

What Lies Beyond the Slide Library?: Facing the Digital Future of Art History

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Résumé de l'article

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L'auteure étudie brièvement cet important changement technologique récent dans l'histoire de la discipline, et poursuit avec un bref compte-rendu de l'émergence des images numériques et des problèmes ou limites actuelles de leur utilisation au Canada. L'article attire ensuite l'attention sur certaines particularités du développement de ressources numériques efficaces et durables dans les universités. Plus spécifiquement, y sont passés en revue les outils et les produits accessibles aux personnes et aux établissements, en ce qui concerne le passage de la bibliothèque de diapositives traditionnelles au centre des ressources visuelles. L'article se termine par un examen critique des conséquences de ce changement inévitable pour la discipline en termes d'enseignement et de recherche, et conclut en offrant de brefs exemples de diverses stratégies visant à effectuer le passage aux ressources numériques.

What Lies Beyond the Slide Library?: Facing the Digital Future of Art History

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Résumé

Le présent article analyse les inévitables changements qui sont liés au passage de la diapositive à l'images numérique dans l'enseignement et la recherche; de plus, il pose des questions indispensables sur les outils de l'histoire d'art et leurs effets sur la discipline. L'auteure envisage l'utilisation de principes fondamentaux en pédagogie afin de repenser l'exercice de l'enseignement par l'image, ainsi que l'utilisation plus efficace des ressources visuelles d'une institution, autant pour les recherches du corps enseignant et celles des étudiants, que pour l'enseignement; elle se penche également sur la contribution des ressources numériques aux changements qui affectent la discipline de l'histoire d'art.

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Even the most techno-dubious art historians must agree that the age of slides and transparencies is giving way to an age of digital reproduction technologies. What some view as signs of the apocalypse are upon us: Kodak is ceasing to make slide projectors; many institutions, like mine, are closing their in-house slide production facilities; and museum photo resource departments are increasingly replacing transparencies with digital photographs as the only new documentation of their collections.

Colour slides have been the primary teaching tool of art history for so many decades that imagining a discipline without them is reasonably difficult. In fact, the phrase “fetish of the slide” is surfacing with increasing frequency in the literature on digital resources. The phrase is helpful in two ways. First, it underlines the visceral connection many art historians have to slides. Slides have dominated for so long that they have become fundamental thinking tools as well as teaching tools. Countless art historians learned to map out intellectual arguments, course development, and lecture pace through the physical manipulation of slides. This epistemological process is at the center of the academy – teaching and research feeding each other. But the phrase “fetish of the slide” also reminds us that slides are surrogates for something else. While there may not be consensus on what constitutes the “original” work of art anymore, we can probably agree that slides are always a poor substitute for the many site-specific experiences of art. No matter how important they have become or how indispensable they seem, slides are not the learning objects of art history; they are the teaching and sometimes the research material. As the form through which we have long accessed the discipline's actual learning objects, slides have profoundly shaped the discipline but the discipline is also constrained by their nature.¹ Accessing those learning objects

through different forms can be daunting, even for those who express frustration at the traditional shape of the discipline.

Terrifying as it might be, the inevitable shift to digital images for teaching and research is also an opportunity to ask important questions about the tools of our work, and how they affect what we can and want to do. Rather than simply substituting jpegs for slides, how might we use fundamental principles of good pedagogy to rethink our teaching with representations? How might institutionally supported visual resources be more effectively used for faculty and student research, as well as for teaching? How might digital resources change or participate in changes already underway in art history?

In order to address these questions, I provide a short consideration of the last major technological shift in the discipline's history before briefly recounting the emergence of digital images, identifying some of the issues to be considered in developing these resources, and considering some of the tools available. However, my ultimate purpose is to critically consider the disciplinary implications of this imminent shift in both pedagogical and research terms.

Repeating History

The most common line of resistance from art historians when faced with digital images is about quality. Digital images are often accused of being not as good, as clear, or as reliable as slides. As we all know, this complaint is often justified, and digital images depend a great deal on the skill of the creator and the quality of the equipment used to create and view them.² Reflecting on the last major technological advance in art history's tools, Professor James Carpenter at Harvard University wrote a short article for the *College Art Journal* entitled “The

Limitations of Colour Slides" (1943). Like those who object to early digital images, Carpenter was dismayed that "even the best so far produced have serious inaccuracies ... primarily they are incapable of reproducing the proper value relations in a subject with fairly strong value contrasts."³ He was equally troubled about the quality variations below the level of the best slides, noting that "unfortunately a great many that are in use are far from the best."⁴ These criticisms were probably completely justified and likely helped to guide improvements in technology and photo techniques. At most, Carpenter's concerns might have tempered instructors' enthusiasm for the brilliant new technology. Perhaps instructors even selected slides more carefully, and made more explicit reference to the reproduction and its complex relation to one's varying experiences of the original object. Carpenter may also have encouraged teachers to continue to expose students to original art as much as possible. However, as far as I know, his objections did not convince any instructors to continue teaching with black and white slides into the twenty-first century.

Carpenter's other objection to the use of colour slides was more telling and seemingly in contrast to the one about quality. "No matter how perfect the process of reproduction becomes," he wrote, "a color slide can never be regarded as a substitute for an original painting. The danger of this becomes greater, as the slide becomes closer to the original."⁵ Of course, the professor will know the difference, Carpenter noted, but the student may not. He went on to suggest that "one of the virtues of black and white slides is their abstractness. There is no question of their taking the place of the originals."⁶ Carpenter was genuinely worried about colour slides. He explicitly deployed the term "danger" in relation to using colour slides for teaching: a danger not as great in teaching sculpture, architecture, or stained glass because "here we have an admitted abstraction from the original which everyone takes for granted."⁷ But just what is the benefit of abstraction? Is the benefit that the instructor or an assigned text can fill in what is missing? So, did Carpenter fear a loss of control over the way his students might view the painting when it was shown in colour? Is it possible that Carpenter was also afraid of the more sensual experience that a good colour reproduction might invite? Would he have argued that a purely intellectual, analytical encounter for students would be more forthcoming without the distraction of colour? Similarly, is it possible that some of the fear about digital reproductions stems from their seductive nature, their similarity to pedestrian entertainment media such as television?

How would Carpenter respond to a virtual reality tour of the Louvre with the capability to zoom in and out on famous paintings? How would he feel about the possibilities of 360-degree views of sculpture and architecture that erode the safety

zone he identified around those viewing experiences? Carpenter was simultaneously insistent about the colour slide as a dangerous masquerade of the original and as a dangerously loose and uncontrollable substitute for the original. This inconsistent set of fears is reigning again in the era of digital reproductions, even if we are now more cognizant of the contradiction.⁸ As in 1943, we need to take concerns about quality and reception seriously. We need to consider not only our own judgments about the usefulness of digital images, but also those of our students, whose visual world may be quite distinct from ours. We need to harness these insights, objections, criticisms, and concerns to improve the technology we will now be using, to learn more about visuality, and to become better, more explicit teachers of art history and visual culture. However, in order to achieve these goals, we need to communicate about our practices and, in part because of the Canadian legal landscape, this has been a challenge.

Brief Background on Digital Images in a Canadian Context

Canadian art historians have faced more restrictive copyright laws than our American counterparts. While the latter have been free to make legal slides of copyrighted images citing the fair use exemption for educational purposes, Canadian instructors have no such protection. In the digital arena, the situation is especially unclear, prompting University Counsel at York University to advise faculty not to post copyrighted images on course websites, even under password protection.⁹ If Bill C-60 makes it to a second reading and passes in its current form, it would allow for the use of digital images in classrooms and on password protected course websites, but only for the duration of the course.¹⁰ After that point, all digital files would need to be destroyed. That means not just removed from the web but removed from any sort of archiving system such as an in-house image database, thus rendering the law unworkable for educational institutions that will never have the resources to rescan images every time they need to be used. Finally, as legal scholar Margaret-Ann Wilkinson has pointed out, the Bill enshrines an antiquated view of pedagogy indicated in part by its copyright exemption only for materials provided by the instructor. This would mean that students who are conducting research and presenting it in class or posting it to a class website would receive no exemption from copyright for their non-profit, educational use of images. Nor does Bill C0-60 provide any relief for faculty who use copyrighted images in their research, although its dissemination is also non-profit and educational.

Lack of government understanding and support has broader implications for digital teaching and research as well. The ongoing public funding budget crunch has delayed the purchase of hardware and software for teaching and research purposes. Fur-

thermore, for many art historians, even determining what technologies they want and need has been a daunting task in the midst of heavy teaching loads and high research and administrative demands. Despite all of these challenges, teaching with digital images is well underway. The University of Toronto built FADIS (Fine Arts Digital Imaging System), its own digital image bank, and populated it by scanning the University's own slides and book illustrations. The system is used by a handful of faculty and especially by the more junior generation of part-time instructors. However, few institutions in Canada have the resources to build their own database and our lack of clear legal guidance on digital copyright in Canada has acted as an additional roadblock to sustained and organized institutional action. Anecdotal research among peers suggests that at present the majority of instructors using digital resources began to do so of their own initiative for reasons of ease or necessity, rather than as a response to institutional initiatives.

My own initiation into teaching with digital images is fairly typical and follows the dictum that "necessity is the mother of invention." When I was first hired at York University, one of my assigned courses was new and very few slides already existed. As it turned out, the texts I needed for images were kept in Special Collections, which would not agree to release the texts, even in order to have slides made by our Slide Library. The University owned the resources I needed for teaching in its classrooms, but I could not access them. After further negotiation yielded nothing more than an offer to make slides for me at a personal cost of \$50 each, I turned to the internet for images and to PowerPoint to present them.

While there was a very steep learning curve at first, what I soon discovered was a brighter, lighter classroom blissfully free of the incessant hum of two slide projectors. Titles of artworks, creation dates and artists' names need not be spelled out, repeated, or handed out because they were typed below each image. Often through student presentations, I learned additional PowerPoint tools, including a feature that enables a presenter to highlight one area of an image while shading the rest. Collectively, the digital presentation tools enabled me to walk students more carefully through visual analysis. The lectures could be prepared from home at any hour of the day or night, and I never had to worry that someone else was using a slide I needed. Images could be linked to a (very simple) course website for review, enabling a level of access not previously known.¹¹ Over time, those first images have mostly been replaced by clearer ones with a level of detail that now often surpasses that of slides (certainly the huge number of older slides). Finally, those lectures can be saved from year to year and be easily altered to reflect changes in a course. A recent study by the Research Library Group's Instructional Technology Advisory Group confirms that the majority of instructors who teach with

digital images likewise use Google Image search to locate images and present them in PowerPoint, supplementing what they cannot find by scanning from books.

PowerPoint is easy and available, but it is likely to be a good transitional presentation tool for art historians rather than a model solution. Harold Besser, an expert on archiving digital images, describes the first stage of the hype cycle of new technology as a period in which the popular tools mimic and borrow from the outdated technology.¹² The cycle starts with great possibilities followed by disappointments. Often the failures are a result of trying to force a technology to serve purposes that it may not be suited to fulfill. New technology is often better suited to something quite distinct from what the old technology did, but it can take a while for those best uses to become evident. At that point transformations take place.

Many instructors may find that just getting the classroom technology to run PowerPoint efficiently in every class is the most pressing challenge, but the program itself is also limited, and thus limiting. It is not easily connected to a collection management system, has comparatively limited functions, and it can compromise the quality of inserted images. The Research Libraries Group (RLG), an international organization of libraries, museums and archives, reports that most faculty using PowerPoint "really dislike it as an instructional tool ... PowerPoint does not allow them to zoom or to compare/contrast different images side by side."¹³ It is possible to set two images side by side, but they have to share a single screen. This often renders them too small to study adequately and does not offer the same freedom as dual projections to make spontaneous comparisons between images. Clearly, we need more powerful and flexible presentation tools for the classroom.

In order to properly address the shortcomings in both presentation and storage tools, individual experimentation by instructors and students must now be replaced by systematic institutional support for digital resources. Instructors using slides continue to receive a level of dedicated staff support that has not generally been available to instructors using digital resources, either because of institutional concerns about copyright or because of a lack of technical expertise. While those teaching contemporary art might have little trouble gathering their own images on the web, teaching material for many fields needs to be scanned and prepared for presentation. In those places where scanning support has been available, rarely have the images been inserted into a comprehensive, searchable database for future use by a wide range of faculty and students. Hence, the RLG report concluded that "almost everybody readily admitted that their particular system for storing images lacked even the most basic metadata necessary for retrieving the content effectively in the future."¹⁴ The *ad hoc* method developed by many instructors may work in the short term, but reverts back to the

days of private faculty slide collections, which do not contribute to the larger scholarly mission of the institution.

How can we ensure long-term access to a wide range of high-quality images? How can we ensure that we have the tools to present them in flexible, creative ways? First, we need to separate the two parts of this equation. Data management software often comes packaged with presentation software, but users need to uncouple these functions for maximum flexibility and sustainability. Besser asks art historians to think creatively and critically about digital reproductions and databases. What are our priorities in a database? What do we want faculty and students to be able to do with the material? Will visual resources be available outside of visual arts departments? If so, how will we balance their constant and specialized needs with those of the larger institutional community? He suggests that any initiative to collect, store, and make available digital reproductions be guided by the need for quality, sustainability, quantity, and usability.

Quality

A Council on Library and Information Resources report on planning a digital image project (2000) emphasizes the benefits of archiving images at the highest visual quality possible and in a neutral-use environment.¹⁵ One simple way to ensure quality is by adhering to the guidelines of the Visual Resources Association (VRA), the international organization of image media professionals.¹⁶ These stipulate the format and minimum resolution of images for teaching and research. Purchasing images or scanning them at less than optimum resolution will not enable users to zoom effectively or to project clearly on to the large screens required in lecture halls. The VRA also posts guidelines to the kinds of metadata that must be collected and entered for every image. Although there is currently some debate about whether images should be catalogued using the same Machine-Readable Cataloging (MARC) coding system used for texts, adhering to at least the range of information suggested by the VRA will ensure that the images can be used in a variety of ways. These guidelines are much more involved than the limited information collected to catalogue slides because databases of digital images can and need to be searched iconographically and relationally. The special challenges evident in cataloguing images become evident in various ways. The Louvre decided to photograph the backs and fronts of two-dimensional objects to capture inscriptions and other key information. We know how to clearly catalogue the recto of a painting, but how do we adequately and specifically catalogue the verso? One Visual Resources curator strongly suggests disseminating VRA quality standards and metadata guidelines to faculty to ensure the usefulness of any images they might capture, collect, and contribute to the institutional database.

Sustainability

Sustainability has many concerns, from technical to financial. The first concern should be the software used to house self-created image collections. There are some slick and user-friendly pieces of proprietary software, such as LUNA Insight, on the market. However, Besser stresses the need to maximize self-sufficiency and cautions against building a system that requires ongoing support from a commercial source. In the United States, many departments have had great success with MDID, now in its second version. This is freeware first developed by a team of art historians, visual resource curators, and technology experts for their own purposes at James Madison University in Harrisonburg, Virginia. The second version was developed with significant support from the Mellon Foundation and is now available to any university. There are technical start-up costs associated with MDID, which tends to need customization and works best with a dedicated server. These costs can be substantial, especially when we consider staff training and support, but MDID is emerging as the most likely sustainable solution for in-house image management. It is becoming the standard for American art history departments; a community of users and support has been well-established.

Governed by the educational fair use exemption to copyright, many American institutions are populating their MDID systems with scanned images. Canadian institutions lucky enough to have jpegs and slides taken by their own faculty or drawn from public domain material in their libraries and archives can also follow this route. However, a per unit cost and labour study conducted at Yale University estimated that scanning an image from a book to produce a slide and a digital image with all necessary metadata costs about US\$11.85, without factoring in storage costs.¹⁷ Purchasing images or subscribing to databases is a far more cost-effective long-term plan, and scanning should thus be restricted to material one cannot purchase. From a strict sustainability standpoint, purchasing digital content from a supplier such as Saskia/Davis Images is ideal. Under their agreement, the purchaser has the digital file and the rights for perpetuity at about a half to two-thirds the cost of scanning an image. This is smart protection for core images such as sets of those used in introductory survey text books. However, there are two key issues in creating or buying sets of images. First is the cost of storage space, which is far from free, as universities are quickly discovering. Second, one of the most exciting aspects of digital images is the possibility of offering faculty and student access to a massive range of materials. Purchasing images individually or in small sets will never offer the range found within subscriptions databases.

We take lessons on sustainability from recent failed digitalizing projects such as the rush to circulate collections on CD-

ROMs. Unless these images are transferred into a database, they are laborious to search and limited in their use. CD-ROMs are also easily damaged, easily lost, and prone to quick deterioration. Christine Sundt is a leader in the field and the retired VR coordinator at the University of Oregon. She recently surveyed digital image projects, both successful and forgotten. She concluded that any niche project needs a business plan to succeed and that this success can only be ensured if the material eventually migrates up to a large institution.¹⁸ CDs may still be a valid means to start a small project such as disseminating digital images of a small collection, but they are not a sustainable option. The innovative CD of the Barnes Foundation in Philadelphia is a perfect example. This hard-to-find tool enables users to virtually tour a model of the once heavily restricted collection and to see the carefully considered hanging of the paintings in relation to the Barnes mansion. It would make a wonderful online tool but has yet to find an institutional home and sponsor. This need for institutional support is true not just of digital image projects but of research tools such as the Union List of artists offered online through the Getty Research Institute. People move, and housing and updating data of any sort are expensive and labour intensive.

In pursuing sustainability, we must also try to consider all the possibilities that have yet to be realized or even imagined. Most professional subscription databases offer text, sound, video, and other multimedia files associated with works of art in their collections. In most cases these are files developed by museums and now archived publicly for educational purposes. While it may seem excessive to insist that departmental or university databases need to offer the same capabilities, it could be shortsighted not to do so. Particularly useful are 360-degree views of sculpture and installations and interactive tours of architectural and exhibition spaces. Databases need to hold original art video work, original digital art and, someday, even interactive art. Working groups will need to decide if video and sound will be housed in the art database or in another system with other filmic material for campus use. Howard Besser urges us to push farther to imagine as many possibilities as we can, and to encourage and make room for innovation in any data management system (or more likely web of systems) that we might develop.

Quantity

Quality and sustainability are the crucial foundations, but quantity of digital resources is just as important to instructors and students. An extensive study recently undertaken at Pennsylvania State University confirmed that one of the widespread concerns among potential users of image delivery systems is that the system(s) developed may not have the images those users most

need. This is a very real concern, but with every passing year more and more images become available in digital formats that are organized, efficient, and yield the results instructors need.

One of the first subscription databases was Art Museums Image Consortium (AMICO). It was formed in 1997 with twenty-two contributing institutions and was the first widely-used subscription database of images. The idea was to form a non-profit consortium of museums that would donate digital reproductions made from their originals to be used for educational purposes. The more than 100,000 images are of very high quality and the search possibilities were exciting. Because the Art Gallery of Ontario, then under the directorship of Max Anderson, was one of the leading contributors, the database even had significant Canadian content from the start. But despite over 250 subscribers, including universities (the University of Toronto was an early advocate), some public libraries, and even a few school boards, the company floundered and ceased to operate in July 2005. The announcement was distressing to many who had come to rely on this subscription resource for their teaching, and thus highlighted the sustainability concerns with subscription databases.

The danger of relying too heavily upon external sources will never vanish, but it is much less of a concern with ARTstor. Eight years ago, the Mellon Foundation established JSTOR, the subscription database of scholarly journals that has quickly become an invaluable resource for the Humanities. ARTstor was also initiated by the Mellon Foundation, with the goal of becoming an equally essential and self-sustaining non-profit enterprise in the next few years. The original base collection of 200,000 images was drawn from collection of the University of California at San Diego, where the slides have always resided in the central library and, according to its librarian, are used almost as much by historians and geographers as by the Department of Visual Arts.¹⁹ After several years of testing at seventeen universities, including Harvard and UC San Diego, ARTstor was launched in July 2004 and, as of February 2006, it had 520 subscribers across the United States. As of 1 July 2005, the subscription became available to Canadian institutions and nine have subscribed so far. The database currently holds over 300,000 images, including the recent migration of the holdings of seventeen museums from AMICO. By the end of 2006, ARTstor estimates it will offer over 500,000 images. Luckily for AMICO users, ARTstor has negotiated with many of the AMICO contributors to take over educational distribution of their images.

Usability

If a system is complicated or limited in the tools it offers, it is destined to become a dinosaur. This brings us to the question of usability. Quantity and usability converge around the issue of

cross-database searching and the need to limit the number of searches users must undertake to find a selection of images. Even though databases rarely use exactly the same metadata, facilitating limited meta-search capabilities across a series of archives will become an important goal. Enabling users to simultaneously search art databases and a resource such as AP Multimedia Archive will be especially important to those teaching visual culture or who seek to broaden the range of materials they consider in art history courses. (AP Multimedia Archive is a collection of about one million images of current and historical events collected by the Associated Press.) Adding specialized collection subscriptions will likely be popular at larger institutions and at those with specialized scholarly needs. Erwin Panofsky's famous Index of Christian Art at Princeton has over 130,000 digitized images on its subscription website, giving access to a range of materials once only accessible to researchers able to go to Princeton in person.

Subscription to one large core database like ARTstor enhances usability by giving faculty a place to start. So too do the additional tools offered by both MDID and ARTstor. (Both collaborated in the latest round of software development to ensure the two systems were as compatible as possible.) As a result, both offer fairly similar presentation software. While neither is overly simple to use, they do enable users to use images in new ways. What does not change is that as the researcher selects images, he or she adds thumbnail images to a sort of light box (the language of old technology always persists into the new). Those images can be adjusted and sorted into a presentation either as full or split screens (meaning that with a large enough projection area, two clear images can be shown without installing two expensive LCD projectors). These presentations can be saved as sets and either presented from the online site or exported into an offline version. The offline presentation tool was a crucial and recent addition to ARTstor in response to widespread user tests. No one can guarantee a continuous internet connection in a classroom or conference room. Furthermore, images from other sources can be added to the presentation once offline, effectively uncoupling the database from the presentation software and ensuring maximum flexibility. Finally, the presentation software enables the instructor to add text that students can access when they enter the programs to see the presentation or review the thumbnail groups the instructor has prepared.

From Slide Library to Visual Resources Centre

Slide libraries reflect the way art history used to be practised, and they continue to shape and limit the way we teach. As much as we like to think that the user-driven, faculty-built aspect of slide collections is positive, we need to acknowledge it

as a limiting force as well. With the high cost of securing images for publication and the trend in publishing to include fewer colour images in books and journal articles, it is no longer realistic to rely on published sources for all our image needs. Even with access to a wide range of printed material, consider that few Canadian university slide libraries have ARTstor's 300,000 images. Slide collections are not just limited in their offerings; they are also canons, however quirky. Since few have a hyper-text database, we are restricted to the normative cataloguing system of nationality and artist's name. Slides tend to be inserted into this structure as a linear chronology of an artist's career. Sometimes media, such as photography, are filed separately, causing even more confusion, most often in the case of twentieth-century artists such as Picasso, for whom nationality and often distinctions between media make little sense. Also, with an increasing interest in exhibition history, slide libraries are faced with the pressing challenge of how to catalogue installation shots. Cross-cultural comparisons and thematic explorations are thwarted by the lack of any kind of iconographic information. Material culture images do not fit into this system and usually get relegated to a section that relies on the personal guidance of the slide curator. Interdisciplinary work requires easy access to images without knowing the identity of the artist, let alone his or her birthplace.

Digital databases enable us to search across national schools, cultures, media, and other classifications to find images that may never have been published. No one in our university need ever have known the image existed, and this is one key benefit of shifting from a primarily user-driven collection. The latter institutionalizes the notion of adequate canons, specialized expertise, and totalizing knowledge (e.g., the one, very human Renaissance expert is responsible for ensuring that that area of the slide collection will serve all the needs of the department in that field or, worse, that the images will serve needs across campus). It also emphasizes the disconnections rather than the connections between cultures, periods, and so on. It is true that the image one might find on ARTstor or another database may not be the best known example of a Chinese painting of a turtle, but, for an instructor who wants to make a cross-cultural connection in a lecture but has no access to Chinese painting slides, that may not be the primary concern. A Google Advanced Images search may also be able to locate a Chinese painting of a turtle, but the quality control and adequate metadata provided by services like ARTstor make it an infinitely superior scholarly resource, one as useful for personal research as for teaching preparation.

Does the end of slides spell the end of slide libraries and slide librarians? Just as computers have increased paper use and digital library resources have increased library use, visual resource centres and experts continue to have a crucial role in this

shift. However, there can be no doubt that their roles will change. Technology is enabling institutions to leverage the economies of scale. Digital image libraries need not be built by each department or each university. Community colleges that never had slide libraries before are signing up at \$800 a year for ARTstor and now have the same resources as huge research institutions like UC San Diego.²⁰ They need new presentation equipment, but what is necessary is more broadly used than slide projectors and can be shared across campus. Florida Gulf State University, which was founded eight years ago, never considered a slide library. With ARTstor and the web, it instantly had all it needed to launch an art and art history program.

In-house visual resource staff will continue to add some content, either through scanning or by inserting and cataloguing digital files acquired from faculty or outside sources. Both of these tasks require technical training in programs such as PhotoShop. For many departments, the temptation has been to farm this work out to work-study students. However, faculty and VR curators argue vigorously against this practice citing practical and quality concerns. Training, even for basic slide scanning, is time-consuming and not an appropriate way to use work-study students. Furthermore, the VRA has set standards for the metadata to be collected and included for all digitized images. The standards for quality are absolutely crucial to generating useful images. Standards in some departments start at 2700dpi in a tiff format from which two jpegs are also produced (thumbnail and projection quality.) All images need to be colour corrected by a trained professional. Only a permanent staff member can ensure that these standards are consistently maintained. In fact, some early adopters argue that a degree in information sciences as well as a background in art history is ideal to guide the creation of a sustainable digital resources system. Early adopters also stress the importance of coordination between faculty users, digital production support, library staff, administrative support, teaching technology support, faculty development support, and system administration. Only a permanent VRC person is in touch with all of those stakeholders.

Some of the leading VRCs in the United States are employing newfound technical skills and collaborating much more actively with faculty to creatively and effectively document their research in ways that are useful for teaching and beyond. The Media Center for Art History, Archaeology, and Historic Preservation at Columbia University is one possible model. Although the Centre has received a great deal of funding from the University, which is something not every school can rely on, it has also aggressively sought grant support from outside to document architectural and archeological sites and to create interactive learning tools such as an annotated compendium of Chinese painting. The Center staff work with faculty and graduate students to determine the best means to document field re-

search. They provide technical training, equipment, and production skills to realize the project vision. Luckily for the rest of us, the Center has been successful with the Kress Foundation and especially with the National Endowment for the Humanities. These external sources require that whatever projects are created must be fully and freely available to the public. Columbia has a website that is an animated glossary of Gothic cathedrals and that enables students to connect terms to the ground plan of Amiens Cathedral. Users can also take a QuickTime virtual tour of Frank Lloyd Wright's Fallingwater or tour an archeological dig in Iraq. Robert Carlucci, Manager for Education and Research at The Media Center, notes that "the visual arts can be difficult to understand. You need a range of contextual information about the period, patrons, technique, artist, etc. to really grasp a work of art, but what technology allows you to do is to bring together a whole universe of information germane to an object that helps students engage a range of issues fundamental to a successful learning experience. We have a new lens through which to see the work."²¹

Because of this explosion in available resources, VRC staff takes on a crucial guiding role for users. An April 2003 survey by AMICO of its users identified "the emergence of a class of intermediaries (librarians and visual resource curators) whose responsibility it is to train users."²² This observation is echoed by Christine Sundt, who notes that her job as a slide curator became much more like that of a librarian. Since the cost of digitizing is high, she needs to be able to direct faculty to various free and subscription resources. The international Society of Architectural Historians has a great if rather primitive site that shares images collected by SAH members.²³ Museums such as the National Gallery of Canada are creating online databases to access their holdings of images and supporting materials such as audio clips. The Metropolitan Museum in New York has produced an innovative, illustrated, and interactive timeline of art history. Currently, it is often faculty or students who share their best resources tips with each other, but the time has come to institutionalize and formalize this key form of communication. Web pages built and maintained by VRC staff need to guide users to appropriate resources such as online projects and image banks, both open access and those available through institutional subscriptions. This kind of annotated and departmental or university specific directory can also help users to find visual materials imbedded in subscription resources like RLG Cultural Resources, which are not exclusively devoted to visual materials. Among the breadth of visual materials archived in this wide-ranging resource are posters, sketches, stamps, and a range of visual ephemera.

What is also clear is that these VRCs need to be as flexible and responsive to users' needs as other libraries have become. Much more faculty and student use of visual resources will take

place away from the VRC. VR curators will need to shift their support to accommodate the needs of those users who will be planning courses, building lectures, and arranging student reviews from their offices, homes, etc. This may entail designated virtual office hours when staff can be available by email or phone. Christine Sundt argues that faculty and students will also need to change their traditional roles a bit and become savvier about digital images. Even without the support of a facility like Columbia's, they need to learn the required standards for documenting their own research. They need to learn how to manipulate material for various purposes and to communicate with collaborators from such areas as IT and VRC.²⁴

The revamping of the VRC is similar to the radical changes that university libraries have undergone over the past decade or two. On a growing number of American campuses, this parallel has become an annexation and the VR librarian/coordinator has become a university-wide appointment, often based within the central library, to ensure a coordinated delivery of services across campus. There are some distinct advantages to this model, but it raises concerns amongst art departments that fear a loss of control over their most essential teaching material. Many early adopters of digital teaching tools insist that local human support is as essential to the long-term success of the transition as are the resources and physical plant. Faculty members want an expert close by who can respond to their ongoing content and delivery needs, and they complain of not finding enough support and art expertise in the central library.

The task for universities will be to balance the needs of two distinct but important groups of users for digital images identified by the Pennsylvania State user study – “a very large group of light and occasional users and a smaller group of frequent and intense users.”²⁵ One way to balance these needs is to retain faculty-wide or departmental VRCs while appointing someone in the central library system who could respond more specifically to the wider visual resource demands from such areas as history, geography, kinesiology, and engineering. Another way to balance needs might be to have a central librarian who monitors the database subscriptions and a VRC that houses a university-wide MDID server. The advantage of this model is that it unifies all university-created images in one database for all users. By combining the personal collections of an architectural historian and a civil engineer, the teaching resources of both could be greatly enhanced. At James Madison University, VRC staff is responsible for collection management, image preparation, and cataloguing, but the technical work is done by Information Technology. Departmental collections are distinguished within their MDID interface. A search could thus be conducted over all the art history and biology images, or be limited to just one collection. Although standardized metadata

is desirable, it is not always possible or appropriate, and MDID2 allows each collection to be catalogued in its own way. As a user selects more collections to search, only shared fields are displayed. This limits search capabilities while expanding the possible search boundaries.

Teaching and Research

Once faculty members have access to a large quantity of high-quality images in a usable and sustainable form, teaching and research possibilities can be simultaneously exciting and overwhelming. Getting caught up in the possibilities offered by technology without a clear idea as to why it is being used is a quick road to frustration. We need to look for creative uses for technology that also adhere to basic principles of sound pedagogy (and that are also basic principles of good research): enable students to see the relevance of their learning, give them some choice or control, ask them to re-examine what they think they know, and help them to see the applicability of their insights to other situations. The criticality expressed in these principles has long been embraced in art historical research, in particular, by the so-called New Art History of the 1980s and '90s, and now teaching resources at our disposal are catching up with shifting values and methodologies.

In my own lower division classes I find students more willing and able to engage with questions of context and meaning now that they are not obsessed with writing down factual tombstone information. They know I post review lists with links to images for exams, and that seems to help them to stay focused on looking closely and critically at the images themselves. I can also use course websites to run online quizzes if I am concerned about the historical grasp students might have of an era.

In the simplest sense, the ease of locating and adding images to a lecture can enhance the relevance and applicability of what students are learning. When I am preparing a lecture on a particular trope in Romantic painting, I can add examples drawn from popular culture without a laborious search, three weeks of lead time, or feeling guilty about ordering a slide for a one-off example. That ease of access can also enhance the democratization and interactivity of the classroom by giving students a chance to make choices and contribute to the visual material under discussion. Digital images are a format every student can access through a personal computer, at the university, or even at a public library. Students send me images they want to discuss or they bring them to class on a memory stick. Through innovative and creative presentations, students routinely show images that go beyond any staid canon of art history. Even analog images such as a catalogue, postcard, or slide can instantly be fodder for classroom discussion through

digital presentation. A digital document reader projects anything on its surface as a high-quality screen image through an LCD projector.²⁶

With digital presentation tools, we are no longer captive to the binary invention of Wöfflin. While there is a great deal to be gained by comparing images, digital presentation enables a range of options from triangulating images, to presenting a collage, or even building an additive display. Starting with one image and slowly adding others to the screen can mimic the arguments we want to make in class about the contextual importance of viewing art. One can show several versions of the same image side by side as a way of disturbing the sanctity and presumed uniqueness of art images. Andrew Hershberger, who teaches history of photography at Bowling Green State University in Ohio, shows several high-quality but distinct prints of the same photographic image as a way to demystify printing choices, human alterations of the print, and conservation issues. He points out this is just one way in which recent access to a huge number of images has changed his teaching.²⁷

Adding text, such as a quote from an artist or a question for students, either integrated with an image or on a separate slide, can also aid in this process of teaching students how context affects our reception of images. A free program called VUE, developed by art historians at Tufts University in Massachusetts, enables faculty and students to design semantic maps. In its simplest usage, instructors might post a series of small reproductions of Impressionist paintings on a blank page within the VUE program. Individually or in groups, students would download the page and set about creating a mapped relationship of the images based on genre, use of historical precedent, or personal connections between the artists. VUE allows students to add connecting lines and annotations as they manipulate the thumbnails. Similar kinds of activities are possible with course management systems like Blackboard, but VUE can be useful for instructors who prefer to pick and choose tools.

Many faculty are discovering that the most revolutionary uses for digital images are to be found outside the classroom. As David Carrier and Robert Cavalier observed in a 1989 article, "because the pace of the [traditional slide lecture] class is determined by the teacher's estimate of what an average student can accept, the brighter students will be bored, while others miss essential points ... one promise of technology is of providing individualized instruction. Each student can choose how long to spend with examples, how much additional information to seek out and what to review."²⁸ Their very early example was to provide students with a video disk full of information about potential Vermeer fakes. Students sorted through the visual and textual support material to prepare a case for a particular painting as a Vermeer or a fake.

Malcolm Thurlby, an architectural historian at York Uni-

versity, posts a selection of his own digital images (thereby avoiding copyright issues) on his website for take-home exams. Unlike the situation in an in-class slide exam, his students have a choice in what they will write about and, unlike a photocopied take-home paper exam, they can work with new, unpublished images posted in large format and crystal clarity.

A dated but still useful 1997 test on the value of digital images in teaching, conducted by Charles S. Rhyne with his students at Reed College, Portland, Oregon, concluded that their most useful function was as a reference tool after having seen the originals. His students observed that the digital image could not convey scale correctly, but that it had astounding detail. In person, the large scale of the Japanese screens (the test object in this case) actually impeded the student's ability to consider details. In fact, brushstrokes had not been apparent to the students when they saw the image *in situ*. On the computer students were able to see all sides of the screens, and the computer views enabled comparisons not possible in a museum situation.²⁹ My own primary use of AMICO outside the classroom follows this model. Whenever possible, I prefer my students to write assignments based on their first-hand experience of art, but even in this regard, AMICO was an excellent tool. After a visit to the Art Gallery of Ontario to see Romantic prints, I was able to guide students to reproductions of the same works online. Students used these jpegs for presentations and as reference tools as they wrote papers.

AMICO (now CAMIO) and ARTstor have both become purveyors of teaching ideas as well as images. While few instructors in higher education are likely to be interested in foregoing the creative activity of designing assignments tailored to their specific courses and teaching goals, AMICO and ARTstor can offer helpful cues to new possibilities. One example asks students to locate two works, one made in France before the Revolution and one made afterwards, and then to compare them. AMICO also provided examples of somewhat interactive quizzes and more sophisticated connoisseurship assignments for upper-level seminar classes. Roberly Bell, at the Rochester Institute of Technology, contributed several sample exercises. One provided a series of quotes from Rodin about ugliness and then asked students to find an image they considered ugly on AMICO and to "create a sketch, plan, maquette, or model for a sculpture representing your interpretation of Rodin's idea of beauty." In addition, some faculty members ask students to design online exhibitions using image databases, an option not suggested on AMICO or ARTstor.³⁰ The substance of these assignments (the kinds of questions they ask students to explore in relation to the images) is not new, but the scope for efficient choice is. Students have long been asked to locate images and to write about them, but since reproductions are rarely indexed in a comprehensive way the process is often arduous and haphazard. Providing

students with properly catalogued databases of images encourages them to consider visual research with the same critical research skills they would use to locate any other material.

Resources like ARTstor and MDID add new possibilities and they also present new challenges. One question that has begun to emerge in the United States surrounds the “added value” component of course material. The grouping of images into a class presentation is a kind of intellectual work. Even more obvious is the addition of text in the form of annotations or longer panels to be included in presentations or as a study guide for students. Presentation and study sets can be saved on both MDID and ARTstor. Should we give faculty credit for this work? If so, how might we do that? If faculty own this work, how will we ensure they can take it with them if they change institutions? What are the intellectual property implications?

Questions about “added value” point to the merging of teaching and research within a climate of digital resources. Much of what has been said about teaching art history with digital resources also applies here. Research images without copyright clearance can be stored in MDID but noted as not cleared for use in classes. Presentation software can be used for conference presentations. ARTstor is big enough to be really useful for research but, for this purpose, there are other useful databases that do not require subscriptions. Bill Gates’s much maligned Corbis or the equally maligned Bridgeman Art Library are perfect examples. These companies are so reviled in academe because they now control images through a huge network of licensing agreements with libraries, museums, and universities. Their structures limit access to reproductions and demand huge, and often impossible, user fees. However, used against the grain, they can also be quite valuable for scouting archives, locating originals, and for conducting iconographic research. They are not useful for classroom presentation, however, as the images are low-resolution and watermarked.

In fact, it is increasingly difficult to distinguish between teaching and research initiatives in the field of digital technology. The mandate and practices of The Media Center for Art History, Archaeology, and Historic Preservation at Columbia are indicative of the renewed effort to link both aspects of faculty work in a dynamic and serious way. A Canadian project similar to those at Columbia, though not initiated by a visual resource centre, is Pierre du Prey’s *Architecture in the Classical Tradition*, a website hosted by Queen’s University.³¹ This was an innovative early project funded by SSHRC and aided greatly by the archives and resources of the Canadian Centre for Architecture. Du Prey’s site houses hundreds of images, from photographs to prints to ground plans, and enables users to chose chronological, thematic, or theoretical paths through the material. The site also includes a hypertexted and illustrated glossary of architectural terms. Collaborative, additive, clear in its goals,

and publicly available, it is a great example of new means of disseminating research.

At Princeton, it is the students who are contributing content for a traditional research *cum* teaching resource. Working in conjunction with the Index of Christian Art, faculty members have been developing field research projects for students in which one of the goals is to collect needed images. The subscription costs for the Index help subsidize this field research to remote locations, but once students and faculty collect rare images, such as a series recently taken of an archeological site in an Israeli desert, those images can be available to anyone with paid remote access to the Index.³²

Tentative Conclusions and Next Steps

One way to avoid succumbing to the overwhelming array of issues, potential problems, and possibilities is for art departments to set priorities and then create reasonable but ambitious one-year and five-year plans. There is a range of possible strategies and priorities. Will one try to bring everyone a little way into the digital world, or focus on the needs of a few keen faculty members to pave the way? Will a department focus on local or campus-wide resources? (Two plans enable departments to link better with their larger community and to determine how best to serve all faculty and students over the long haul.)

One small VRC at the Fashion Institute of Technology in New York set and accomplished the following as their short term plan: it arranged for MDID to be customized by the Institute’s staff, identified 680 images needed for one course to be offered in the autumn semester, and scanned and entered all data over the preceding summer. Because the number of people involved was small enough to allow them to stay in close communication, the process was intense but fairly smooth. Because the project was initiated by a faculty member and tied to her teaching, the results were instantly useable.³³ The longer-term plan was to subscribe to ARTstor. The working group therefore chose a faculty member who taught from the Institute’s own archives of fashion design, and thus produced unique content for future use. This project enabled FIT to gain a better sense of the equipment needed for installation in classrooms, the level of campus wide IT support needed for teaching, and the level of student support or resistance. Keeping the scope of the pilot project small lessened the level of inevitable frustration and disappointment.

A different one-year plan might ignore developing new content at first, and subscribe to a service like ARTstor instead. Devoting significant staff resources to facilitating ARTstor’s use might include the organization of workshops and online tools to help faculty learn the technology, and the offering of similar support for students so they do not flounder or continually

come to faculty for support. Once faculty members are familiar with the image collections available through subscription they may be better able to identify any specialty material that needs to be added. This plan has the advantage of providing a huge archive of images quickly, which is particularly helpful if a department has a wave of new faculty. New faculty always have significant start-up needs as far as images are concerned, and it seems prudent and more cost-effective to encourage those needs to be filled digitally. New faculty may also have already taught digitally or, at the very least, may be more comfortable with the concept.

Every department will have to develop a plan that suits its particular strengths and needs, but the fact is that every department needs a plan. While the best practices for integrating technology into teaching art history cannot operate on the edges of legality, that pervasive fear must not keep us from exploring possibilities and devising creative, engaging, and legal solutions. We need these possibilities and solutions to enter the active and mainstream discourse of the discipline so that they can be debated and tested. Rather than concerning ourselves with whether digital technologies are good for art history, the time has come to identify best practices.

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Notes

- 1 See Trevor Fawcett on the history of the slide lecture, "Visual Facts and the Nineteenth-Century Art Lecture," *Art History* VI, 4 (1983), 442-60.
- 2 For informed conversations among art historians and visual resources experts on the topic of cameras, projectors, databases, and related equipment, see the discussion listserv archives Consortium of Art and Architectural Historians, <https://lists.princeton.edu/archives/caah.html>. Membership in the Consortium is required and open only to graduate students and professionals in the field.
- 3 James Carpenter, "The Limitations of Colour Slides," *College Art Journal* 11, 2 (January 1943), 39.
- 4 Carpenter, "The Limitations of Colour Slides," 39.
- 5 Carpenter, "The Limitations of Colour Slides," 38.
- 6 Carpenter, "The Limitations of Colour Slides," 39.

- 7 Carpenter, "The Limitations of Colour Slides," 39.
- 8 See Sally M. Promey and Miriam Stewart, "Digital Art History: A New Field for Collaboration," *American Art* XI, 2 (Summer 1997), 36-41. They conclude that "as we listen to our colleagues discuss their hopes and dreams for electronic technology, art professionals as a group seem to ask two apparently contradictory things of digital images: we want them to contain as much visual information as possible (reflected in our concern with resolution and quality of scan), and we want them to be acknowledged as reproductions, distinct from original works of art" (p. 40).
- 9 Julia Shin Doi, "Copyright in the Classroom," presentation at the Centre for the Support of Teaching, York University, Toronto, May 2004.
- 10 See Margaret-Ann Wilkinson, "Filtering the Flow from the Fountains of Knowledge: Access and Copyright in Education and Libraries," *In the Public Interest: The Future of Canadian Copyright Law*, ed. Michael Geist (Toronto, 2005).
- 11 Posting copyright protected images on a website constitutes copyright infringement, but linking them does not. It would seem logical that you could post images that reside in the public domain, but there is some confusion regarding the reproduction rights of museums, for instance.
- 12 Harold Besser, "History of Digital Technologies for Teaching Art," keynote address for *Beyond the Slide Library*, conference at the Fashion Institute of Technology, Toronto, 8 October 2004.
- 13 Gunter Waibel and Arnold Arcolio, "Out of the Database, into the Classroom: Findings from the Instructional Technology Advisory Group," Research Libraries Group, April 2004, http://www.rlg.org/cn/page.php?Page_ID=406 (last accessed in February 2006). Waibel and Arcolio's report is one of several RLG has commissioned in its effort to "provide solutions to the challenges presented by information access and management in the digital era" (http://www.rlg.org/en/page.php?Page_ID=2).
- 14 Waibel and Arcolio, "Out of the Database."
- 15 Linda Sorenson Colet, "1. Planning an Imaging Project," *Guides to Quality in Visual Resource Imaging*, Research Libraries Group, 2000, <http://www.rlg.org/visguides/> (last accessed in February 2006).
- 16 Visual Resources Association guidelines are available on their website, <http://www.vraweb.org/>.
- 17 Visual Resources Association, "Per Unit (Image) Cost and Labor Sample (Sample from Yale 2002)," <http://www.vraweb.org/diag/YalePerUnit.pdf> (last accessed in February 2006).
- 18 Christine Sundt, "Digital Projects Past and Present: Survivors or Fossils?" paper presented at *Futures Past: Twenty Years of Arts Computing*, Computers and the History of Art Annual Conference, London, England, 12 November 2004.
- 19 Vickie O'Riordan, "This is the Modern World: Collaborating with ARTstor," paper presented at *Futures Past: Twenty Years of Arts Computing*, 12 November 2004.
- 20 The major drawback to ARTstor is the cost, which is scaled to the size of the university, college, or art school. Universities are classified as very small to very large with current, one-time sign up fees for subscribers of US\$4,800-32,000. Community colleges pay US\$800 and independent art schools pay US\$600-8,500 depend-

- ing on size. Annual fees range from US\$500 for a very small art school to US\$16,000 for a very large university. The sticker shock is painful, but the cost has usually been absorbed at the university-wide level, which is reasonable because the database includes much more than traditional art images.
- 21 Jo Kadlecsek, "Technology Brings Art History to the Future and Changes Education in the Process," *Columbia News*, 11 December 2002, http://www.columbia.edu/cu/news/02/12/art_history.html (last accessed in February 2006).
 - 22 No copy of the survey or of its results is available online but a summary can be viewed as a PDF series of presentation slides. J. Trant and D. Bearman, "AMICO On-line User Survey: Preliminary Results," AMICO Members Meeting, 8 May 2003, <http://www.amico.org/univ/docs/AMICOUsersSurvey030508.pdf> (last accessed in February 2006).
 - 23 See "Image Exchange" page on the SAH website, <http://www.sah.org/>.
 - 24 Christine Sundt, "Building the Bridge: Art history, Meet technology!" *Visual Resources* XIII, 2 (1997), 161–67.
 - 25 Ann Copeland, *The Visual Image User Study* (VIUS), Pennsylvania State University (2003). Available at <http://www.libraries.psu.edu/vius/>. Copeland is the Special Collections Cataloging Librarian at Pennsylvania State University.
 - 26 Video document readers are currently being explored at York as a solution for image needs in studio classrooms. Studio instructors need some way to show some images without blacking out the studio. Attaching a video document reader to a cart topped with a large flat screen television has been proposed as a mobile solution that could be shared between instructors.
 - 27 For PDF version of slides, see Andrew Hershberger, "Teaching with AMICO Library Digital Images," AMICO Users Session, 2003 Annual Members Meeting, LaJolla, California, 8 May 2003, <http://www.amico.org/docs.html> (last accessed April 2005).
 - 28 David Carrier and Robert Cavelier, "Theoretical and Practical Perspectives on Technology and the History of Art History," *Leonardo* XXII, 2 (1989), 245–49, 247.
 - 29 Charles S. Rhyne, "Student Evaluation of the Usefulness of Computer Images in Art History and Related Disciplines," *Visual Resources* XIII, 1 (1997), 67–81.
 - 30 This activity is more common in the United States where a fair use exemption from copyright exists for educational use. While Canadian faculty often use images behind the firewall of course management tools like WebCT, York University counsel is unlikely to be alone in their concern about this practice.
 - 31 <http://act.art.queensu.ca/homepage.php>.
 - 32 Colum Hourihane, "Facing the Future Through the Past – at the Index of Christian Art," paper presented at *Futures Past: Twenty Years of Arts Computing*, 12 November 2004.
 - 33 Jane Duda, "Overview of Current Projects at FIT," paper presented at the *Beyond the Slide Library*, 8 October 2004.