. He is now planning for the next course and appropriate slides for digitization.

7.3 ARHS14 - Introduction to Asian Art

Professor Blick in the Art History Department, teaches a number of courses related to Asian art, and LBIS supports this with a broad range of slides. However, she still felt the need for more visual resources and often uses her personal collection in lecture presentations, averaging eight to ten thousand slides per semester. Professor Blick is also interested in a broader application of digital and educational technology, including an electronic course guide, digital images for lecture presentations and high-resolution images to enable in-depth study. The electronic course guide would be an HTML version of the current printed copy. Digital technology would also enable a modification of teaching method in that high-resolution images can be studied in-depth and this would supplement the study guide.

As a start, two carousels of slides were submitted for scanning. Dr. Blick's preference is also for the projection of two images side-by-side, a traditional method of presenting images for art and art history courses. To facilitate this teaching method using digital images, Microsoft® PowerPoint was used to create the presentation of the images. This is an ongoing project, and we will monitor it closely as it

involves a broad range of educational technology applications.

7.4 LBIS Slide Collection

As we made progress with the digitization of the pilot collections, we also started to plan for the systematic cataloging of the slides in the main collection as well as digitization of selected slides based on faculty request.

By the completion of the digitization of the two pilot faculty collections, word had spread and other faculty were keen to obtain digital images of their most heavily used slides from the LBIS collection. These included faculty from the departments of Psychology, Languages, Law and Social Studies, and Classics. Again, with user needs and limited resources in mind, we decided to address the digitization requests that involved small quantities of 150 to 200 slides at a time. The digitization of the pilot faculty collections thus neatly segued into cataloging and digitization of the main LBIS slide collection.

8. Resources and Infrastructure

The working group consisted of two Librarian and Technology Consultants, one for developing the database system and the other for digital imaging, and four student assistants. The latter were given training in data entry as well as the scanning of slides and processing of images. At the initial phase, the librarian and technology consultants developed and tested the process, and then fine-tuned it with the student assistants.

The scanning workstation consists of:

- a PC (Compaq® Pentium III, 750MHz, 256Mb RAM)
- a slide scanner with auto slide feeder (Nikon® LS-2000 Super Coolscan)
- a CD Writer (HP® CD-Writer Plus 9210E)

Campus-wide access to digital resources is also facilitated by improvements in network and computing infrastructure. In 1992, the campus network was migrated from Ethernet to a high-speed Fiber Distributed Data Interface (FDDI) backbone. There is also a regularized program for the replacement/upgrading of computing resources in the public computing areas as well as faculty and staff worksta-

tions. In terms of projection facilities, there are currently only a small number of auditoriums and classrooms with high-resolution projection equipment. However, the plan to equip all teaching classrooms with audio-visual and computing equipment over a two-year period was recently approved. This should further encourage the use of digital visual resources.

9. Observations and Recommendations

By the end of September 2000, we had completed several iterations of the workflow from selection and processing of the slides to recording the images on CDs. This has enabled a better understanding of the potential of the framework and working model. We have also learned several management and technology lessons.

Feedback from faculty was very positive, and there was general agreement that the sharpness, clarity and immediacy of images displayed on a computer monitor is far more appealing than projected images. They were also impressed with the flexibility and ease of information organization and retrieval on the web pages. More faculty members are considering digitization of their collections but we are mindful that a large number of slides still await processing and hope to obtain more student assistants to do the scanning and data entry. A number were also keen to explore further uses of digital technology in education.

It was also clear that the digitization of faculty collections would have to be a collaborative effort between professors with subject knowledge and the LBIS team with technology expertise. It was heartening to note that faculty had a positive attitude and were willing to incorporate digital resources in their coursework despite the predominance of 'analog' visual resources such as 35mm slides and prints. It is anticipated that some faculty will take on new digitization projects on their own with the help of their student assistants. LBIS could then provide professional advice, standards and guidelines, and backup scanning and data entry where necessary.

Student interest was also high given their familiarity and comfort with digital media. The students in-

interviewed were delighted with the ability to do individual study of enlarged images on the computer screen rather than projected on a screen and viewed from afar. It was also interesting to note the comments and reactions of the student assistants on the digitization project. These range from the advantages of digital enhancement of images to bypassing the copy-stand photography process and using digital photography directly instead. From a management point of view, it was useful to involve the student assistants in the entire process, from faculty interviews and negotiation to cataloging and scanning the slides. This in part teaches them project management skills as well as creating a sense of ownership and responsibility for the projects.

As reported in the literature, we found digital imaging projects to be resource-intensive in terms of time and labor. With only one imaging workstation available, we had to schedule its use. Student assistants also had to divide their time between processing the traditional slides and digitizing and cataloging the collection. The early stages were marked by trials and errors, and the necessity to return to the drawing board time and again to fine-tune the process.

We also realized that technology training at all levels would be required to support our digitization efforts. We anticipate providing a wider range of application software workshops as the digital image collection grows and its use spreads across campus. To use the digital resources effectively, faculty and students must be exposed to a greater range of software applications available on the campus network for multimedia presentations, including -

- scanning and imaging software,
- viewing and manipulating images using programs like Adobe® Photoshop and Microsoft® Photo Editor,
- presenting images on screen using Microsoft® PowerPoint or Corel® Presentations, and
- incorporating images in text and other documents.

10. Conclusion

While there is widespread use of the traditional 35mm slides, there is a growing move among some faculty towards the use of digital images in instruc-

tion. With improved communication and computer technology on campus, digital images present a viable supplementary if not alternative instructional resource. Digital scanning is resource intensive in terms of time and staff and computing needs but the results are worth the effort. Images on screen have a density of detail and are more vivid and immediate than slides viewed with a loupe on the light box or projected on the auditorium screen.

Compared to major universities, we have a relatively small collection but the challenges faced are no less significant. The quantity of images is just as daunting given our small staff number. Despite resource limitations, we wanted to maintain the standards recommended by the professional associations. We also face similar concerns about copyright and felt strongly about our professional role in providing better access to information in all formats.

As this author was primarily responsible for the digitization and image management component, interaction with faculty on the pilot collections further stressed the collaborative effort required in such projects. Here, key players were non-Asian professors with subject knowledge and an interest in education technology, and an Asian librarian with technology skills and subject interest. These collaborative efforts have a shared vision of using information technology in teaching Asian culture in a small-sized liberal arts college.

The three pilot collections gave us the digitization and digital resources management experience we had looked forward to. Although the pilot collections are mainly related to Asian art history and religious studies, we have now expanded to other subject areas including psychology, African-American history, and Greek mythology. Our proposed framework for a digital image library allowed flexibility without losing effective information access. It also provided an effective method of achieving a critical mass of digital visual resources relevant to local needs.

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Appendix A: Database Fields

Record Type
 Image Number
 Classification Number
 Location
 Work Type
 Title
 Creator
 Date
 Material/Medium
 Technique
 Measurements
 Repository Name
 Repository Place
 Repository Number
 Style/Period/Group/Movement
 Nationality/Culture
 Subject
 Related Work
 View/Description
 Source
 URL (to external or additional resource)
 Notes
 Scanning Notes
 Copyright Status
 Copyright Notes

NOTE

Our database structure above is based on the Visual Resources Association (VRA) Core Categories for Visual Resources - a set of 28 elements designed to describe works of art, architecture and other cultural works that are presented and shared in a networked environment. As they are guidelines, it is not required that all of the categories be used to create a record for any one work or visual document. Further explanation of the VRA categories, including definitions and usage, can be found at the VRA web-site at <http://www.oberlin.edu/~art/vra/dsc.html>.