Advocating for Visual Resources Management

in Educational and Cultural Institutions

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Executive Summary

The Visual Resources Association (VRA), the international organization for image media professionals, endeavors to address the value of images and the educational demands associated with the emergence of new types of visual resources. The goal of this white paper is to promote holistic thinking about how to effectively meet institutional as well as image user needs in an environment of rapid technological change and in the face of challenging economic conditions.

Images increase in importance. Faculty in many disciplines acknowledge that digital images have revolutionized their teaching. The visual learning of students now takes place primarily in a digital realm. Special collections within libraries, archives, and museums have found that providing digital access to their holdings stimulates appreciation and use. The skills and responsibilities of visual resources professionals have expanded in scope. These managers have successfully re-aligned operations to meet digital demands. New technologies, extended responsibilities, and closer alliances with related services—such as information technology, rights management, and course management—typify the changes in the work of visual resources professionals. This work now involves building institution-wide resources tied into central digital information infrastructures for the management and preservation of content in a variety of media. Image management is beginning to involve participation in inter-institutional efforts to share collections and labor demands.

This paper identifies six strategic areas for consideration in planning for the future: multiple sources for images; ways of integrating personal and institutional collections; social computing and collaborative projects; the life-cycle continuum of image assets and their description; rights and copyright compliance; and visual literacy.

VRA argues that eliminating visual resources services carries high risk during this transitional era and does not serve the institution's broader educational mission. Many institutions have begun to re-examine the appropriate administrative home of visual resources collections in response to the changes brought about by the demand for digital media in pedagogy. Several successful administrative scenarios are described to suggest flexible options for continuing to build shared image collections and provide support for the constituents of educational and cultural institutions.

Advocating for Visual Resources Management in Educational and Cultural Institutions

Introduction

In our Information Age, digital media are displacing static media—such as books for words or film for images.[1] Entire industries (publishing and music, for example) must examine their business models and reinvent themselves. Educational and cultural heritage institutions are also rethinking operations while striving to maintain the institution's mission. In this paper the Visual Resources Association (VRA), the international organization for image media professionals that furthers research and education in the field of image management[2] endeavors to address administrators, faculty, and curators in both higher education and museum environments who must make decisions about the future of image collections and services during this period of economic stress. In recent cases, elimination of professional positions and closure of visual resources collections to meet immediate budgetary crises have often failed to consider the full range of planning issues.[3] This report describes the value of images and the educational demands associated with the emergence of new types of visual resources[4] so that institutions can think holistically about how best to meet needs in an environment of rapid technological change and in the face of challenging economic conditions.

I. The Importance of Visual Resources to Teaching, Learning, and Institutional Identity

Both faculty and students use pictures more now than ever before. In several studies, faculty from nearly all disciplines report that their use of digital images has increased. Many indicate that the use of images has "revolutionized their teaching." They are "using substantially more images, more frequently than they did analog images...[and] discovering how students can be better engaged with materials through the use of digital images."[5] Interestingly, studies also indicate that faculty expect institutional support and coordination for visual resources, just as they do for computing or library services.[6] Additionally, accreditation agencies want programs to have access to information resources and technology, which includes the media collections and software applications that visual resources facilities provide. Visual resources professionals have been able to transform their operations, which once served communities using primarily 35mm slides, to focus on the expansive possibilities afforded by digital images. Image content that formerly served a limited group of constituents now has added relevance and accessibility for a much larger community of users, both within a given institution and beyond its traditional borders. (See several innovative examples in the Conclusion below.) Similarly, libraries and archives have found that distributing digital images of their special collections enhances wider public appreciation of these holdings, increases use, and contributes to an organization's reputation. Web sites rich in museum collection images have expanded museum audiences exponentially.[7] Some museums have capitalized upon the work of packaging high quality images and descriptive data by using it to handle requests for publication images or by distributing their image assets through services such as *Scholars Resource* or *ARTstor*.[8]

II. Visual Resources Services and Change

Most visual resources collections provide instructional images for higher education, but these functions are closely allied to image collections found in archives, libraries, and museums. The services commonly provided by visual resources professionals in both the past and present consist of:

- Helping clients find the images they want for teaching, learning, research, and publication
- Creating useful instructional images through traditional photographic, and, now, digital

production
- Developing systems of access for image collections
- Describing and categorizing images to make them easily accessible
- Designing and applying shared standards for image quality, descriptive data, archiving, and preservation
- Supporting clients' effective use of image management software, presentation tools, and social networking technologies as well as related hardware
- Providing advisory services for any of the above, as well as for compliance with copyright, licensing, or other rights

Recent changes in the means by which these activities are accomplished have been rapid and profound. New technologies, extended responsibilities, and closer alliances with related services in the parent organization such as information technology, rights management, and course management typify the changes in the work of visual resources curators.[9] It now involves building institution-wide resources tied into central digital information infrastructures for the management and preservation of content in a variety of media.

The digital landscape has proven more complex than its analog predecessor, as has been demonstrated in other information service areas such as libraries or computing. Important considerations for decisions about the future of visual resources services should include:

1. Multiple Sources for Image Content
2. Strategies for Integrating Personal and Institutional Image Collections
3. Social Computing and Collaborative Projects
4. The Life-Cycle Continuum of Image Resources
5. Rights and Copyright Compliance
6. Visual Literacy

Examination of each of these considerations follows.

1. Multiple Sources for Image Content

Visual resources are available to an institution from a variety of internal and external sources:

- Collections assembled by individuals[10]
- Collections managed institutionally[11]
- Subscription services[12]
- Services combining these sources[13]

These vary in the degree to which they are:

- Free or fee-based
- Open or restricted access
- Discoverable by search engines or closed to them

A similar range of resources exists for most forms of information such as text, audio, and video. Visual resources professionals expect a future in which this diversity of sources will continue and, indeed, prove essential to sustain educational use. An economic model where any one source dominates can lead to serious inefficiencies.[14]

Educational users often complain that images found with *Google* or other search engines frequently lack the quality required for illustrating lectures or assignments, are inaccurately identified, or of questionable legal status. While some high-quality images may be found "for free" on the open Web, quality always requires financial, technical, and human resources,

whether or not the end user pays directly.

Although existing sources supply billions of pictures,[15] teaching and research continually require additional images. As with other information formats, new areas of knowledge and inquiry create fresh needs. Teachers, students, and museum curators constantly invent urgent new uses for pictures. Local production of image assets has always been an effective response to dynamic requirements and should continue to be a significant part of the increasingly complex array of image sources.

2. Strategies for Integrating Personal and Institutional Image Collections

Recent development of image services seeks an optimal relationship between collections assembled by individuals and those managed institutionally. Personal collections are to some extent a natural result of the digital environment where use normally entails copying and repurposing. Research indicates that those individuals with the largest personal collections are also more likely to be frequent users of institutionally managed or licensed collections of images.[16] So, although personal collections abound, they do not supplant licensed or institutionally managed collections, but do complement them. Collections massed by individuals sometimes offer important assets such as insightful selections, original photography of high quality, and, in some cases, authoritative descriptive data. Of course, by definition they respond well to the variable needs of the individual. On the other hand, the liabilities of personal collections include duplication of effort, idiosyncratic organization that prevents sharing or breaks down as the collection grows, insufficient backup and preservation routines, and haphazard approaches to copyright compliance. Clearly, the existence of independent collections offers the opportunity for visual resources professionals, faculty, and museum constituents to collaborate to reduce redundancy and share important image content with the entire institution and, when possible, scholars worldwide.

Professionally managed collections offer many benefits to an institution. Most notably, they are built to last. Many digital images created just ten years ago—in situations where professional standards were ignored—have been abandoned because they have become inadequate for today's higher resolution monitors and projectors. Some systems have been entirely rebuilt because they were not designed to port to new software. Visual resources professionals work together as a community to establish best practices that maximize return on the labor of collecting, describing, and managing images.[17] (See number 4 below, The Life-Cycle Continuum of Image Resources) They manage rights in a way that helps protect the institution. (See number 5 below, Rights and Copyright Compliance) Working closely with faculty tightly focuses institutional visual resources collections upon the relevant programs and course offerings. Successive faculty teaching in the same or associated areas should be able to access core images, rather than having to start over every time there is a change in a teaching responsibility. Most collections of this type have routines for making additions to the collection at the request of users and can be more responsive in this way than subscription services. Digital libraries such as *ARTstor* or projects like *American Memory* do not relieve institutions of the responsibility to maintain local resources. To date, these resources tend to supply strong collections representing the traditional art history canon or the specifics of the American experience, but lack sufficient numbers of contemporary works of art and architecture, non-western material, architectural plans, and other images of new or interdisciplinary interest. Indeed, larger projects such as *ARTstor* support local production by providing a delivery platform for locally managed collections enabling cross-collection and inter-institutional searching and sharing.[18] Building image collections strategically and collaboratively ensures quality, facilitates sharing, and increases efficiencies for users and contributors.

3. Social Computing and Collaborative Projects

One of the most exciting developments in recent years is the creation of online networks where image collections can be easily built by individuals and openly shared. The casual social computing approach of *Flickr* is perhaps the most widely known. Projects such as the Library of Congress' *Photostream* and Lewis and Clark College's *accessCeramics* use the popularity of *Flickr* to their advantage.[19] *Photostream* staff upload historical photographs to *Flickr and* enlist the public to help tag, comment on, and identify the images for enhanced descriptive data. The *accessCeramics* partners encourage artists to upload images of their work to *Flickr* for a jury to consider for inclusion in an in-house designed database providing a Web accessible digital collection for teaching the ceramic arts. In both cases, information professionals facilitate the process of engaging a broader public in image access while extending the reach of their traditional work, such as enhancing descriptive data. Such collaborative resources can maximize the educational potential of digital technology, social networking, and cloud computing. Systems with new collaborative features include the *LUNA Commons*, the *Madison Digital Image Database*, and the *ARTstor Digital Library* also partnering with the Society of Architectural Historians on the *SAHARA* project.[20] Distributed networks of participants including faculty, students, museum constituents, visual resources professionals, librarians, and others contribute to an environment where images, descriptive data, image management tools, and presentation software are coordinated. These resources leave room for spontaneous image uploads while allowing for quality control. With only a few years of practical experience, collaborative image collections point toward learning environments that benefit an entire institution or multiple institutions.[21] As Clay Shirkey suggests in his book *Here Comes Everybody*, "Collaborative production, where people have to coordinate with one another to get anything done, is considerably harder than simple sharing, but the results can be more profound."[22] Image professionals contribute content to these collaborative resources; they help integrate these new initiatives and technologies into pedagogy through outreach and instruction; and in some cases they actively participate in the design of collaborative systems.

4. The Life-Cycle Continuum of Image Resources

As image asset managers, visual resources professionals safeguard the images and metadata that add value to an institution's long-term information portfolio. Key methods of extending the shelf life of image collections are:

- Creation of high resolution images in anticipation of future hardware capabilities
- Coordinating management and preservation of digital and analog formats
- Using standards for description to improve search and retrieval as well as to structure data for mapping to future systems
- Recording rights and reproduction information to support future decision making
- Planning software and hardware upgrades
- Maintaining databases, system security, and appropriate backup protocols
- Staying current with research on emerging technology and participating in experimentation

Image professionals have long cooperated in the development of standards, best practices, and shared labor for visual resources.[23]

Like books or archival materials, 35mm slide collections represent a substantial investment of time and institutional resources making good stewardship warranted. While the use of 35mm slides will undoubtedly be phased out, portions of these collections will gain significance in the archival realm because they reflect the pedagogy and research interests of the institution's faculty, students, and curators. Slides and photographs may be historically important in and of themselves, as evidenced by some special collections of lantern slides that have been digitized

and made accessible.[24] Visual resources professionals should work with image users to make informed curatorial decisions about scanning selected content and preserving it before initiating the storage or disposal of older formats, such as photographs, lantern slides, or 35mm slides.

5. Rights and Copyright Compliance

More often than not visual resources professionals become local experts in copyright because daily operations confront them with complex issues of rights ownership, licensing, and fair use. As a result, they can field questions from administrators, faculty, students, staff, museum curators, course designers, and the public on such subjects as who owns the rights to an image, when the institution should license an image resource, how the institution can manage digital access and minimize risk, and how fair use may apply to myriad situations.[25] Their further familiarity with pedagogical and research practices coupled with careful documentation of the sources of the institution's visual resources enables them to assist with permission inquiries when necessary. In effect they stand on the front lines of institutional copyright risk management, guiding users to make informed choices about how to use resources, consulting legal counsel when necessary, and guiding the institution's licensing and reliance on fair use.

Many people oversimplify fair use, presuming that if a use is educational, it's fair. But the purpose of the use is only the first of *four* fair use factors:

- Purpose of the use
- Nature of the work used
- Amount and substantiality of the part used
- Effect on the market for the work

To provide guidance on fair use, the visual resources expert must know the media community's fair use norms, keep current on image resource availability on the market, and know the security offered by the technology environment in which the use will take place, in addition to understanding the full meaning of those four factors and their implications for each potential fair use.

A thorough understanding of copyright and fair use also enables a visual resources professional to leverage local collections by sharing images with other institutions. *ARTstor*'s Shared Shelf initiative is a stellar example of collaborative image collection building with a well-considered approach to rights management.[26] It owes much of its success to active participation by visual resources professionals who are able to bring their unique collections to the attention of other educators through appropriate reliance on fair use.

6. Visual Literacy

Twenty-first century teaching places great importance on visual literacy. This emphasis motivates image professionals to work one-on-one with faculty, students, museum curators, and other institutional staff to facilitate image access and use. Increasingly, visual resources professionals add instructional activities to the repertoire of services provided. Partnering with faculty and librarians in classroom training activities or offering regularly scheduled workshops in how to create meaningful content with new technological tools are now common practices. In an article entitled, "Visual Literacy in the Age of Participation," Rockenbach and Fabian stated, "The expectation of a more participatory process forces information professionals to rethink their role in the flow of information and suggests responsibility for nurturing a new range of skills and literacies such as higher-level critical thinking skills, problem-based inquiry, and visual literacy."[27] They suggest that today's visual learners expect to play a more active role in the learning process and want dynamic educational interactions. Students need assistance using visual information

and developing digital literacies for their academic exercises. This includes identifying reliable image sources, judging the quality of images and associated descriptive data, accurate identification of historical content, and understanding intellectual property and how to cite images in their writing and assignments. These are also becoming important life skills. In many fields, images have the status of primary source materials (not mere illustrations), and the ability to "read", interpret, or otherwise skillfully negotiate imagery is imperative. Development of this skill can be limited by problems with image accessibility, quality, or reliability. In many situations, well-equipped visual resources facilities act as a key learning space for teachers and students.[28] Institutional constituents often seek assistance from visual resources professionals about technical, legal, and aesthetic matters recognizing their colleagues' authority in these areas of visual literacy.

Conclusion

This white paper argues that eliminating visual resources services carries high risk during this transitional era. Although most visual resources facilities have traditionally been administered in close proximity to image users, many institutions have found that aligning them with audio-visual, information technology, libraries, or other museum departments can result in cost-effective and progressive uses of images in education. This paper provides real examples of several administrative configurations that have met with success. (See **Appendix A: Administrative Scenarios**.)

In a world increasingly dominated by visual media and visual learners, visual resources services grow more valuable by providing:

- Collections: Institutionally managed collections fill a wide gap between personal collections and subscription services playing an important role in emerging systems for inter-institutional collaboration.
- Processes: Infrastructure and workflow are developed for building collections that are scalable, sustainable, and preserved for the future.
- Services: Direct image services for faculty, students, and institutional staff who would otherwise need to repeatedly start from scratch are provided.
- Support: Visual resources professionals make technology viable for educators through instruction on classroom use, presentation software, image manipulation, database management, Web interfaces, and the like.
- Guidance: Visual resources professionals partner with campus experts on rights management and the expanding interest in visual literacy.
- Facilities: Visual resources collections have the ingredients of dynamic learning spaces.
- Expertise: Visual resources professionals stay current with the wide range of issues and rapid technological developments relevant to the use of image resources.

Some recent examples of innovative work in the field of visual resources provides a glimpse of what can be accomplished when employing new technology:

- The Society of Architectural Historians is experimenting with new modes of scholarly communication and collection building with the Mellon-funded *SAHARA* project (www.saharaonline.org), which is a strategy, a resource, and a service. Members of this scholarly organization and information professionals are working together to build an online archive of architectural and landscape images, as well as other content, for teaching, research, and publication. Scholars upload and download images through a shared online site while visual resources professionals, librarians, and technologists assist with metadata and systems.
- With a *Facebook* page (http://www.facebook.com/utsoavrc), a *Flickr* (http://www.flickr.com/groups/utsoa/) image group, bookmarks on *Delicious*

(http://delicious.com/utsoavrc), a blog called “Deep Focus” http://soa.utexas.edu/vrc/blog/), and award winning videos posted on its *YouTube* channel (http://www.youtube.com/user/SOAVRC), the School of Architecture's Visual Resources Collection (http://soa.utexas.edu/vrc) at the University of Texas at Austin uses social networking tools to connect faculty and students to image resources and services.

- The *accessCeramics* (http://accessceramics.org/) project partners in Lewis & Clark College's Art Department, Visual Resources Collection, and Library have created a searchable database to address the dearth of contemporary digital images available for teaching the ceramic arts. Artists are actively engaged in the process when they upload images of their work into *Flickr* and catalog them in the fields created for this purpose. Image professionals then enhance the metadata to meet current VRA standards thus improving search and retrieval. Financial support from funding agencies, NITLE and NEA, is allowing the resource to be freely available on the Web for educational purposes and extending the reach of the project globally.
- During their research travels, University of California Berkeley faculty can upload their images and data directly to campus servers through the *Media Vault* project (http://mvp.berkeley.edu). By partnering with their local visual resources curators, faculty field images can be harvested from collection databases and shared with the entire University of California 10-campus system.
- Requesting a photograph and permission for publication from the Metropolitan Museum of Art once took days or weeks. Working with *ARTstor*’s Images for Academic Publishing initiative (http://www.artstor.org/what-is-artstor/w-html/services-publishing.shtml), the Met makes the images instantly downloadable once the requestor clicks through the online agreement
- A wiki (http://digital-image-collections.wikispaces.com) at Wellesley College seamlessly leads image users to free and fair use Web sites sorted by historical or topical areas of interest. Visitors, including those beyond Wellesley, contribute their own favorite open image sources.

There is nothing static about digital technology. Once collections are reformatted from analog slides to digital files the work of managing the collection persists, as does the need to grow the collection according to local needs. The expertise of visual resources professionals, the services provided, and collections maintained help institutions advance the 2009 EDUCAUSE top teaching and learning challenges:[29]

- Creating learning environments that promote active learning, critical thinking, collaborative learning, and knowledge creation
- Developing twenty-first century literacies among students and faculty (information, digital, and visual)
- Reaching and engaging today’s learner
- Encouraging faculty adoption and innovation in teaching and learning with IT
- Advancing innovation in teaching and learning (with technology) in an era of budget cuts

Considering the complexity and enormous potential of the digital future, working collaboratively to share resources, staying current with emerging developments, and experimenting with educational implementation is the most logical way to move forward.

Appendix A:
Administrative Scenarios

Digital technology has often transformed visual resources collections from departmental to institution-wide resources stimulating image use in a broader variety of disciplines. Yet disciplinary heterogeneity remains an important factor influencing an institution's choice of the administrative structure for visual resources since some disciplines use a significantly higher number of images in their work. Many institutions have begun to re-examine the appropriate administrative home of visual resources services in response to the changes brought about by the emergence of digital images. Of course, administrative positioning is not necessarily the same as the physical location of staff, services, or collections. This appendix outlines successful administrative scenarios for visual resources in academe and museums.

None of these administrative configurations is inherently superior. The local environment suggests the best approach to placement in the organizational structure. *All visual resources operations need to work closely with related services in their parent organization since collaboration is an essential aspect of effective service in the Information Age*. Some considerations, which should inform decisions about administrative positioning and physical adjacencies, include:

Users and Services:

- Who are the current and prospective image users?
- What type of support do they need?
- Should visual resources staff act as: Content selectors? Builders of shared image collections? Catalogers? Quality controllers? Copyright gatekeepers? Instructional technology support specialists?

Partnerships:

- What type of partnerships with other institutional services is most important: Library? Central computing? Instructional technology? Classroom technology?

Physical Space:

- What physical locations are in the best proximity to users?
- What are the space requirements of the visual resources collection?
- What are the possible uses of the space historically dedicated to analog collections?
- Can opportunities be found to create a learning space for visual technologies?

Accreditation:

- What do the institution's accreditation organizations expect regarding effective information resources, technology, and facilities?

Budget:

- What are the costs of the new ways of operating?
- Where are these best absorbed and administered?

Five primary types of administrative arrangements for visual resources services have been identified below,[30] discussed in order based upon frequency of occurrence.[31]

1. Departments, Schools, or Colleges
2. Libraries
3. Museums
4. Audio-Visual or Information Technology Units
5. Hybrid Models

1. Departments, Schools, or Colleges

Historically, most slide and photograph collections originated in academic departments in order to provide the spontaneous, front-line services necessary for image-intensive teaching, research, and study by the department's faculty and students—services and tasks still important with the use of digital technologies.

Benefits

- Focused Collecting: A major advantage of an institutionally managed collection is focusing resources on local needs. (See number 2 above, Strategies for Integrating Personal and Institutional Collections) With departmental administration this focus can be more precisely tailored to the programs of the department, school, or college.
- Proximity: Proximity facilitates communications. It encourages a wider variety of questions and suggestions. It allows quick handling of "emergencies." Furthermore, a physical location within a department stimulates the informal communications that help build trusted working relationships between faculty and visual resources personnel.
- Department Visibility: Digitization has encouraged many academic units to open their image collections to others in their institution. Moreover, the visual resources curator may be the only person on campus with the equipment and experience to scan and catalog images and move them into shared collections. These factors can increase the visibility of the department across the institution and help to broaden the digital collection's client base.

Examples

The University of Maryland's Department of Art History and Archaeology is in the process of transforming its slide room into a new learning space for education and collaboration. The Michelle Smith Collaboratory for Visual Culture, currently under construction, will have state of the art digital projection with a curved projection surface to promote visual immersion in image presentations. The Collaboratory will be central in creating a nurturing environment for academic quality and creative learning. Social spaces have been designed for flexibility with moveable furniture to promote collaborative activities and student study. This new space will provide ample workspace for meetings, workshops, forums, and the execution of large-scale technical projects.

On the ten campuses of the University of California (UC), most visual resources collections are in departments, schools, or colleges, but they work closely with their campus libraries and the California Digital Library. The visual resources curators generally build the collections and the UC Libraries and California Digital Library deliver the images and preserve them for the future. On the UC Irvine campus, collaboration between a faculty member with an extensive fieldwork collection of the Islamic architecture of South Asia, students interested in this art historical area, and visual resources professionals resulted in over 10,000 images being made available not only to all ten UC campuses, but all *ARTstor* subscribers.[32]

At the University of Colorado (Boulder and Denver campuses), the visual resources facilities of the College of Architecture and Planning, the College of Arts and Media, and the Department of Art and Art History share a streaming video server so that academic lectures and films are readily available to faculty and students. Access to the streaming videos is provided through their Luna *Insight* image collections as part of the University of Colorado *Digital Library.*

The Image Curator from Hobart and William Smith Colleges has taken on the duties of art bibliographer and art collection curator. She coordinates book purchases with the art department and the head of technical services at the library and has completed a project comparing the book and journal collection with that of comparable institutions. She keeps current on publications in the fields and presents orders to be placed. In addition, the Image Curator oversees the art collections of the Colleges, which includes curating exhibitions and producing exhibition catalogs.

2. Libraries

For many years some institutions have administered visual resources services as part of a library organization. Examples include the University of Oregon, Massachusetts Institute of Technology, Harvard Fine Arts Library, and Yale University. In recent years, more visual resources operations have moved, either administratively or physically, from academic departments, schools, or colleges to a library unit–often in response to the changes outlined earlier in this document.

Benefits

- Service Mission: Visual resources reside in a service unit, sharing the library's mission to support research, teaching, and learning.
- Shared Values: The visual resources collections and the library have similar values (principles of collection development, data standards, digital access, preservation and the like.)
- Related Skills: Library partnerships can allow for information professionals who have similar skill sets, such as cataloging, database, subject specialty, and reference service, to work more efficiently together.
- Shared Staffing: Sometimes resources for staffing, service hours, or facilities can be shared.
- Digital Library Development: Visual resources professionals have much to offer digital library development efforts. Both kinds of digital collection building employ the same basic techniques (and sometimes the same hardware and software.)
- Interdisciplinary Setting: The broader user-base of a library can help stimulate the new tendency for interdisciplinary use of digital images, from the arts to the sciences.
- Teaching Involvement: Visual resources services thrive on close work with teaching faculty – an involvement that many twenty-first century libraries pursue.
- Related Image Sources: Libraries usually license image databases since they resemble bibliographic databases in terms of cost and support.
- Technological Infrastructure: Visual resources collections in libraries tend to enjoy a larger infrastructure for hardware and software.
- Professional Development: Often library environments allow for more professional development opportunities to stay current with changing technology.
- Budgeting Flexibility: When budgets decline, the options for reducing costs might be more flexible in a larger service organization than in an academic department, where faculty and staff salaries constitute most of the department's budget.

Examples

At Stanford, the increasing complexity of visual resources services became an administrative drain on the Art and Art History Department, whose chair requested that the University Libraries consider managing the service. After this change in 2006, the visual resources staff report a more robust infrastructure, more rapid digitization, disciplinary expansion, and increased involvement in user-training and Web site development. The University Libraries administration reports on the growth of the image database as a significant aspect of its digital library development.

At Vassar, the Visual Resources Library (VRL) reports to the Director of the Libraries and has been under library administration for more than a decade. The VRL recently completed digitization of the most critical portions of the slide collection. For several years the visual resources staff were heavily involved with helping art and art history faculty with the transition to digital images. Once these two efforts were accomplished, the VRL increased its interactions to include constituents from a broader range of disciplines and has become active in other types of digitization projects in the Libraries. The staff maintains especially close ties with an "embedded" technologist who reports to Computing and Information Technology, but is permanently assigned

to technical support with the Art Department and the VRL.

Yale University has one of the oldest visual teaching collections, founded by the Yale School of Fine Arts in the 19th century (when it contained plaster casts, original prints, photographs, and, eventually, slides). The collections and staff have always been housed with the art gallery, art history department, art school, and school of architecture, but have been under the administration of the Yale University Library since 1951. With a recent move, the collection is now contained within the newly renovated Robert. B Haas Family Arts Library, which sits between the adjacent School of Architecture and the History of Art department, and can now serve a broader spectrum of image use across the campus.

3. Museums

The role of museum visual resources has changed rapidly in response to digital media. Such units were once most commonly aligned with education departments or museum libraries to provide slides and, more recently, digital images for instructional purposes to curators, education staff, docents, and occasionally the general public. Visual resources professionals now leverage their multiple and varied skills to provide new services and address essential museum needs, particularly in the area of digital asset management. All museum functions stand to benefit from centralized visual resources services, including: forwarding research and education, documenting objects, developing a Web presence, producing publications, archiving institutional history, developing interactive media, and contributing to digital learning. The responsibilities of visual resources managers have started to extend into each of those museum functions, and also into rights management – providing image permissions for works in the museum and acquiring and licensing external images. Combining visual resources services with general oversight for a museum's digital image assets has multiple benefits.

Benefits

- Shared Need: The productivity of nearly all museum work benefits from effective access to images, particularly curatorial, editorial, educational, communication, merchandising, and Web development activities. Because of this mutual dependency, coordination of images helps to promote these activities.
- Skill Transfer: The skills required in successfully managing a traditional visual resources center also suit a broader digital asset management role.
- Efficiencies: This new direction for museum visual resources might involve direct or enhanced affiliations with photo services and instructional technology units, and represents a unique opportunity to streamline inefficiencies in museum operations by combining facilities, budgets, or staff.
- Consistency: The visual resources curator's experience with data standards can bring a valuable consistency to data created by distinct museum activities. They can coordinate distribution of all images produced by the museum for any purpose, as well as those licensed externally, through a single management system.
- Outreach: Well managed image assets serve a variety of outreach functions. In addition to appearing on museum Web sites, images may be distributed through third-party vendors, contributed to *ARTstor* or to online reference systems such as *Oxford Art Online*. These broaden museum audiences and sometimes generate revenue.

Examples

In recent administrative restructuring Minneapolis Institute of Arts combined three departments—Photo Services, the Visual Resources Library, and Permissions—to create the Visual Resources Department (VRD). This new department provides photographic services for the museum,

handles permissions requests for the museum's permanent collection, and has oversight for legacy collections of film-based images, including 35mm slides from the former slide library. As a member of the VRD team, the Visual Resources Librarian continues to manage digital image collections and data in addition to coordinating copyright determinations and processing permissions requests for image reproduction.

The Image Resources & Copyright Management Department of the Israel Museumis the focal point for several converging areas of museum activity handling imaging policy, creation, preservation, and image bank management. As the copyright advising office of the museum, it deals extensively with image and text copyright management and licensing. The department also works with the dozens of crews who come each year to film at the museum. It advises and provides services both for the museum's own projects and for outside clients including authors, designers, publishers, museums, etc. from around the world.

At the Metropolitan Museum of Art, the Image Library is the museum's central repository and archive of museum images and object photography in all formats, ranging from high-resolution digital images to traditional large-format color transparencies, black-and-white photographs, 35mm slides, and lantern slides. The Image Library oversees approximately 1 million records (including digital images, object and analog image placeholder records) in the museum's central digital asset management system, *MediaBin*, and the ordering records in the museum's internal online photo ordering tool, *IOWA*. In addition, the Image Library provides museum staff with a variety of services, such as onsite reference service and instructional programs on image use and research, training and support in the use of *MediaBin* and *IOWA*, provision of image cataloging guidelines, maintenance of the rights information pertaining to the digital images in MediaBin, circulation of analog materials, and image licensing for study, publication or commercial use. The Image Library also plays a pivotal role in building local and special digital image collections from the museum's curatorial and research departments.

4. Audio-Visual or Information Technology Units

As technology has expanded the role of visual resources managers, the duties added often relate to instructional technology (IT) and audio-visual support–everything from managing projectors or smart classroom carts to technology instruction, maintaining servers, and providing labs containing video production and editing tools. In work environments physically located near the classes they support, it can be advantageous to have skills related to the technology chain leading from the image to the actual classroom instruction (Web access > search and retrieval > presentation tools > classroom projection). For a more remote location, skills and knowledge related to the “backend” tasks such as database design, Web design, user interface design, and server maintenance might be more advantageous. In either of these situations, merging with an existing instructional or information technology unit can be an effective approach.

Benefits

- Tech Allies: Closer ties can be formed with server, Web, and programming teams. This can lead to better practices regarding database support, accessibility, and long term storage of content.
- Broad User Base: Since IT units are often situated centrally, they can facilitate the transition into serving the whole institution, bringing about expansion into other disciplines and a much larger user base.
- Service Links: Collaborating with other service units, such as libraries and media centers, may be easier because of already established communication channels.
- Strategic Planning: Belonging to a central unit can enhance the ability to affect decisions at a higher level. Sitting at the table during decisions about data storage, staffing options,

collaborations, and project management solutions, can keep image professionals informed and able to participate in coordinated progress.

- Tech Plus: A visual resources collection can also benefit the larger IT culture by strengthening ties with users and enhancing the professional component of the unit.

Examples

The University of Minnesota's Visual Resources Center (VRC), situated in the College of Liberal Arts Office of Information Technology, serves the entire College of Liberal Arts (which includes the Arts, Social Sciences and the Humanities) and partners with the College of Design to provide services to the whole University of Minnesota system. Among the services is a growing *Digital Content Library* serving learning objects—images, audio, and video—to a variety of scholarly disciplines.[33] From within IT, the VRC has been able to collaborate with the library, the Weisman Museum of Art, Goldstein Museum of Design, and the Katherine E. Nash Gallery.

Ohio State's Knowlton School of Architecture *Digital Library* supports the curricula of Architecture, Landscape Architecture, and City & Regional Planning, but also has collections that are accessible to the public. They consist of images, video, 3D models, and document files that reflect student work, study abroad programs, the history of the disciplines, lectures, course materials, etc. The *Digital Library* is currently being redeveloped in *Drupal*, an open source content management framework, to allow integration of social media tools with the content. The new system will also host their *Open Educational Resources* (*OER*)— course materials, videos, and other educational media freely available with open copyright licenses.

5. Hybrid

While the administrative models above illustrate important types, some institutions have had success with a hybrid approach—where functions like management, space, and computing infrastructure are contributed by several administrative units. Ideally, a hybrid arrangement can blend any of the benefits listed above. It initiates cooperation and team building in a very concrete way.

Examples

The Smith College Imaging Center is administered collectively by the Department of Art and IT Educational Technology Services. The Center executes select projects in cooperation with the College Library Special Collections, the Smith College Museum of Art, and the Five Colleges Consortium. The staff of the Imaging Center consists of librarians, visual resources curators, catalogers, information management professionals, digitization specialists, and technology specialists from Art and Educational Technology Services.

James Madison University (JMU) has spent ten years building a campus cooperative system for managing digital media collections and for integrating digital media into the teaching and learning process called the *Madison Digital Image Database* (*MDID*). Distributed free of charge under an open source license, it is also used by many institutions around the world. User support and ongoing development news is available through the *MDID* wiki, email, and a community mailing list of over 340 subscribers as well as through a blog, *Facebook*, and *Twitter*. Image collections can be shared across institutions and currently over 10,600 images (*Art Images for College Teaching*, *Madison Art Collection*, Otis College of Art and Design's Artists Books, etc.) are being made available to 45 institutions. JMU received an IMLS National Leadership Grant for Libraries to develop an Application Programming Interface (API) to facilitate interoperability between *MDID* and other systems and tools, such as *Flickr* and *ARTstor* connectors, a *Blackboard* building block, and *PowerPoint* import/export. This will provide a foundation for institutions to exchange data between *MDID* and other local systems or repositories. Embracing the social web, *MDID3* will soon support rating, tagging, annotating, link suggestions and RSS feeds. *MDID* illustrates

how collaboration among visual resources professionals, instructional technologists, and other campus constituents can provide local resources and tools that can be extended to a much broader community.

Appendix B:
Visual Resources Association
White Paper Task Force

Charge

To develop an organizational statement assessing the ongoing importance of visual resources collections, services, and personnel in helping academic and cultural heritage organizations to fulfill their missions and goals.

Task Force

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Notes

[1] The Information Age is defined as the current stage in societal development that began to emerge at the end of the twentieth century. This period is marked by the increased production, transmission, consumption of and reliance on information. Many consider the new role of information to be changing our social and economic behavior as dramatically as did the Industrial Revolution. See: Harvard Center for International Development, "Glossary of Terms," Information Technologies Group, Center for International Development at Harvard University, http://cyber.law.harvard.edu/readinessguide/glossary.html#I.

[2] See the "What is the VRA?" portion of the VRA Web site at: "Visual Resources Association," http://www.vraweb.org. Professional development is provided annually at the spring conference (http://www.vraweb.org/conferences/index.html) and Summer Educational Institute for Visual Resources and Image Management (http://www.vrafoundation.org/sei.htm) where visual resources professionals share expertise and current practices as well as obtain information about emerging technologies. A Strategic Plan Task Force is presently at work on a forward-thinking report (expected publication date, late 2009 or early 2010) to guide the VRA over the next five years. Additional publications provide details about the visual resources profession: Hemalata Iyer, "Core Competencies for Visual Resources Management," http://www.lib.lsu.edu/SAA/VRCC.pdf (an IMLS Funded Research Project at the University at Albany, SUNY); "Criteria for the Hiring and Retention of Visual Resources Professionals" (currently being updated), http://www.vraweb.org/resources/general/criteria.html; Art Libraries Society of North America, "ARLIS/NA Core Competencies for Art Information Professionals," http://www.arlisna.org/pubs/onlinepubs/corecomps.pdf; and Kim Kopatz, ed., *Guidelines for the Visual Resources Profession*, Art Libraries Society of North America and Visual Resources Association, 2000.

[3] Spring 2009 first saw the closure of Cornell University's Knight Visual Resources Facility followed by the University of California, Irvine's Visual Resources Collection, and the Art Institute of Chicago's MacLean Visual Resources Center. In all three cases, professional staff were laid off and uncertainty remains about the future of the 35mm slide collections. Although basic support for the digital image databases and online delivery systems might now be provided by libraries or computing units, they will be static rather than dynamic resources, unable to respond to immediate teaching needs.

[4] In this paper the terms "visual resources," "digital images," or "image assets" are used interchangeably. The American Library Association has an "Advocating in a Tough Economy" toolkit (http://www.ala.org/ala/issuesadvocacy/advocacy/advocacyuniversity/toolkit/index.cfm) that might be useful to image professionals. (Thanks to Adrian Turner for this reference.)

[5] David Green, "Using Digital Images in Teaching and Learning: Perspectives from Liberal Arts Institutions," *Academic Commons* (October 2006): 9-10, http://www.academiccommons.org/imagereport. In a nation-wide, 2002 study faculty ranked pictures as the 4th most-used format of information for teaching after books, journals, and news: Digital Library Federation and Outsell, Inc. "Dimensions and Use of the Scholarly Information Environment," Washington, DC: Digital Library Federation and Council on Library and Information Resources, 2002, http://www.diglib.org/pubs/scholinfo.

[6] The faculty desire for support is documented in: Michael Dooris, Henry Pisciotta and Michael Halm. "Penn State's Visual Image User Study," *Planning for Higher Education* 34, no.3 (April-June 2006): 27-33; K. Gustafson, "The Impact of Technologies on Learning" *Planning for Higher Education* 32, no. 2 (2003-4): 37-43; Henry Pisciotta, Michael Dooris, James Frost and Michael Halm, "Penn State's Visual Image User Study" *portal: Libraries and the Academy* 5, no.1 (2005): 33-58; and Maureen Burns, "From Horse-Drawn Wagon to Hot Rod: The University of California's Digital Image Service Experience," *Journal of Archival Organization* 4, no. 1/2 (2006): 111-139.

[7] Carol Vogel, "3 Out of 4 Visitors to the Met Never Make It to the Front Door," *New York Times*, March 29, 2006, Late Edition East Coast, G18, discusses the importance of Web sites for the missions of three major museums. (Thanks to Günter Waibel for this reference.)

[8] *Scholars Resource* is a marketplace where educational institutions can license digital images in perpetuity from multiple sources for classroom teaching. See http://www.scholarsresource.com. Along with a number of museum participants, other contributors include commercial photographers and vendors who previously provided 35mm slides and now license digital images, such as *Saskia* (http://www.saskia.com/), *Davis* (http://davisart.com/), *Archivision* (http://www.archivision.com/), *Hartill* (http://www.hartillart.com/), *Bridgeman* (http://www.bridgemanart.com/), and more. *ARTstor* is a non-profit organization collecting images in the areas of art, architecture, humanities, and social sciences and distributing them for research and pedagogical purposes with a set of tools for viewing, presenting, and managing images. See http://www.artstor.org.

[9] Comparison of position postings since 1982 indicated a dramatic increase in the number of responsibilities and qualifications listed for visual resources curators: Henry Pisciotta and Catherine Adams, "Fuzzy Jobs and Fuzzy Matches," (paper presented in a session entitled "Digital (Dis)Order: Implementing Change" at the Visual Resources Association 26th Annual Conference, San Diego, March 15, 2008.) A panel of visual resources professionals explored their changing roles at the Visual Resources Association 24th Annual Conference in Baltimore. Remarks as well as a table summarizing the roles can be found in Jackie Spafford, Maureen Burns, and Vickie O'Riordan, "Damned If You Do, Damned If You Don't: The Changing Roles of the Visual Resources Curator," *VRA Bulletin* 33, no.3 (Fall, 2006): 33-42. In the Visual Resources Association's 2007 Professional Status Survey, 70.3% respondents reported additional responsibilities as a result of subscriptions to licensed content.

[10] Collections built by individuals have always existed, but in the analog world tended not to be shared extensively due to the limitations of the physical media. Digital technology has made it easier to create, copy, collect, and share images thus increasing the number of personal collections.

[11] Photograph collections and slide libraries (later renamed visual resources collections to encompass the expanding variety of media) tend to be in the image-intensive departments of architecture, art history, design, education, and studio art. These collections usually contain purchased 35mm slides or licensed digital images obtained from commercial vendors (e.g. *Scholars Resource* mentioned above in note 8) as well as material donated or developed locally using copy stand photography. When contracts and licenses do not prevent it, the slides in these collections are often digitized and shared more broadly within an institution through password-protected Web services. Other institutional analog and digital image collections in archives, libraries, and museums might be similarly shared internally for educational purposes only or exposed to the world on the Web, depending on their copyright.

[12] Straightforward examples of subscription access to a database of digital images include *Associated Press Images* (http://www.apimages.com), *Catalog of Art Museum Images Online* (http://camio.oclc.org), *Index of Christian Art* (http://ica.princeton.edu.), and more.

[13] Systems that have multiple sources for images include *ARTstor* (http://www.artstor.org), *Madison Digital Image Database* (http://mdid.org/mdidwiki/index.php?title=Main_Page), and the *LUNA Commons* (http://www.lunacommons.org) For example, *LUNA* provides the user with the ability to add and work with image content from personal collections and *Flickr* in addition to the *Commons* shared collections. Presentations, slides, media groups, search results, etc. can be integrated into blogs, *Facebook* posts, tweets, courseware and the like for expanded access and discovery.

[14] Competition is good for the consumer since it increases choices, encourages development, and holds prices down. There are a number of commercial vendors providing digital images complete with descriptive data, such as the *Scholars Resource* partners (mentioned above in note 8). Purchased images can be an efficient alternative to copy stand production and help to fill the gaps in subscription services. Decades of consolidation of academic journal publishing into a very small group of companies have produced a highly awkward economic model that strains the budgets of colleges and universities. Literature on this crisis is abundant, especially in the professional literature of librarianship. Two legal scholars have produced a series of studies from the point of view of economics and anti-trust law: Aaron Edin and Daniel Rubinfeld, "Scholarly Journals Project: Final Report to the Mellon Foundation," August 20, 2005, http://msc.mellon.org/research-reports and Aaron Edin and Daniel Rubinfeld, "Exclusion or Efficient Pricing? The 'Big Deal' Bundling of Academic Journals," *Antitrust Law Journal* (*ABA Antitrust LJ*) 72, no. 1 (2004): 128-159. For overviews of the current situation see: Association of Research Libraries, "ARL Statement to Scholarly Publishers on the Global Economic Crisis, February 19, 2009," http://www.arl.org/news/pr/econ-crisis-19feb09.shtml; and International Coalition of Library Consortia, "Statement on the Global Economic Crisis and Its Impact on Consortial Licenses, January 19, 2009," http://www.library.yale.edu/consortia/icolc-econcrisis-0109.htm.

[15] Estimates of the size of the Internet vary widely, but as far back as 2002 the number of images on all Web sources could be estimated at 10 billion, some fraction of which might be useful for education: Henry Pisciotta, "Image Delivery and the Critical Masses," *Journal of Library Administration* 39 no. 2/3 (2003): 127 and 135.

[16] Henry Pisciotta, Michael Dooris, James Frost and Michael Halm, "Penn State's Visual Image User Study," *portal: Libraries and the Academy* 5, no.1 (2005): 46. Many surveys have reported large fractions of respondents who have personal collections of images, although the numbers vary widely. They are summarized in: Henry Pisciotta, "Understanding the Picture User," *Advances in Librarianship* 29 (2005): 227-228; and David Green, "Using Digital Images in Teaching and Learning: Perspectives from Liberal Arts Institutions," *Academic Commons* (October, 2006): 5, http://www.academiccommons.org/imagereport.

[17] Two notable projects are the Visual Resources Association's *VRA Core 4* (http://www.vraweb.org/projects/vracore4/index.html) and *Cataloguing Cultural Objects* (http://www.vrafoundation.org/ccoweb/index.htm) projects. An interesting project report discusses the need to move beyond silos which divide content into piecemeal offerings, see: Diane M. Zorich, Günter Waibel, and Ricky Erway, *Beyond the Silos of the LAMS: Collaboration Among Libraries, Archives, and Museums*, OCLC Online Computer Library Center, Inc., 2008, http://www.oclc.org/programs/publications/reports/2008-05.pdf.

[18] *American Memory* (http://memory.loc.gov) is a cooperative project coordinated by the Library of Congress to provide digital access to written and spoken words, sound recordings, still and moving images, prints, maps, and sheet music that document the American experience. *ARTstor* is working with more than one hundred participating institutions to host their local institutional collections on *ARTstor* servers. Hosted collections are available only to students, faculty, and staff allowing them to access institutional content with ARTstor core images. A second phase of the hosting program is developing a suite of web-based tools for managing hosted collections directly within *ARTstor* (http://www.artstor.org/what-is-artstor/w-html/services-hosting.shtml).

[19] The process of creating *Photostream* (http://www.flickr.com/photos/library_of_congress) is described by Library of Congress, Prints and Photographs Division, "Library of Congress Photos on Flickr," http://www.loc.gov/rr/print/flickr_pilot.html. The *accessCeramics* project is described at: http://accessceramics.org/about; and general information about *Flickr* may be found at: http://www.flickr.com/about.

[20] In addition to establishing a model partnership between faculty and information professionals, *SAHARA* is building an image resource with the members of a professional organization, the Society of Architectural Historians, to experiment with new modes of scholarly communication (http://www.sah.org/index.php?src=gendocs&ref=HOME&category=Sahara%20HOME.)

[21] The following articles reinforce the discussion about the value of cooperative ventures in times of economic difficulty: Sue B. Workman, "Sweating the Assets," *EDUCAUSE Review* 44, no. 5 (September/October 2009): 44-55, http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume44/SweatingtheAssetsforSmarterITS/178415; Gayle Palmer and Tom Storey, "The Top Trends in Digitization," *Western Trek* 4, no. 3 (Summer 2008): 2-5; and Sara Mudd and Andy Havens, "Library Cooperation in the 21st Century," *Next Space, no.*12 (June 2009): 4-9.

[22] Clay Shirky, *Here Comes Everybody: The Power of Organizing without Organizations* (New York: Penguin Press, 2008), 109. For more information about the new mixed role of user/contributor, see David Weinberger, *Everything is Miscellaneous: The Power of the New Digital Disorder* (New York: Times Books, 2007.)

[23] An important function of the VRA has been the cooperative development of best practices for digital image preservation and metadata standards. See the "Data Standards," "Projects," "Publications," and "Resources" portions of VRA Web , "The Visual Resources Association," http://www.vraweb.org/organization/committees/datastandards/index.html.

[24] For example, 2,800 lantern slides (the predecessors to 35mm slides) representing the work of Harvard faculty and providing an historical view of American buildings and landscapes built during the period 1850-1920 are in *American Memory* (http://memory.loc.gov/ammem/collections/landscape.) The North American Lantern Slide Project surveys lantern slides to coordinate the identification of valuable archival content, most of which is now in the public domain: (http://arlisna.org/nalss/index.htm.)

[25] The Digital Millennium Copyright Act makes explicit the need for this type of copyright education in educational contexts: U.S. Copyright Office, "The Digital Millennium Copyright Act of 1998: U.S. Copyright Office Summary," http://www.copyright.gov/legislation/dmca.pdf. In addition, the VRA has an Intellectual Property Rights Committee that makes valuable tools and resources available to help guide good decision-making, such as the "Digital Image Rights Computator" at http://www.vraweb.org/organization/committees/ipr/index.html. Digital rights management has led to experimentation with embedding intellectual property rights data in digital image files. The VRA has an Embedded Metadata Subcommittee (http://metadatadeluxe.pbwiki.com) researching standards, exploring issues, and developing tools for embedding descriptive metadata into image files. The VRA also has appointed a member to represent its interests with the PLUS Coalition. The coalition's work is described by Jim Goldstein, "The PLUS Coalition: Standardized Licensing Codes," *Digital Photo Pro*, http://www.digitalphotopro.com/business/the-plus-coalition-standardized-licensing-codes.html).

[26] For more on *ARTstor*'s Shared Shelf, see http://www.artstor.org/news/n-html/an-090714-shelf.shtml. For an authoritative discussion of the future of shared collections from the legal standpoint, see: Gretchen Wagner, "New Angle of Repose," *EDUCAUSE Review* 42, no. 6 (November/December 2007): 85-104, http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume42/SharingVisualArtsImagesforEduc/162067. In addition, social networks like *Flickr* and the *Wikimedia Commons* (http://commons.wikimedia.org) have led to increased awareness of Creative Commons licenses (http://creativecommons.org) and other new legal frameworks.

[27] Barbara Rockenbach and Carole Ann Fabian, "Visual Literacy in the Age of Participation," *Art Documentation* 27, no.2 (Fall 2008), pp. 26-31. See also the International Visual Literacy Association at: http://www.ivla.org/org_what_vis_lit.htm

[28] The need for such learning spaces and examples can be found in the following special issue on learning spaces, *EDUCAUSE Quarterly* 32, no.1 (2009), http://www.educause.edu/EDUCAUSE+Quarterly/EQVolume322009/EDUCAUSEQuarterlyMagazineVolum/163844. For an example specific to visual resources, Duke University's Department of Art, Art History and Visual Studies repurposed half of the Visual Resources Center space to support an Architecture/Design Lab. Faculty and graduate students use the lab to introduce 2D and 3D design assignments and 3D reconstruction projects into the architectural history and archaeology classes.

[29] EDUCAUSE Learning Initiative, "The EDUCAUSE Top Teaching and Learning Challenges 2009," EDUCAUSE, http://www.educause.edu/eli/Challenges.

[30] A more comprehensive list of administrative scenarios might have included for-profit collections and non-profit subscription services, but have been omitted as peripheral to this document.

[31] The determination of these administrative types and frequency of occurrence are based upon two VRA professional status surveys from 2007 and 1999. Using the more current data, most respondents to the surveys (primarily VRA members) managed collections in academic departments (about 40% in both 2007 and 1999) followed by those in libraries (18.6% in 2007, up from 14.5% in 1999).

[32] For more information about Alka Patel's South Asian and Cuban Art and Architecture, see http://www.artstor.org/what-is-artstor/w-html/col-s-asian-cuban.shtml. A recent article provides information about UC's experience, see Lena Zentall and Maureen Burns, "University of California Shared Image Collections: Convergence and Expansion," *VRA Bulletin* 35, no. 2 (2008): 56-68, a special issue on digital collaboration. This article was also posted as part of "University of California Image Service: UC Shared Images," California Digital Library, http://www.cdlib.org/inside/projects/image/#News.

[33] For additional information about the University of Minnesota's *Digital Content Library* see: http://dcl.umn.edu/static_content_items/about