

# THE ADVANCES OF TECHNOLOGY: A CASE STUDY OF TWO MIDWEST ACADEMIC SLIDE LIBRARIES

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## ABSTRACT

*This study focuses on the question of how willing and prepared slide libraries are for technological change. Many slide libraries are at various stages of development, and this fact could either facilitate or inhibit growth when it comes to implementing new technologies: in particular, digitized images in any of the available formats (CD-ROM, laser disc, or online).*

*In this case study of two Midwest academic slide libraries, issues such as funding, size of the library, current technology usage, and knowledge of various technologies, were examined to determine their effects on advancement toward new and innovative systems. These issues were addressed in an in-depth interview process with slide librarians at two different academic institutions. Since digitized images are not yet being used in the slide libraries on which this study is based, interview questions focused on opinions, attitudes and expectations about the implementation of digitization.*

## INTRODUCTION

Slide libraries are information institutions that house collections of visual resources used to assist with teaching, research, or historical documentation. They are normally part of a facility where art or architecture is taught or practiced, and are often part of other academic departments as well, such as history, anthropology, agriculture, and biology. Museums of art, science and natural history, and art galleries, also have slide collections. This study focuses on two art and architecture libraries composed primarily of 35 mm photographic slides, primarily in color.

The following study reflects our interest in determining how such academic slide libraries will be affected by current technological changes, primarily pertaining to the implementation of computer databases for access and retrieval of records, and digitization of images. Our prior knowledge of slide libraries, as patrons and/or staff, has given us firsthand experience with the types of problems encountered by curators, staff and patrons. The slide libraries discussed in this study are referred to as 'A' and 'Z'. The academic institutions that they are part of are similarly coded, as are the curators.

We believe that slide libraries are in need of automation. With a computerized database, identification and selection of images will be possible through a wider choice of access points, according to an individual patron's specific needs. After an initial conversion period, staff duties in processing new slides will become less labor-intensive, allowing a reallocation of staff time and resources.

Although digitization is becoming increasingly necessary to adequately manage large and growing image collections, currently it is not financially possible for many organizations similar to the two we have chosen to study, to begin this transition. Slide curators often run these facilities alone, both managing the collection, and shouldering the responsibility of keeping up with technological changes. The reality is that many slide libraries do not even have computers, let alone resources for digitization.

This study examines the current levels of technology and capability for advancement in two academic slide libraries. It determines problems and opinions surrounding the idea of technological change within slide libraries anticipating digitization and identifies broad issues which impact attitudes and concerns about incorporating technology into slide libraries. Key issues relate to support, not only on a financial basis, but also on a technical and personal level. We have also examined slide libraries' readiness for change in terms of their curators' familiarity with advanced systems and efforts at specialized training.

The two libraries chosen for this study are dealing with many similar problems when it comes to advancement. With an awareness of the changes in organizational structure, method of working and social implications attendant to this process, other libraries may work more confidently toward procedures that will facilitate technological advancement at their institutions.

## LITERATURE REVIEW

Due to the fact that the use of digitized images in slide libraries is not yet a widespread phenomenon, there are no published research studies assess its impact. With the advent of the Internet, there is growing interest in digitized images, and recognition that digital technology is a very useful tool in improving access to them. To be able to adapt to these changes, slide libraries must also incorporate basic technologies, such as automation, into their present system before they can move on to further advancements. However, there are still major technical and procedural issues that must be resolved before digitized images become widely accessible at educational institutions.

Currently, many slide libraries that support academic departments at universities and colleges use a computerized record index to allow user access to their collections. One such documented example is an ambitious computerization project undertaken in 1985 by the Rensselaer Polytechnic Institute's Architecture Library (Keefe 1990). MARC records were used to create automated database records for slides. All slides with the same title were treated as a set; different views of an item (details, drawings, plans, etc.) are listed within the main record. With this technology, a slide library patron can determine if a slide of the needed detail or view is available without going directly to the slide drawers. Although the MARC record system allows improved access to the architecture slide collections at Rensselaer, the trade-off decision here was to give up some standardization in order to allow for greater access (Keefe 1990, 41).

The use of MARC records in slide libraries is a step toward increased access to visual image collections. The vision expressed by Howard Besser and Maryly Snow, and shared by many others, is that of a national visual index, one which would afford the increased access to images demanded by a society in which visual learning and visual education have become increasingly important (Snow 1990, 227).

The only way to get slide records into national bibliographic utilities such as RLIN and OCLC is through the use of the MARC format. If slide librarians want to have their records available on campus online library catalogs, those records must also be in the MARC format (Snow 1990).

Jul's (1991) article "Howard Besser explores the development of image databases" summarizes a 1991 lecture that Besser gave at OCLC. The article makes the point that catalogers use MARC format for audio-visual materials, but often slide librarians find that this format is not suitable for the needs of the library. Problems arise from the fact that, for depiction materials, the photographer is the main entry in MARC format. The photographer of the image is irrelevant to a slide librarian who is cataloging slides of fine art;

the artist is of most importance. Other problems arise regarding the physical description. There is wide variance in the vocabulary used to describe images. There needs to be a standardized vocabulary developed to make access and retrieval of these images more efficient.

Another problem when developing a format for indexing is that the patron needs to be taken into consideration (Sutherland 1982). The user of the system, especially the layperson, may not know exactly what he or she is looking for, and might ask for works of art containing a certain subject rather than naming a particular artist or title of a piece. Designers of image databases need to consider providing access to content as well as subject in order to avoid creating databases that will only be useful to trained art historians (and even then, would still limit the number of points of access to a collection.) Since Sutherland's article, there has been some advancement in indexing systems, but this still remains an issue.

Another disadvantage to using only a MARC records-based system is that patrons are being asked to choose slides from a written record alone, without seeing the actual image (Keefe 1990). It is clear that the next step in providing improved access to images is to link these computerized MARC records to digitized visual images.

Howard Besser, the leading figure in this field, discusses the technical aspects of the digitization process, pointing out problems and suggesting some solutions as well. In his article "Imaging: Fine Art" (1991) he explains that in the fine arts, digitized images are of extra importance, because the items that are pictured "are often either too large (wall sized), too small (slides), or too fragile both to attach textual explanatory material to them and to retrieve them easily when someone needs to examine them" (589). This is extremely relevant to current practices in slide libraries, because slides displayed in a slide case (not projected) are too small to be carefully examined, and often students have little choice but to study slides thus presented. Besser proposes that digitized images can be an ideal study aid, and the higher the quality of image provided, the fewer the number of users who will have to see the original objects. Of course those who are conducting major research studies - such as art historians or other scholars - would still want to examine the original art objects, but digitized image systems would be useful for students taking courses in fine art and architecture.

Besser also discusses the different types of scanners, and the issues involved in the scanning process. Color quality and level of resolution are among the issues to be considered when choosing a scanner; different devices (scanners and computers) represent colors in different ways. He describes a scanner specifically for slides (Barneyscan), but it cannot be used to digitize photographs printed on paper.

He also examines issues around image storage. Storage of high resolution images can become a problem especially when a large collection exists. Compression of images reduces the amount of storage space needed, but this may lessen quality. Continuous tone images, such as paintings, do not compress as easily as line drawings and text.

Similar issues are discussed by John Sutherland (1982) in "Image Collections: Librarians, Users and Their Needs." Sutherland discusses the large amount of information that is required to produce an image database. Creation of such a database would take a very long time, especially when one considers the time it takes to scan an individual image (for a table of these times, see Besser 1991, 590).

Copyright is also a related and clearly pivotal issue for the way that digitized images will be disseminated in the future. Besser brings the interests of key players to light: Museums exercise a large amount of control over the use of high quality reproductions of works to which they hold copyright. The question of how control will be maintained when these images are made accessible through the Internet is a crucial one, and will be dealt with as the use of digitized images becomes more widespread.

Despite the numerous problems still to be resolved in several areas - expanding and standardizing the MARC records system to allow accurate cataloguing and indexing for art objects and slides, and the technical and copyright problems associated with digitization - the revolutionary implications of this new technology are clearly recognized. Digitized images offer a new level of access to visual information. Digitized images are stable because they are based on a series of measurements which are far less susceptible to change than an analog signal. They are transferable, since they are accessible not only at one location but can be

downloaded. It would be possible for a high-level digitized image to provide the source for many other types of reproduction, such as slides and color transparencies. Digitized images can be manipulated: unlike photographed images, digitized images can be enlarged to greater detail and contain much more information than a slide. One important practical application is their use in conservation labs to study the composition of paint pigments.

Digitized images have the power to change the way art and architectural history is studied. The nature of photographic reproductions available in the past has had a determining effect on the type of critical analysis historians could bring to images (Vaughan 1989). Scholars working with black and white photographs could speak only of tonality and contrast in works of art. With the advent of color photography, an increased level of sophistication has been brought to the analysis and interpretation of art objects. It has been argued that digitization of images will result in a deterioration of the already tenuous credibility of the photograph as authentic historical evidence (Druckrey 1990).

The Centre for Image Information at De Montfort University at Leicester (Britain's National Art Slide Library) has taken steps towards constructing an institution that will eventually become a digitized image bank. At the printing of McKeown's 1993 article, the Centre was in its preparatory stages. Some of the initial issues encountered were: many slides need to be replaced; the present catalogue needs to be transferred to a database from the typed lists currently being used; methods of cataloging and documentation need to be established and standardized; the services to be offered must be defined.

The Centre has also defined some related functions and goals: to collect and assemble information on digitized images; to maintain files on management issues, including copyright; to encourage other image owners to make their images available; to promote the development of standards to facilitate the exchange of images; to explore ways in which communities can utilize the opportunities found in new technologies; and to encourage the users and developers to participate cooperatively in the process of development.

Similarly, in the Getty Art History Information Program's 1994 "Humanities and Arts on the Information Highway - a Profile" a strong case is put forward for the inclusion of the arts as a voice in the discussion of the National Information Infrastructure. A key concern is the adaptability of visual resources to global networks. A listing of major computer-based projects in the humanities and arts, including fourteen "imagebases," provides some idea of the international scope of these efforts. In the United States, a number of Getty programs exist to support pioneering work in digitization and standardization for the arts. The Getty project for standardization of description and cataloguing of visual images is being carried out alongside such efforts as the international Text-Encoding Initiative, which has created guidelines for Standard Generalized Markup Language (SGML)-based encoding and interchange of machine-readable texts (Trant 1994).

It has been remarked that one area of study that has been woefully neglected to date is investigation into scholars' needs, uses, and expectations for image use in research (Henri 1994). Although not part of the current study, an important adjunct study would determine what scholars will most expect from working with a digitized image system, and how that fits into the larger picture of the functioning of the image library as a unit. Part of the study of scholars' expectations involves understanding how the introduction of new technology will affect ongoing routine practices. Results that have been observed in previous studies show that more efficiency in one place can cause less in another (Sproull and Kiesler 1991).

All of these issues discussed in the literature are relevant to the introduction of digitized images into slide libraries. Projects such as the UCB Image Database Project (University of California at Berkeley) and at the Centre for Image Information (De Montfort University at Leicester), among the initial few to venture into the realm of utilizing digitized images, provide models for other efforts.

## METHODOLOGICAL MODEL

We have assumed that slide libraries need automation and standardization in order to keep pace with wider technological developments. Questions on our interview guide were shaped to test the following initial assumptions:

### **EXPECTED RESULTS/SUSPECTED RELATIONSHIPS:**

**1. Technological changes are more likely to occur in larger slide libraries with a heavy volume of usage.**

Judging from the various articles in the literature concerning digitized image projects currently in progress, slide library digitization seems more likely to be initiated when a significant volume of images exists to which access is required, and when these images are used within and supported by an institution of higher learning.

A question sheet sent to the slide curators prior to the interview created a base of factual information about the size (number of images, staff, and patrons served, and overall budget) and scope of the collections of the two slide libraries studied (see Appendix II).

**2. If funding is limited, then technological advancement will be inhibited.**

In late 1994, institution Z became a participant in a nationwide digitization initiative. Participation in this project allows access to selected digitized images from a number of institutional collections. Beginning in Fall 1995, images will be accessible through specifically established image servers on campus, and several pilot courses will be taught using digitized images in Spring 1996. A separate corporate grant allows a second visual material digitization project to begin at institution Z at the same time. It remains to be seen whether sources of funding will become available to allow the continued use of digitized images for education once these initial projects are completed.

The slide library at institution A already has a computerized collection index in place, something slide library Z does not have. Slide library A also has a digitization effort underway, and is conducting these efforts as part of a campus-wide technology program. Again, it remains to be seen whether the results of these initial efforts will encourage the allocation of other institutional or corporate funds to continue support for digitized images in education.

Questions in section III of the interview guide (see Appendix I) address issues of planning and development.

**3. If current technology is limited or non-existent, then a progression through certain levels of technical competencies (i.e. automated circulation and indexing) will need to be accomplished for the effective introduction of digitization in the slide library.**

Of the slide digitization projects which provide detailed documentation in the literature, various models are suggested. In the Berkeley model, using the text-and-image browsing system "ImageQuery", the text-based subject access records are developed in parallel with the digitization of images (Besser and Snow 1990, 222).

In other case studies, such as that of Rensselaer Polytechnic Institute (Keefe 1990), a National Endowment for the Arts grant enabled their architecture slide library to create an automated records index for their images using a MARC-records based system. Although they have not since documented any move to digitize this image collection, these automated records could be linked to allow access to the digitized images they represent. At De Montfort University in Leicester, their strategy has been to begin automation by transferring paper records of their holdings to a computerized database (McKeown 1993, 30). The development of an accompanying digitized image database, although desirable, is viewed as a long-term goal.

Items in section I of the interview guide establish current indexing methods, and determine the respective “features and bugs” of each. Questions 4 through 6 in section II of the guide determine other forms of computer technology used and/or available to support daily work practices at the slide library.

4. If there is knowledge about digitization among the community (librarian/users), then there may be an increased awareness of the need to incorporate/plan to incorporate these technologies into the slide library.

With digitization of visual images about to occur, major implications for the slide library can certainly be foreseen. As digitized image collections continue to grow, and as online access becomes a reality, the slide library’s traditional roles of collecting and physically housing images will be changed and quite clearly diminished. Providing access to images will remain a key role of the slide library, although accomplished in new ways: for example, by developing online access to an index of the image collection, and digitization of some of the images currently on slides.

There is nothing in the literature which specifically addresses this correlation between knowledge of and positive attitudes toward digitization. All the literature cited in the bibliography draws attention to the numerous problems - technical, managerial/organizational, political and financial - associated with undertaking a digitization project. Those who have undertaken such projects realize their immensity and the fact that it will take much time - years - before the significant problems relating to the development and implementation of such systems are resolved. There is a keen awareness of the revolutionary impact of these new technologies among developers of these initial projects.

Questions 7 through 9 in section II of the interview guide are used to determine the slide curator’s familiarity and previous experience with digitized images. Questions 22 through 24 in section IV examine the curator’s attitudes toward digitization.

5. If people are knowledgeable about digitization, then their expectations of its benefits and readiness to change will be increased.

This in fact may not be so, as was the case with the online *Thesaurus Linguae Graecae* and its criticism by classical Greek scholars (Ruhleder 1994). Ruhleder’s research found a great concern among scholars over the impact of the online thesaurus, and its implications for the nature and future of classical scholarship. Similar concerns may be expressed by slide curators, in light of their awareness of their patrons’ needs.

The questions in section III of the interview guide determine changes planned or already being implemented, and the slide curators’ concerns for the future.

## **PRIMARY METHODOLOGY**

The primary methodology consisted of semi-structured interviews with slide curators, who are the heads of the art and architecture slide libraries at institution Z and at institution A. In each of these libraries, the curator was the only full-time staff member; hourly student workers were not interviewed.

The available management, collection development, and service policies from each slide library were used to supplement the data collected from the interviews, and form the basis of the description in the analysis.

## **MEANS OF DATA ANALYSIS AND EVALUATION**

Using a process of content analysis, significant words and phrases were extracted from the transcribed interview material in order to identify the main themes and issues that arose. This information was then grouped according to three broad categories suggested by the responses of the interviewees. These categories are technology, support, and attitudes/opinions. The situations at the two institutions studied are compared and contrasted within each issue or thematic context, and conclusions drawn from analysis of each situation.

This data is also considered from the point of view of the information it sheds on the Expected Results, which the group formulated prior to conducting the interviews. The results derived are thus useful in identifying issues surrounding the implementation of technology in slide libraries.

## DESCRIPTION

### **SLIDE LIBRARY A**

The slide library facility is located within the art department and houses 120,000 images, stored in standard slide drawers. Included in the library are a reference collection, periodicals, and art history reserve articles. The slide collection is divided into two sections: non-western and western. These are based on the primary cultural divisions, and a chronological time frame, respectively. The images collected are: fine art, photography, decorative arts, graphic design, architecture, and children's art. Along with the curator's desk is a Macintosh computer workstation, a student workdesk, slide viewing tables, a library table for studying, and a slide viewer. A copy stand and camera, for use by the curator, are located in a small room within the slide library.

The slide library is accessible to current faculty of institution A, graduate students who hold teaching assistantships in the art department, visiting artists in the studio program, and faculty from other departments outside the art department. The art history faculty are issued keys in order to have 24 hour access. The loan period for art faculty is one week, for art history instructors one semester; graduate assistants and any other users may borrow slides for two days. Slides are selected and pulled by the user and are recorded on a check-out form which is kept on file until the return of the slides. The exception is departmental faculty who have name cards which are deposited in the slot left by the chosen slide. Behind each slide is a laminated photocopy of the slide; this permanent copy is used as a record of the slide.

Overdue notices are issued when slides are not returned. If necessary the curator will revoke privileges and additional slides cannot be borrowed until previous ones are returned. A \$5.00 fine is levied for each slide that needs replacing due to film damage or loss.

An alphabetical computer index of artists in the collection exists; a print copy is bound and available for patron use. Information about the slide collection can be sorted and retrieved according to artist, media, and time period. A handout explaining the scope of the collection and slide library policies and procedures is available for patrons.

1,000 to 1,999 slides per year are made in-house and between 500 and 999 are purchased from commercial slide companies; the total budget is \$5,000.

The slide curator has a studio art undergraduate degree, with two minors, one in history, the other in English literature, and a master's degree in art history. The slide curator is a civil service position. The total staff is comprised of one full-time curator, one part-time hourly worker, and art history teaching assistants. The library is open for 42 ½ hours per week, Monday through Friday, and is used by approximately 50 patrons weekly.

### **SLIDE LIBRARY Z**

Slide library Z is located within an architecture department. The full-time curator manages a collection of 250,000 slides for circulation to art and architecture historians and graduate students. 15 to 20 users check out approximately 1,000 slides a week. The curator has a staff of one full-time clerk and an additional total of 40 hours per week assistance from student hourly workers. The library is open for a total of 40 hours per week, with no evenings or weekends. Art and architecture history faculty have keys to the slide room for access outside of regular open hours.

Art history faculty are the primary users, and are permitted to keep materials for as long as needed, or until they are requested by another patron. Faculty of other areas of the art department are asked to keep slides out only for the time they are needed, and students are to return slides the next day. Slides are checked out by hand, with everyone, except art and architecture historians, completing a check-out form. Name cards are used to mark the slots where slides have been borrowed; a photocopied locator card is filed behind each slide.

The collection contains images of the following: fine art (painting and sculpture), photography, decorative arts, crafts, graphic design, architectural history, landscape architecture, and to a lesser extent, industrial and interior design. These are indexed first by country or culture, and sub-categorized by medium and artist. The slide drawers and viewing tables are in a room adjoining that where the curator has a desk and computer. The photography lab is also located in this room. 2,000 slides per year are made in-house and up to 499 are bought from commercial vendors; the overall annual budget for the slide library is \$3,500 to \$4,000.

The curator of slide library Z has a Bachelor's degree in history, with a minor in art history and has worked full-time at the slide library for 19 years.

## RESULTS AND ANALYSIS

The content analysis of our transcribed interviews revealed three major areas where issues of concern arose. These issues centered around technology, support, and attitudes and opinions of the slide curators. The discussion below details the results found in each of these areas.

### TECHNOLOGY

There are several issues involved in incorporating new technology into the current systems of the two libraries. The primary issue is cost, but quality is also a consideration when thinking about converting the slide libraries to digital images. Both slide curators also have some very definite ideas about the future of their slide library, when new technology is eventually implemented.

When discussing future technological developments, both curators commented that quality was of importance if digital imagery was going to be used in each of their libraries. The curator from library A seemed much more concerned with the quality of the imagery, but has also had more experience with digital imagery and is thus more aware of some difficulties encountered with digitization. Slide curator A stated that they "weren't real pleased with the digitized imagery." Library A has performed their own digitizing and have also purchased CD-ROMs, such as the Frick Museum's CD-ROM. She stated that "some of the painting faculty was a little bit displeased about the changing color." Because of the issue of color quality, she stated that "there's a feeling right now that we shouldn't pursue this until the technology gets a little better...but right now film seems to have much better resolution than digitized imagery". Color quality is something that slide curator A is trained to see, and has had to convince the technical people at her institution that the quality of imagery needed to be improved before implementation. The technical staff at institution A believed that when it came to color, "close enough was good enough," and curator A had to convince them that, for use in the art field, color accuracy is a very significant factor in image reproduction.

The slide curator at library Z did not discuss image quality as extensively, but did state that it is important. She expressed a belief that digitized images would be better than slides, because slides often fade and become discolored over a period of time. This will not be an issue with digital imagery, as they will retain their color. The curator at library Z did not think that the image quality is "as bad as some people think...people find them fine to study with."



Both curators are enthusiastic about the potential that digitized images have, especially for studying purposes. Both mention that the images could be networked, enabling many people to use them at the same time. Curator Z would like to see these images networked to both the dormitories, so students can study in comfort, rather than having to crowd around slide cases containing small slides, and perhaps to other universities. Curator A discussed having a computer lab in which the students could view the images for studying purposes. The curator at slide library A also points out that an instructor could include textual information with the image. Both curators see the numerous advantages of digital images, including making their own specialized image collections on CD-ROMs. As Curator A states, "It's possible the teacher could have their own disc of the slides that they use over and over again like in survey [classes] where you have stock images".

One problem that concerns the curators is the cost of investing in these technologies. Both comment on how expensive they are, especially when purchased from vendors. Slide curator Z states that, if the money were available, she would rather purchase commercially-made CD-ROMs, rather than create them in house, just as she would prefer to buy slides rather than make them, since the commercial products are usually of better quality than what can be produced in-house. Slide curator A, though, is hesitant about spending the money, just as she is with the overall idea of digitization. She would rather wait until the technology is more secure, rather than expend the "time and expense of putting the collection on CD-ROM [which] then may become so quickly obsolete that we'll have to redo it."

The two curators are also faced with the problems of learning the technology themselves as well as teaching it to others. Curator A appears to have much more support in this area. She has already, as stated before, had some experience with digital imagery. She is also able to take grant-funded faculty workshops during the summer to learn about the capabilities of various technologies. She is concerned, though, about the possibility of having to serve as the teacher to "computer illiterate" faculty and students using the facilities. She does not have enough time available to add computer instruction to her current roster of duties, and believes that there will not be enough money allotted in the budget to hire additional staff for the slide library to fill this role. In addition, she believes that it should not be her job to teach people how to use the equipment.

In contrast, the curator at institution Z appears to receive little support from the administrative level in terms of learning how to use the equipment. She is currently enrolled in a course to learn about new technologies, a course that she is paying for out of her own pocket. At present, she is more concerned about trying to learn these new skills herself than she is about bringing her patrons up to speed. She also stated that the slide library will be getting equipment to scan images, but that she will "probably have to figure out how to use it on my own". A related problem is that if she is receiving less support from the administrative level in terms of training, then the task of teaching patrons to learn to use the equipment when it is in place will be more difficult. Many of these new procedures have not been planned for in advance by the administration.

As stated before, though, both curators seemed enthusiastic about gaining access to digital images, and they both see it as being something that will likely continue to be incorporated into their own libraries in the future. However, slide curator A states, "I don't think one is going to replace the other" when it comes to actually replacing slides with digital images. She believes that she might have to provide both types of images for quite a while. She thinks that, in her own library, "the slide collection...will be around maybe for a good 25 more years...it [would not] ever be deaccessioned until everybody was comfortable." Curator A believes that slides will still be used until there is "a whole new replacement of faculty by younger faculty."

Even though the focus of the interviews was digital imagery, both curators commented that it will take some time before digitized collections will be the norm at their libraries. During this transition period, other technological changes will be occurring. The curator at institution A says that videos will be used before digitized images are incorporated. At the moment, video is being used to a limited extent, but since the quality is so good, she thinks that the professors will incorporate it much more in their lectures in the

near future. Curator Z states that more standards among slide libraries are needed if digitization is to become fully incorporated. She also states that, before digital imagery is the norm, some type of automated circulation will probably be implemented at her library.

Although they both see the advantages of digitization, both curators expressed concerns about digital imagery. Even though they both see it being incorporated into their libraries in various stages, they also have expressed concerns about these changes. There are still issues of costs, for the equipment and training, which are still too high considering the quality of the images. Also, other advancements seem to be of more immediate need and more feasible at this moment.

#### **SUPPORT**

Although both curators welcome the digitization of images, they expressed concern about the increased work resulting from in-house digitization. They see a need for a position for someone with a computer background responsible for the digitization equipment and process. This person would also assist people in accessing images. They feel that having this position would quicken the pace and ease the transition towards digitization. Both agree that digitization without additional help is a constraint and without it, it often appears to be an insurmountable challenge.

The two slide curators expressed opposite perceptions of the type and amount of administrative and financial support needed for digitization. In library Z, the curator's impression of the administration towards computerization is one of disorganization. Additionally, curator Z feels her suggestions and opinions are often disregarded. Informed proposals for new equipment and software seem to be overlooked. And even though the administration has made the decision to proceed with digitization, curator Z is rarely consulted and, if so, only informally. Curator Z fears that without thorough planning and her input, decisions are being made that may result in failure and the blame will be placed on her. Financial support is also lacking as well. Money is foreseen by Z to be an hindrance in obtaining technology such as more powerful image management systems.

At the other pole, curator A feels she receives the necessary equipment and training required. Curator A also noted the institution's desire "within the next few years to see computer terminals set up in here and students starting to use and look at the digitized imagery". Funding available for slide library A did not seem to be a deterrent.

#### **ATTITUDES AND OPINIONS: SLIDE CURATOR/SLIDE LIBRARIAN**

At institution Z, the slide curator currently feels comfortable with the existing system, and does not see a need to change to an automated system or a digitized system. Nonetheless, change is already occurring around her, with some uncomfortable results.

Discussing the system currently in use, she reported that it is difficult to make changes, because the current system is the only one she knows and feels comfortable with it. The organizational system for the slide drawers is based on a system developed at the Metropolitan Museum of Art in New York. Although this system is inherently somewhat idiosyncratic, further changes have been made at slide library Z to accommodate the particular needs of individual faculty members. Curator Z spoke of the current system as being "faculty driven", meaning that "the slide collection is really part of art history and the only regular users have been the art history faculty...so we've adjusted to faculty members in creative little categories."

At institution Z, the fact that the slide library exists as a closed system, composed of a small community of users, is one of the primary reasons why the curator is not particularly welcoming change. She fears the move away from the shared knowledge and practices which allow the system to function as it currently does, and the resulting breakdown of the present community, of which she is a valued member. Her apt comparison was "it's sort of like changing from a boutique to being a Super Wal-Mart. I like working with a small group of people...."

At institution A, the slide curator presented a more positive and welcoming attitude towards digitization. She discussed several practical advantages and improvements for the faculty in the teaching of art and art history, and as well for the students in improved methods of studying art images.

Clearly, in these two institutions, one of the key factors affecting each curator's overall attitude is the support given to each individual. At institution A, the slide curator maintains an active communication with a number of people in the technical area. Through her inclusion in this group, she has become more informed about the capabilities and limitations of current imaging technologies, and has a clear idea about her institution's plans for technological advancement. Even so, she still maintains some reservations about the amount and scope of skills and responsibilities that will be required of her with this new imaging technology:

I'm going to have to figure out how to. I mean I'm going to probably be given the go-ahead - get this equipment, start this new technology, let's make these slides accessible to students. This and that. I'm going to be the one who's got to figure out the best way to do that. Kind of fine tune it. But that's difficult for me because I don't have the background and the latest technology.

As mentioned earlier, at institution Z the slide curator has largely been left out of this process, and is left to deal with the fact that many decisions about the introduction of new technology are being made without her input or participation. Correspondingly, she lacks the confidence about the new systems that comes from a solid knowledge and understanding of them. A diminished morale is evident: "I feel like I'm not getting support from the school, so I'm a lot less inclined to want to work my weekends and my nights, like I did before."

Interestingly, the slide curators at both institutions acknowledged a feeling of "no control" and a sense of inevitability about the entire process. At institution Z, these feelings of lack of control were largely generated because of the fact that decision-making and planning are being done without her consultation. She also feared that she would be the one blamed, "the fall guy", if the new systems somehow failed to perform as expected.

At institution A, the slide curator viewed these sweeping changes as inevitable, with the force of a great deal of societal and institutional momentum behind them. "[W]e have no choice. We had to go to the workshops...move onward and upward....We'll be a highly technological society in the future, so I see it as inevitable and I'm going to go with the flow."

Slide curator A also reported feeling pressure from those in charge of the technology programs at her institution. Likewise, curator Z reported that "I tell people what might be good, and then maybe we get it, maybe we don't, but I feel sort of pressured".

At both institutions, the slide curators felt that there would be a mixed reaction to digitization among faculty members. At institution A, the curator perceived a difference in attitude between art history and studio art faculty, noting that many of the art history faculty already use computers quite a bit for research, whereas fewer of the studio faculty (painters, sculptors, etc.) have computers in their offices and are less inclined to use them on a daily basis.

At institution Z, the slide curator did not see a difference in attitude along departmental lines, but thought that some faculty would favor the introduction of digitized images, as long as they would still have the choice of using either them or slides. She felt that if the entire system were to be completely changed, faculty would not put up with it. Both curators noted that there are some faculty who are set in their ways, and would prefer to continue to teach using projected slides. Both stated that faculty would rebel against being "forced" to use a new system. Slide curator Z also noted that some faculty realized that digitized images would make it easier for students to study images.

Both slide curators concurred in their assessments that students would welcome the opportunity to study using digitized images. Curator A noted that "most of the students now are computer literate and will see it as not a problem at all."

## CONCLUSION

Many issues are involved in incorporating computer technology into a slide library, especially when considering conversion to digital images. Some of this study's expected results and relationships held true, whereas others did not.

As far as purchasing and supporting new technologies, a primary concern of both curators was that of funding. This would seem to support the study's expectation that if funding is limited, technological advancement will be inhibited. In both slide libraries, funding for extra staff was a key component of these concerns. Both slide curators believe it would be quite difficult to accomplish the transition to digitization without extra staff, because of the increased workload and the specialized technical knowledge required. Curator Z believes these concerns are well-founded since she is not presently receiving institutional financial support to begin acquiring such knowledge. Support in terms of adequate staff and adequate training and preparation thus stand as the chief concerns shared by both curators about impending digitization.

Another of the study's expectations was that if the amount of technology currently in use at the slide library is limited, then there would have to be a certain technological progression before the library could begin to effectively introduce digitized images into its facility. This expectation was not strongly supported in the interviews, as there is no clear pattern in either situation. At institution Z, the slide library has had a computer in the office for about one year. It is used for word processing and to link to the campus network for e-mail and other resources. There is no computer technology in use for any facet of maintaining or managing the slide collection. The pilot digitization initiative will begin at the same time as the development of a computerized database. Curator Z discussed the possibility of implementing computerized circulation procedures for slides, but instead, the decision to initiate digitization will eventually allow far greater access to images, as opposed to a computerized checkout system which would simply allow better record-keeping of slides. In contrast, slide library A had a computerized indexing system in place before the campus experiments with digitized images began. Although slide curator A shares many of the same concerns as curator Z, part of her more optimistic attitude may derive from this greater familiarity with technology in the workplace. Having some collection management technology in place for a certain length of time prior to introducing digitized images would not only help staff but also patrons to become familiar with using computers in the slide facility and may help ease the transition to digitization.

It was also expected that if there is knowledge of digital images, there would be an increased awareness of the need to incorporate them into the slide library, and that curators would be more willing and ready for this change. This is true only to a limited extent. The administrators at both institutions see the potential for improving learning and teaching using digital imagery, and are taking steps towards implementing it. The curators also recognize the positive aspects of using digital imagery, but they are more reluctant to change primarily because of the issues of support, as well as uncertainties about the capabilities of digital technology. Skepticism in this regard was also expressed by the studio faculty at institution A, who were not impressed with the mediocre color quality produced in the initial digital image experiments.

Finally, the research group proposes that technological changes are more likely to occur in the larger slide libraries that have a heavier volume of usage. This expectation is supported in a broad sense in regard to digitization, as both the slide libraries in this study have substantial slide collections, and are beginning digitization. On the other hand, in regard to other computerized systems, the larger of the two libraries studied, library Z, has been slower in incorporating other computer technologies, i.e. it currently has no computerized collection management system. However, this library is taking steps towards digitization. Library A on the other hand, which is the smaller of the two, has already made some initial technological changes, as a computerized indexing system is already in use. Experiments with making a laser disk have also been undertaken. Even though the number of slides in its collection is somewhat less than half that available in slide library Z, plans for digitization are underway.

The general conclusion to be drawn from these two case studies is that it will take a continued investment of time and experimentation before digital imagery is successfully integrated into the libraries. The amount of time needed will depend on several factors: institutional financial and administrative support, the capabilities and quality of current technology, and a satisfactory resolution of copyright issues. Once these issues are addressed, then the transition to digitized images can be effected.

## APPENDIX 1 - INTERVIEW GUIDE

### I. Collection Access

- 1 a. Can your slide collection be accessed by a computerized record index or database? (If not, move to question 2)
  - b. brief description of the system currently in place
  - c. When did you start using it here at the slide library?
  - d. What is it based on? (commercial software program or in-house programming, etc.)
- 2 a. Do you provide any type of printed index or card index for your collection?
  - b. If yes - brief description.
- 3 a. What are the access points to your indexing system?
  - subject
  - artist or architect
  - country and/or city
  - period or era
  - medium
  - other - specify
  - b. What do you consider to be the best features of your present indexing system?
  - c. What do you consider to be the main problems with your present indexing system?

### II. GENERAL COMPUTER USAGE

- 4 a. Do you use a computer for any kind of work related tasks?
  - b. If yes - list typical types of usage.
- 5 a. Do you have access to and use electronic mail?
  - b. How do you have access to it? (is it provided by the school or is it through commercial software?)
- 6 a. Do you subscribe to an art-related "listserv" like ARLIS or any visual arts related newsgroups? Do you receive any art-related newsletters? Specify what.
  - b. Do you find the postings or articles you read here to be useful in a practical or work-related sense? (do they help in decision-making about collection management and development? Do they provide useful information about art CD-ROMs currently on the market?)
  - c. Do you read the technology-related articles or postings in these newsletters or newsgroups?
7. Are you familiar with the concept of digitized images?
8. Does the slide library or the school provide access to digitized images as far as you know?
- 9 a. Have you personally viewed digitized images?

- b. If yes - was it on CD-ROM or the Internet?
- c. Have you personally used programs like Mosaic or Netscape?

### III. PLANNING AND DEVELOPMENT

10 a. Have you any informal sense (through conversations etc.) of what your patrons' needs are and if these needs are being met? Describe needs.

- b. How could your patrons be better served?

11. Have you any formal means of evaluating the needs of the patrons you serve? Describe

12 a. Are any changes beginning to occur now at your slide library which affect the way your daily work is done? (technological, social, budget, academic policy, other)

- b. If so in what way do you feel these changes occurring?

13 a. Are academic/institutional policy considerations affecting long-range planning at your slide library? Describe.

- b. Are you included in this planning?

14 a. Do you have or are you aware of any plans for technological change or any other way of upgrading your collection access?

- b. Are these changes currently being made or are they just being considered at this time?

15 a. Do you view the introduction of digitized images on your campus network as a useful and needed future project for your slide library? Why or why not?

b. Do you think it is even possible and can you see it happening or are you interested in making it happen?

16 a. Would you consider employing purchased CD-ROMS for survey classes as a more feasible alternative to digitizing your slide collection? Why or Why not?

- b. What would you prefer if given the choice - CD-ROM images or networked images? Why?

17 a. In general what type of reaction would you expect from the faculty if your slide library would change from the use of slides? The students? The slide library staff?

Negative

Positive

Neutral

Why?

What do you think the overall enthusiasms or concerns of your patrons would be?

18 a. What are your particular ambitions and concerns for the future direction of your slide library in view of the numerous digitized image projects underway at various institutions

Finally, What is your background? How did you come to work in the slide library?

Anything else you'd like to add that we didn't bring up in this discussion?

May we call you for clarification?

Thank You for your participation. Please contact us if you want to add anything.



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