

Conservation

The Getty Conservation Institute Newsletter ■ Volume 17, Number 1 2002



The Getty Conservation Institute Newsletter

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Conservation, The Getty Conservation Institute Newsletter

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The Getty Conservation Institute (GCI) works internationally to advance conservation and to enhance and encourage the preservation and understanding of the visual arts in all of their dimensions—objects, collections, architecture, and sites. The Institute serves the conservation community through scientific research; education and training; field projects; and the dissemination of the results of both its work and the work of others in the field. In all its endeavors, the Institute is committed to addressing unanswered questions and promoting the highest possible standards of conservation practice.

The GCI is a program of the J. Paul Getty Trust, an international cultural and philanthropic organization devoted to the visual arts and the humanities that includes an art museum as well as programs for education, scholarship, and conservation.

Conservation, The Getty Conservation Institute Newsletter, is distributed free of charge three times per year, to professionals in conservation and related fields and to members of the public concerned about conservation. Back issues of the newsletter, as well as additional information regarding the activities of the GCI, can be found in the Conservation section of the Getty's Web site.
www.getty.edu

Front cover: A portrait of a girl, attributed to U.S. photographer Allen Drew Cook, who was active in Philadelphia in the 1890s and early 1900s. This is how the albumen photograph appeared prior to conservation treatment. *Photo:* Tram M. Vo, courtesy the University Gallery Teaching Collection, University of Delaware (photograph given by an anonymous donor in 1991).



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Awareness of preservation challenges for photographs dates back to photography's inception in the mid-19th century. However, it was not until the latter part of the 20th century that conserving photographs emerged as a professional pursuit. The current state of conservation of photography is examined by three professionals in the field who explore some key areas for research, outline the development and needs of photographic conservation education, and describe the critical role photographic conservators can play in the care of photographic collections.

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James Reilly, director of the Image Permanence Institute in Rochester, New York, and Bertrand Lavédrine, director of the Centre de recherches sur la conservation des documents graphiques in Paris, along with Getty photographic conservators Marc Harnly and Teresa Mesquit, discuss the conservation of photographs with the GCI's Dusan Stulik and Jeffrey Levin.

News in Conservation

18 Conservation of Photographic Collections A New Collaborative Project at the GCI

The conservation of photographic collections and photographic material is relatively young when compared with other museum conservation areas. To expand the existing body of knowledge regarding photographic conservation, the Getty Conservation Institute recently embarked on a collaborative project to advance techniques for characterizing photographic material and identifying variations in photographic processes.

21 Conserving Mosaics in Tunisia

The areas of North Africa along the Mediterranean that were once part of the Roman world are abundant in preserved mosaics—particularly in what is today modern Tunisia. As part of the GCI's project on in situ mosaic conservation, the GCI and Tunisia's Institut National du Patrimoine (INP) have collaborated on a program to provide training for INP staff in order to help save this immensely rich heritage from further deterioration.

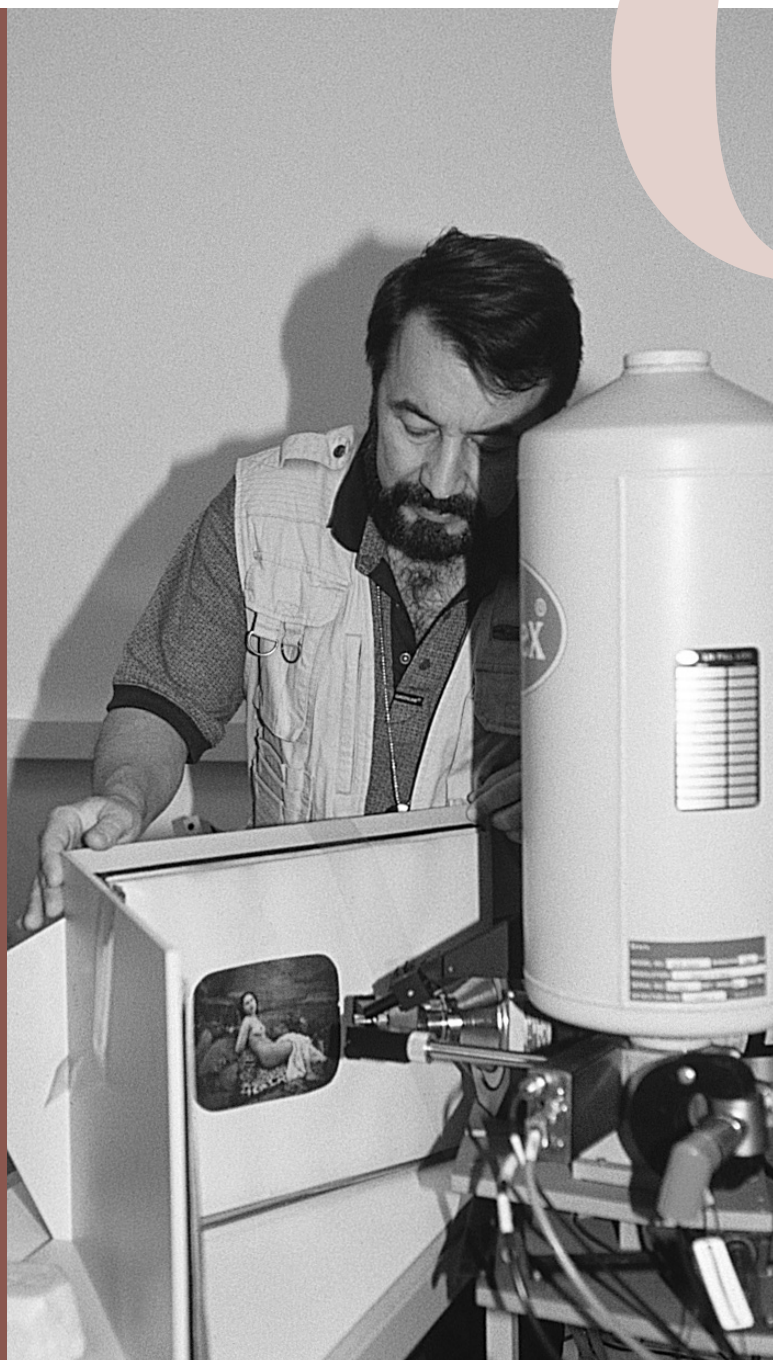
GCI News

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Updates on Getty Conservation Institute projects, events, publications, and staff.

Research in Photographic Conservation

By Anne Cartier-Bresson



GCI senior scientist Dusan Stulik performing X-ray fluorescence (XRF) analysis of an album of photographs attributed to French photographer Eugène Durieu. In using XRF and Fourier transform infrared spectrometry (FTIR) to analyze the photographs, GCI scientists discovered that Durieu experimented with different toning procedures, including platinum. A number of photos in the album may be the oldest extant examples of platinum and combination toning. *Photo: Herant Khanjian.*

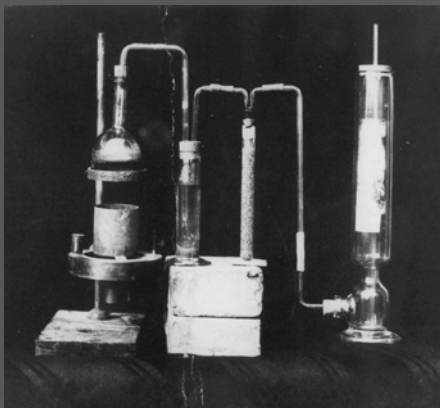
ONE OF THE PARTICULARITIES of the history of photography is its close association with scientific research in chemistry, physics, and optics. This was the case from its very inception, and it was especially apparent in photography's early years. The pursuit of better technical results and greater image stability was led by the inventors of photographic techniques and was quickly taken up by photographic societies, the first of which were the Royal Photographic Society and the Société Française de Photographie.

The evolution of photographic technology in the modern era and its commercial expansion have created a situation in which photographers generally know less than they once did about the nature of the materials with which they work. In the 1980s, developments in the marketplace spurred the rapid growth of new digital imaging and color processing techniques. Meanwhile, over the course of the last century, entire realms of photographic history have disappeared because of diminished interest and the dispersion of integral collections.

However, the increasing awareness of the history of photography and of the need for better preservation methods should provide new impetus for explorations into the conservation of photography within the framework of art conservation. At the same time, the tremendous rise in the number of photographic techniques used today naturally leads to research in these areas. Conservation efforts should not be concentrated solely on historical photographs and on the photographs of artists who use specialized or historical techniques. They must also accommodate the work of artists whose photography is more conceptual or documentary—as well as confront the increasing number of unconventional ways that artists mount photographic works.

There are two fronts on which photographic conservation research will continue to develop. The first is research in physical and chemical processes, conducted by chemists, physicists, and other scientific researchers. The second, applied research, is closely related to case studies conducted by conservators. There are at least several key areas where research should be pursued.

Print sulfurization instrument, constructed by Louis-Alphonse Davanne in 1864. Davanne was the vice president of the Société Française de Photographie from 1866 to 1876 and conducted research on the instability of silver images. This instrument was built to reproduce the mechanisms of silver print sulfurization. *Photo:* Collection of Société Française de Photographie.



Examination of a large-scale photographic work by Georges Rousse. Contemporary photographic works can present complex physical and chemical difficulties for storage, public exhibition, and conservation. Treatment methods for this work, damaged during exhibition, were researched and tested prior to application to study possible interactions with the work's Cibachrome emulsions. *Photo:* Collection of Maison Européenne de la Photographie.

Noninvasive analysis of photographic materials: The exact composition and structure of a number of early photographic techniques are not as well known as they should be. Simple, non-destructive technical analyses would provide art historians and conservators with vital information. More sophisticated applications can determine which metals are present, indicating the nature of sensitive layers and of the toning methods used by a photographer. Identifying organic materials helps determine binders or possible protective layers on a photograph's surface. In addition, the in-depth study of photographic material would enable cultural institutions, collection curators, and the art market itself to assess the authenticity of historical prints.

Study of deterioration mechanisms in photographic materials: Potential alterations of digital or classical photographic materials—and the impact of nontraditional mounting techniques—are still relatively unknown. The results of comparative studies of deterioration would advance conservation methods that are suitable for new artistic practices. Reliable methods of testing color alteration over time would enable improved conservation management of photographs, particularly in relation to the effects of exhibition on images.

Evaluation of restoration and preventive conservation methods: A great number of studies are still needed to determine appropriate conservation methods and to evaluate their effects over time. Results disseminated by organizations such as the International Council of Museums, the American Institute for Conservation of Historic and Artistic Works, and the International Institute of Conservation could be made more accessible in databases or through Web portals. The level and means of accessibility of this data should be defined as soon as possible, while also making certain that the sensitivity of the object and the complexity of the procedure are considered. Because each conservation intervention is effectively a case unto itself, it is important to avoid promoting difficult treatments that could inadvertently damage a work. In addition, widespread dissemination of information on the exact composition and possible negative effects of commercial materials and products used for conservation should be a priority.

Better use of digital imaging technologies: If preservation of the artifact is the primary concern—in addition to determining physical changes in materials and the effects of treatments—digital imaging and data instrumentation guidelines are necessary to better monitor and categorize material changes over time. A more extensive dissemination of standards for new techniques would also aid conservators tremendously. Collections would be best served by the establishment of standards related to reproduction quality and increased accessibility of image and data banks.

Beyond the development of certain areas of research, the field also would benefit from the creation of networks. The challenges facing the conservation of photographic material result from the newness of the discipline itself. But these challenges can be met if our responses are well thought through from the start. The use of cross-disciplinary teams of historians, conservators, and scientists working on various aspects of photographic conservation is an exemplary model. Improving international collaborations would lead to the development of a common language in a world where research priorities often depend on specific economic and geographic circumstances. Such collaborations would also constitute a consolidating force at a time when the circulation of photographs is intense.

Historically, photography has always challenged assumptions. This is why, along with the concrete results of all sorts of specific research, photographic research itself is always questioning, through examination, objects that are becoming simultaneously more and more prevalent and less and less understood.

Anne Cartier-Bresson is the director of l'Atelier de Restauration et de Conservation des Photographies de la Ville de Paris.

*The Conservation
of Photography
Three Perspectives*

Education in Photographic Conservation

By Mogens S. Koch



Collodion print in which the emulsion layer has been damaged by water (*top*) and a copy of the print after digitalization and retouching (*bottom*). To create the new print, the original was digitized and the digital file treated in Adobe Photoshop. The file was then converted to a negative, and the negative was printed on transparency material, then contact-printed on black and white fiber-based paper. *Photo Digitalization:* Kathrine Suhr and Mogens S. Koch. *Photo:* Collection Aalborg Historiske Museum.

AWARENESS OF PRESERVATION PROBLEMS for photographs dates back to photography's inception in the mid-19th century. Early on, it became evident that this new medium had fundamental preservation challenges, in particular with the permanence of the image.

However, it was not until the latter part of the 20th century that conserving photographs emerged as a professional pursuit. The first photographic conservator in the United States was employed at the George Eastman House in Rochester in 1965. Another decade passed before existing art conservation schools began offering programs in photographic conservation.

In 1976 the Winterthur–University of Delaware Program in Art Conservation established the first educational program in photographic conservation. Two years later, the Art Conservation Department at Buffalo State College awarded a master's degree to its first student specializing in photographic conservation. Academic programs in the subject developed in Europe at about the same time. In the spring of 1977, the School of Conservation at the Royal Danish Academy of Fine Arts in Copenhagen initiated a program in the school's Department of Graphic Arts.

Today, students interested in photographic conservation enroll in general conservation programs and then specialize in photography. Currently there are only a handful of conservation programs in North America with a full photographic conservation curriculum. In Europe, there are over a dozen such programs.

While most programs offer master's degrees, there are differences in requirements and in emphasis in curriculum. Some programs require the completion of a thesis, with subjects that run the gamut from the theoretical to the practical. Other programs, in contrast, have internships ranging from half a year to two yearlong internships; these provide students the opportunity to work more independently and to apply their skills in a workshop setting. Some programs focus on the preservation of graphic documents and library materials, while others address a wider range of conservation disciplines, including textiles, paintings, and objects as part of their core curriculum.

Students at the Royal Danish Academy of Fine Arts School of Conservation remove albumen prints from their old board mounts. *Photo: Mogens S. Koch.*



Danish conservation students in a cleaning class. The students are choosing samples for testing of surface cleaning methods. *Photo: Mogens S. Koch.*

An important recent contribution to the field is the Mellon Advanced Residency Program in Photograph Conservation, a collaboration of the George Eastman House and the Image Permanence Institute of the Rochester Institute of Technology. This two-year program—established with funding from the Andrew W. Mellon Foundation—provides highly specialized and advanced training for a select group of young conservation professionals, helping them develop a thorough understanding of photographic history, chemistry, and deterioration mechanisms, as well as of the technology and identification of the wide range of photographic processes and types.

Photographic material may be preserved for a variety of reasons and purposes. These factors influence the direction of conservation and, ultimately, of education and training. In Europe, with a long tradition of valuing photography for its information content—as opposed to primarily for its artistic content—the photographic negative has been viewed as an archival product whose treatment is necessary to fulfill a utilitarian purpose: to make high-quality prints. For this reason, there has been a greater emphasis on the treatment of historic negatives in Europe than in the United States. Certainly, negative collections are also the focus of many prominent U.S. collections, but in Europe, more attention is given to intervention with negative collections. To a certain extent, this difference is reflected in education and training program curricula.

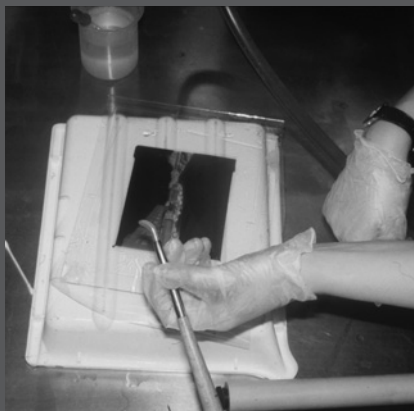
Photographic conservation—and education in the field—must strike a balance in emphasis between the treatment of individual works and more holistic approaches to entire collections. What must be conserved are individual photos of varying value and lasting quality and large photographic collections that collectively need care. In European education programs, about 70 percent of course work is devoted to individual treatments; the remaining 30 percent concentrates on care of collections. I hope that in the future there will be more emphasis on management and less emphasis on individual treatment. With appropriate management, we can preserve more—at a lower cost—than we can with hands-on conservation.

In the next 10 to 20 years, I see photographic conservation education becoming more specialized and covering more topics. I expect that photographic conservators will be grouped in four main areas: prints, negatives, movies, and modern media. The category of modern media itself will be divided into two quite different areas—materials produced from digital files (such as ink-jet prints) and digital storage media (such as CDs). (In the photographic conservation program at the Royal Danish Academy of Fine Arts, the preservation of digital media is already a part of the curriculum.) As with other disciplines, as photography evolves, it will be impossible to provide students with all the knowledge necessary for the full spectrum of conservation work. Perhaps the curriculum for photographic conservation will be split into two majors—one in analog, the other in digital. The digitalization of photography will have an important effect on all photographic conservation programs. We will have to deal with the stability of file formats, storage media, ink-jet prints, and other printing media in a rapidly changing world of manufactured media. These will be difficult challenges.

Photographic conservation research will have an impact on education in the field. Topics that I believe merit additional research include surface cleaning of photographs, chemical treatment methods, evaluation of different treatment methods used by conservation workshops, and design of exercise materials with known damage phenomena for training in treatment methods.

Beyond research, one of the greatest benefits would be the establishment of an international forum for faculty from schools of photographic conservation. Over the years, informal contacts have linked faculty and programs. For instance, my program, the School of Conservation in Copenhagen, has maintained close cooperation with North American institutions such as the National Archives in Canada, the International Museum of Photography at the George Eastman House, the Image Permanence Institute, and the University of Delaware. These institutions have greatly influenced the organization and content of the Danish program.

Conservation student remounting a negative emulsion. The negative, removed from its acetate support, is placed on a new polyester support. *Photo: Mogens S. Koch.*



Graduate students from the Winterthur—University of Delaware Program in Art Conservation discuss the conservation treatment of a collection of photographic print materials with program director Debra Hess Norris. The students minored in photographic conservation during the second year of their three-year master's degree program. *Photo: University of Delaware (UD), Jack Buxbaum.*

But now, a more formal and ongoing means of exchange is needed. To create such a forum initially would require an international gathering where faculty would meet to exchange experiences, knowledge, teaching methods, and course materials and to discuss the outlines of the aesthetic, theoretical, and practical knowledge necessary for photographic conservators.

The goal of such a gathering would be to achieve some consensus on the content of a professional education and training program. In a paper presented at the 1996 ICOM-CC meeting in Scotland, Nora Kennedy, photographic conservator at New York's Metropolitan Museum of Art, suggested what the core competencies in photographic conservation might be. She concluded that the field needed to work toward defining "the minimum level of knowledge, skills, and education that can and should be required of a conservator entering the field." I concur. While all photography conservation programs need not be exactly the same, some agreement is necessary on the minimum criteria for a photographic conservator.

There is also a need for continuing professional educational opportunities, such as the Mellon Collaborative Workshops in Photograph Conservation. This sort of approach should cover other countries and include one- to two-week workshops in special topics, led by individuals with extensive experience in the area being covered. An example of this is the training component of Safeguarding European Photographic Images for Access (SEPIA), a European Union-funded project that includes seminars to teach teachers, in order to expand the pool of experts able to provide training. More such efforts are necessary to equip conservators dealing with the preservation of our visual memory.

Mogens S. Koch teaches conservation of photography at the School of Conservation of the Royal Danish Academy of Fine Arts in Copenhagen.



Prints of the Cathedral of Copenhagen, 1911, from a glass plate negative, before (*top*) and after (*bottom*) the glass plate's treatment. Treatment was conducted by Royal Danish Academy of Fine Arts School of Conservation student Jesper Stub Johnsen as part of his thesis work. *Photo Digitalization: Mogens S. Koch.*

Photographic Conservators:

A Part of the Process

By Roy Flukinger

AS A CURATOR, conservators and conservation scientists are no strangers to me. Long before the Harry Ransom Center, where I work, set up its own conservation department some 20 years ago, I had sought out those few acknowledged experts in the field of photographic conservation whenever we faced an especially troublesome problem of preservation or identification. I learned early on that these individuals did not approach things exactly as I would. They tended to attack a problem with the open skepticism, practiced patience, and obsessive attention to detail that had made my delicate, humanist soul wince through all those required high school and college courses in biology and physics.

In the process, however, the photographic conservators invariably produced results and provided me with insights and options that gave me more opportunities to do the right thing for the photographs in my charge. They saw a question not “for better or for worse” than I but simply from a different perspective—a perspective that improved my chances of making a good decision about the original question I had brought to them. So now, after some initial trial and error, the Ransom Center continues to be one of the fortunate institutions that have a full-time photographic conservator on staff, and the result is an ongoing and positive educational process for my associates and me.

Despite the wide variety of types of institutions that employ us, we photographic curators do face many common challenges: preserving and protecting the collection, providing for its organization and access, seeing to its interpretation and presentation, adding to its quantity and quality, and contributing to the professional field. In taking on such a vast responsibility, we seek out a wide number and variety of resources to help us with the large organizational, managerial, scholarly, and bureaucratic aspects of the profession—everything from books to researchers, networking to teaching, and archiving to fund-raising.

One of the very best resources for any manager of a photography collection is, quite naturally, the photographic conservator. The assistance, insight, and perspective of conservators are invaluable in countless ways. As one might expect, they help us identify processes and provide treatment for our valuable objects. But that is



Top: Photograph conservator Barbara Brown, intern Clara von Waldthausen, and senior curator of photography and film, Roy Flukinger, at the Harry Ransom Humanities Research Center, University of Texas at Austin. They are discussing the condition and rehousing needs of a cased photograph. *Photo:* James Stroud, ©Harry Ransom Center Conservation Department.

Bottom: Conservator Barbara Brown examines a late-19th or early-20th-century cabinet card photograph. Viewing the photo under a microscope permits closer examination of the surface characteristics and layer structure of the image. These observations, combined with those made by the unaided eye, help identify the photographic process used. *Photo:* Richard Shannon, ©Harry Ransom Center Conservation Department.

just the beginning. They also guide us in setting standards and defining goals for preservation housing and care. They optimize the quality of such critical procedures as loans, exhibition preparation, staff training, and patron education. They provide critical and expert help that enriches all of the staff in the preservation and conservation aspects of even such nontraditional functions as

promotion, acquisitions, publications, teaching, development, and administration.

In short, the best conservator of photographs does not simply stay in the lab treating objects. He or she is also part of the larger process and plays a significant daily role in most facets of the institution's operation. The opportunity I have had to work side by side over many years with Barbara Brown, the Ransom Center's photographic conservator, has helped me to learn and grow as a curator who must constantly deal honestly with challenging questions and qualitative decision making. That Barbara is ultimately able to do her job amid my flights of imagination, impulsiveness, and abstract theorizing may be yet another positive quality of conservators.

Finally, beyond the day-to-day and the merely institutional, there are some more lean and muscular concepts that have emerged in my work with a good photographic conservator. While these concepts may not be universal, they are at least grounded in a practical truthfulness that can make all of us—curator, conservator, and administrator alike—more effective. In no particular order, they are:

- Never assume. But if you do, always test your assumptions. Conservators, like historians, are born questioners.
- “Photography is an evolutionary science.” That observation came from one of my favorite photo historians, William Jerome Harrison, in 1887, and it is every bit as true today as it was then. As any conservator can tell you, things will keep changing. Do not get too comfortable.
- Taking no action—or making no decision—is, of course, always making a big decision. It may be right or wrong, and there may be no way to tell at the time, but it is a decision nonetheless.
- Trust your instinct. It should not be ignored. Some of the brightest insights I have observed have come from conservators' hearts as well as from their heads.
- Never give up, but know when to pause. Some answers are better found and some decisions better made after you return to the problem later.
- If you do things right, you will end up with more questions than answers. Believe it or not, this is good.
- History and science—like curators and conservators—are very different creatures. But they do have this in common: they both recognize that truth is an elusive thing, and while we may never attain it, we must never cease searching for it.

The last point may be the most important of all, because it reflects the continuing quest of both our professions. The search for truth is ultimately a faith-based journey, and it lies at the heart of nearly all solid conservation practice. And even if ultimately all photographs are fleeting, it is nonetheless inspirational to see

photographic conservators striving to find what is true in each and every image.

Just perhaps, the best conservators are those who help us restore faith along with restoring photographs.

Roy Flukinger is senior curator of photography and film at the Harry Ransom Humanities Research Center, University of Texas at Austin.



Top: A partial view of the photographic collection storage area for the Harry Ransom Humanities Research Center. The Center's photographic holdings include over five million original photographs, negatives, transparencies, and photomechanical prints. *Photo:* Barbara Brown, ©Harry Ransom Center Conservation Department.

Bottom: Photography Department staff member Tiffany Bauer examining prints in the Harry Ransom Center's seminar room. Behind her is a selection of the Center's collection materials arranged for a visiting class. *Photo:* Barbara Brown, ©Harry Ransom Center Conservation Department.

In 2000, the Getty Conservation Institute and the Image Permanence Institute (IPI), a part of the Rochester Institute of Technology, organized a meeting to identify the needs for research in photographic conservation and to evaluate possible projects that could address those needs. Attending the Rochester meeting were professionals in conservation science, photographic conservation, training, archives management, and curatorship. A major outcome of the gathering was a new project on the conservation of photographic collections, undertaken collaboratively by the GCI, the IPI, and the Centre de recherches sur la conservation des documents graphiques (CRCDG) in Paris (see page 18). The ultimate aim of the project is to provide a foundation for the later development of new tools to diagnose the causes of deterioration of photographic materials, and for the development of new treatment and preventive conservation strategies for these materials.

We asked James Reilly, director of the IPI, and Bertrand Lavédrine, director of the CRCDG, to share their thoughts on current issues in the conservation of photographs. Photographic conservators Marc Harnly, with the Getty Museum, and Teresa Mesquit, with the Getty Research Institute, joined in the discussion.

They spoke with Dusan Stulik—a GCI senior scientist and the Institute’s manager for the conservation of photographic collections project—and Jeffrey Levin, editor of Conservation, The GCI Newsletter.

Jeffrey Levin: *The 2000 Rochester meeting identified the need for a major initiative in photographic conservation, which hasn’t received the same level of scientific support as other branches of art conservation. Why hasn’t photography, at least until now, gotten that kind of attention?*

James Reilly: I think it reflects the art consciousness of society in general. The long debate about whether photography is art was largely over by the 1980s, and you saw an increased interest in photography, both as art and as a historical document. The public became much more ready to accept photography, and the art market responded. Major museums began to collect, and prices for important art pieces in photography rose. From both the historical and the art perspectives, photography just came up in everyone’s consciousness. And by extension, the need for scientific research and the conservation of photographs came to the fore.

Bertrand Lavédrine: I agree. There have been collections of photographs since the 19th century, but the willingness to create a museum photographic collection at the level of a drawing or a painting collection is recent—maybe 30 years old, depending upon the country. For instance, certain French institutions, such as libraries, archived huge collections of photographs, but it was only after the 1970s that photographic prints appeared in museums. Compared to paintings, photographs still represent a small proportion of collections in museums. It seems logical that scientific support was given first to solving problems concerning the most valuable or the highest number of artifacts. For the general public, and even for some professionals, photographs were considered valuable documents but not art objects.

Marc Harnly: The only thing I can add is that photography is a very new medium. To an extent, it’s natural that its appreciation as art has lagged behind other disciplines like painting or drawing, which have been researched, appreciated, and displayed for hundreds of years. Plus, there are still people in the art world today who unfortunately do not view photography as an art. I think history will prove them wrong.

James Reilly: The public’s appreciation of fine art photographs took a tremendous leap in the 1960s and 1970s, when it became possible

“ The breadth of things

that were tried and achieved in the mid-19th century

always surprises us. ”

—James Reilly



Courtesy James Reilly

in books to photomechanically reproduce photographs more faithfully, to convey their original color and tone. Until then, reproductions in books were all black and white. Albumen prints, for instance, were reproduced in black and white. This rich tapestry of processes was unfamiliar to people because they didn't see it. They had no way to experience it except to look at the original objects. And these weren't being displayed. As people learned more about photographs as objects, they began to appreciate them as artistic achievements.

Bertrand Lavédrine: The recognition of photography as a fine art has not seen a continuous rise. In the 19th century, people appreciated photographs as an art form more than they did in the 1950s. The industrialization of photography and consumer photography played a role in identifying photography as a current object but not as a fine art object. Now it's enjoying a renaissance.

Jeffrey Levin: *How well do we understand the diversity of experimentation that occurred in the mid-19th century, when photography was in its early stages—and how does our knowledge of the first decades of photography affect our ability to conserve photographs from that period?*

James Reilly: We know from writings and publications at the time about the general lines people were pursuing. But when you're confronted with a specific photograph made in this early period, you're really not sure what was done because they were inventing the processes. The breadth of things that were tried and achieved in the mid-19th century always surprises us.

Bertrand Lavédrine: Even if the necessary technical data about photography were available, there are so many uncontrolled parameters—the quality of the chemical used, the treatment, post-treatment, and natural aging—that it is difficult to rely only

on this technical information to predict their fragility and permanence.

Jeffrey Levin: *Teresa, Marc, in your experience with photographs from that period, how has the lack of knowledge about the level of experimentation affected the way you work?*

Teresa Mesquit: I encounter lots of photographs that I'm not entirely able to identify by visual means alone. In some cases it's difficult to know, for example, whether you're looking at an albumen print or at a salt print with a light albumen binder. Curators and cataloguers can be a great help, because they may know the greater scope of a photographer's work. Still, many variants of processing and toning methods, coatings, and so on, remain obscure to us. But it's possible they'll be quantified and described with the help of different technologies. The more we glean from the examples we have of early photography—and from the results of analysis—the more informed our approach will be.

Marc Harnly: I certainly agree. We continually encounter photographs with technical origins that can't be determined precisely. As a result, conservators approach their work conservatively. If there are certain questions about a photograph we can't answer, then we don't consider treatment that could result in an irreversible change. So yes, we are sometimes limited because we don't know all the details of the process that created the photograph.

Jeffrey Levin: *What do each of you see as the priorities in terms of the needs for research in the conservation of photographs?*

James Reilly: For me, the 2000 meeting confirmed a lot of things I'd been thinking about. The key idea that came out of that meeting was that the priorities mostly had to do with the characterization of the photograph as object. There were four purposes for characterization that were swirling around at that meeting. One was to be able

to monitor a photograph's condition. This would be very useful in the exhibition and treatment of photographs—knowing whether they've changed. The second purpose for characterization research was authentication. Is this a forgery? Does this object fit with the other body of work that a photographer had? This benefits institutions, curators, dealers, and collectors. The third purpose was for the institutional and scholarly tasks of cataloguing and describing. What kind of paper is it on? What kind of image does it have? How was it made? Finally, characterization research assists with scholarship and teaching. The approaches developed through a characterization initiative would help scholars understand the techniques used and make it possible to teach others about those techniques more effectively.

Marc Harnly: Characterization is important, as Jim says, because it encompasses so many aspects of study. As a conservator, researching the effects of treatments is also important. Each new generation of conservators in all disciplines does things slightly differently than the previous one as a result of scientific research. For example, surface cleaning of photographs is something that was once done more routinely than it is today. Research on albumen prints showed that on the microscopic level, not necessarily visible to the naked eye, treatment was changing the binder of these prints just by using the standard surface cleaning techniques at the time. Today, with that knowledge, conservators approach surface cleaning more carefully. While I'd like to believe that my conservation practices are the best, research may prove in the future that some could have been better.

Teresa Mesquit: In looking for ways to help characterize photographs, I wonder if there is an untapped resource outside institutions in the form of private collectors and dealers, many of whom have built up an invaluable expertise in photo history and techniques. Because of the sheer volume of what passes through their hands, they may have a visual knowledge that perhaps we don't have. Are there alliances out there that we could be forming? I don't have much contact with the private collecting world or the commercial manufacturing of photographic materials, but Jim, through your work, you must have a sense of that.

James Reilly: There's a lot of knowledge about the materials in the industry and certainly in collecting institutions and among private conservators. It would be very nice to tap into this through the creation of databases or didactic tools.

Bertrand Lavédrine: Characterization of photographic material is one of the priorities that came out of the Rochester meeting. Depending on the country, institution, and collection, priorities can change. Priority is often linked to a specific environment at a given time and in a given place.

James Reilly: I don't mean to imply that no other issues were brought forward at the Rochester meeting. There were certainly things like cold storage, gelatin problems, and research on the long-term effects of treatments that would involve accelerated aging, as well as just evaluating the effectiveness of a treatment right after it's done. There's a big mismatch between the needs of the field and the scientific resources available to it. In my mind, if we had to choose one thing, it would be characterization research. But that doesn't mean it's the only thing worth doing.

Dusan Stulik: You cannot deal with the problem of aging if you don't know what you are aging. The same is true with exhibition and storage. Characterization research got on top at the Rochester meeting because it was connected with most of the issues that we discussed there. It's important to get scientific research on photography to the same level as scientific research on painting.

James Reilly: Conservation—and, by extension, conservation science—exists to support the appreciation and usefulness of photographs in society. The special contribution that the conservator and the conservation scientist make to the discussion is to understand and speak for the object so that registrars or curators or collectors know more about what they're dealing with. How was it made? What are its characteristics? When we ask ourselves what will make the greatest contribution to the larger issues, characterization research makes the most sense.

Bertrand Lavédrine: The majority of the participants at the Rochester meeting were people dealing with fine art collections. If you had gathered people from archives and libraries, perhaps these priorities would have been different. They would have emphasized more collections management. We still have lots of questions regarding enclosure materials, cold storage, negative storage, and other issues for which we do not have easy answers when dealing with a large collection. And preserving the integrity of images is essential if we want to transmit them to future generations and be able to perform characterization once the image has gained historic or aesthetic value—many photographic prints that were once considered documentation are now recognized as fine art.

James Reilly: Yes, there are plenty of examples of photographs that were produced as documentation, and later it was recognized that the photographer had great visual ability or was a technical genius who combined a great eye with interesting or beautiful subject matter. When all those things come together, objects considered relatively unimportant suddenly become very important. But we need to realize that there are literally billions of photographs in private and institutional collections. If we're doing conservation research that benefits primarily those few identified as fine art, are

“ Even though larger institutions seem to have their preservation programs in place, there are countless important collections still in forgotten boxes in basements. ”

—Teresa Mesquit



Robert Walker

we neglecting the rest that need to be managed in a different way? All of us in photographic conservation research have to keep our eye on both camps.

Dusan Stulik: *But don't you think that whenever you do some research that targets art photography, there is a benefit for archival photography or storage? The knowledge can go from one camp to the other.*

James Reilly: Very easily. That's true.

Teresa Mesquit: Even though larger institutions seem to have their preservation programs in place, there are countless important collections still in forgotten boxes in basements. Recently here in Los Angeles, an exhibit of photography drawn from the police department archives was mounted at a small gallery. The purpose of the show was to present the crime photographer as a craftsman, but also to show his or her visual acumen and sensitivities. The show drew a lot of attention to the archives in general and to their potential for telling a number of local histories—the police force, crime in L.A., architectural history. Hopefully the attention will generate money for preserving the collection. As you say, Jim, we need to keep our eye on both camps. There's still a need for the basic care and storage and cataloging of many yet-to-be-revealed collections.

Jeffrey Levin: *Up until now, characterization of photographic material has been done primarily with optical microscopy techniques. Part of the scientific research that we're doing at the GCI takes a more analytical approach. Could we talk a bit about the way characterization has typically been done and about how that is different from the analytical approach?*

James Reilly: The things that are the most commonly used are a low-power loupe or a stereo microscope. You look for the color, layer structure, and other things that you can see, primarily to identify

processes and to determine what kind of deterioration is going on. It's relatively simple, straightforward, and nondestructive—but highly subjective and not very quantifiable. So it certainly would be better if there were analytical instruments that told us something meaningful and quantitative. The problem is not to apply the device but to interpret what it is telling you. Today we have all sorts of ways to characterize materials. But our difficulty is fitting that into a scheme that ultimately relates back to the work of the conservator, the curator, the registrar, the dealer, or the collector.

Dusan Stulik: *With the analytical tools available today, like X-ray fluorescence, Fourier transform infrared spectrometry, and GC mass spectrometry for organic material, we can identify not only major techniques but also variant processes and get some information about chemical treatment during the processing or chemical postprocessing, like toning. But I completely agree with Jim that there is no way to avoid the problem of interpretation. You can get all this data, but figuring out what it means in the context of a photograph is really a challenge.*

Jeffrey Levin: *How great is the danger that knowledge about chemical photography and past experimentation is going to be lost as we move toward digitizing images or capturing images in a digital format?*

Bertrand Lavédrine: We will lose some knowledge, but it's a natural attrition. In the story of photography, each evolution of the technology rendered the previous processes obsolete, contributing to the disappearance of crucial knowledge. For instance, at the end of the 19th century, we stopped manufacturing albumen paper and collodion plates. This is normal evolution. I don't see any difference with the evolution toward digital imaging. Some knowledge will disappear. On the other hand, many artists and photographers are rediscovering the 19th-century photographic processes.

Dusan Stulik: *My take on this is that chemical photography today is something like illuminated manuscripts. Illuminated manuscripts basically existed for several hundred years and were eliminated by Guttenberg. How wonderful it would be if the people who created illuminated manuscripts made some provision to ensure that the knowledge regarding the methods they used was preserved. We didn't get that information. But we have the potential to preserve that knowledge about chemical photography—now, at the end of its use.*

Bertrand Lavédrine: But we don't know if the information we're preserving is the information they will need in the future. Furthermore, there are many recipes for medieval illumination of writings, but often we do not fully understand them. The vocabulary has changed, and the product source is different. For instance, the products used for iron gall inks have nothing to do with iron sulfate and gallic acid found today. Yes, it is necessary to keep information we think they'll need, but it seems unrealistic that we'll be able to transmit all the knowledge and know-how.

Dusan Stulik: *But that is exactly what I'm talking about. It would be really wonderful if somebody in the 15th century had accumulated all the knowledge and translated it to us.*

Bertrand Lavédrine: I agree with what you're saying, but I am not sure that we can preserve all the crucial knowledge we're talking about. First, no one has a comprehensive knowledge of a photograph—the emulsion manufacturer knows one part, the paper manufacturer another, the photographer knows about its processing; it is difficult to gather all this data together. Second, we always lose some information with time.

Teresa Mesquit: Unfortunately, many vital records kept by photographers or studios or companies have perished for one reason or other. They've been destroyed by fire or gone moldy in a basement. There's always loss of information. Also, there hasn't always been an appreciation of commercial products and the need to preserve them. It's surprising, for example, how few product catalogues of photographic paper have survived. To my knowledge, there really isn't a repository that has systematically collected these products of the technical history of photography.

Marc Harnly: I agree with Bertrand that it is inevitable that we're going to lose some crucial information, and that's part of the natural evolution. But I also agree with Dusan in advocating that we try to archive as much current information as possible. Conservators, curators, and scientists continually study the old treatises and writings of photographers. Granted, it's open to interpretation, but I still believe it can be useful.

James Reilly: Clearly, chemical-based photography is passing. Already, black-and-white photography is an old process. Fewer and fewer people have had the experience, which used to be common, of taking a picture, developing the film, and making a print in the darkroom. If they'd made a black-and-white print, when they went to an exhibition of photographs, that kind of training of the eye led to an appreciation of what they saw. As Bertrand says, this will pass inevitably. You can't hold back evolution. But it's unfortunate. Conservators and modern photographic artists use hands-on experience with these old processes to inform their work, and everybody finds it incredibly helpful. Yes, it's a laudable thing to try to capture crucial knowledge. But the appreciation and the understanding will be lost when the chemical-based imaging passes into history. There is definitely a price to be paid when it all goes to digital—and the biggest price, I think, is the loss of appreciation.

“ In the story of photography, each evolution of the technology rendered the previous processes obsolete, contributing to the disappearance of crucial knowledge. ”

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CRCDG

“... researchers should always consider what venue is going to be used to present results to ensure that they’re going to reach as wide an audience as possible.”

— Marc Harnly



Teruko Burrell

Marc Harnly: I believe there will always be artists who will go back to the old processes, mainly because there are nuances possible with traditional methods of photography that are never going to be possible with digital. Conversely, there are and will be things possible with digital imaging that are not at all possible using traditional methods. That is going to attract the experimenters that photography has always attracted.

Jeffrey Levin: *Don't digital photography and the preservation of images in digital form pose a whole new series of preservation challenges?*

Bertrand Lavédrine: There is ambiguity in putting the word photography near the term digital. Some people talk about digital photography, and they show you a print—that is, an ink-jet print or a conventional photographic print made from a digital file. If digital photography refers to that print, the conservation problem is not a different one from conserving traditional photography. If conservation of digital photography means conserving a digital file, this is the major problem of migration of data. The big challenge that hasn't received much attention is moving from a physical object to a number sequence. In this case, digital photography is like music. It's a score you have to play—and you need an instrument. This is really different from 19th- or 20th-century photography. If we now refer to the digital photograph as a digital file, the notion of “original” has no meaning. Each copy is an original. That makes a big difference for a fine art collection.

James Reilly: I agree that you need to distinguish between the digital file and the physical object created from the digital file. Both have preservation problems. Big ones. You have to move the digital file forward from one hardware and one software platform to another, and the only strategy that seems to work is the creation of digital repositories. It has to be done centrally in some functional deposi-

tory. So far, they're not very cost effective and are complicated by the need for human intervention. We're not benefiting as much from lowering the costs of mass storage as we thought. On the other hand, all the hard copy output—the ink-jet prints and so on that are made from the files—that's a totally different problem. In the long run, we'll probably have better luck making stable, digital hard copy prints than in solving the problem of preserving the digital file. We're creating digital files so much faster than we're creating any enduring way to preserve them.

Bertrand Lavédrine: Do you think that a fine art museum will be ready to acquire a digital photograph just by buying a file and not a print? Or is there really now the question in fine art photography of whether to buy a photograph and not a file as well.

James Reilly: I suppose that in the fine art realm, there will be acquisitions of digital files, but it will be quite some time before the digital file becomes a central focus of preservation in the fine art context. It will come, but not soon. I find it difficult to imagine the pure digital file being seen as the work and the key thing to apply art preservation to.

Jeffrey Levin: *So, Teresa—have you had to conserve any digital files lately?*

Teresa Mesquit: No, I haven't. I doubt if traditional photographic conservators will be involved in preserving digital files. That would more likely fall into the hands of preservation officers or librarians or specialists who have to deal with migrating the files elsewhere. The rest of us will probably deal with the output.

Marc Harnly: Several years ago, the American Institute for Conservation formed the Electronic Media Specialty Group, which now meets regularly, like the other groups for paintings, objects, and photographs. There are “techie” conservators who are really

attracted to this area—which is great for the field. Conservators have to be somewhat knowledgeable about the preservation of digital files as well as of the objects themselves. The conservators in this group will keep the artistic issues in the preservation discussion so that they are not lost among all the technical issues.

Jeffrey Levin: *In what ways can the private practitioner in photographic conservation—someone who is not working with an institution—contribute to the advancement of our understanding of photographic material?*

Teresa Mesquit: For one, private conservators are among the pioneers in a field that had no formal training until the mid-1970s. Over the years, their studios have served as vital training sites for students of photographic conservation. Also, some have hosted a number of hothouse-style workshops aimed at developing new treatment techniques. These are big contributions, I think, and perhaps they are specific to the treatment emphasis that guides private conservators.

Marc Harnly: Conservators in private practice have a great deal of anecdotal knowledge about photographs and how they react to treatment. This can be used to guide research. There are many motivated private conservators who conduct their own research and produce and publish relevant and useful information.

Bertrand Lavédrine: In France, conservators are mainly in private practice. But they work for institutions. Whether conservators are private or not, they do have the contact with the object and are the interface between the scientist and the object. They always can formulate problems and questions, and some of them are also heavily involved in conservation research and analysis.

Jeffrey Levin: *Is there more that can be done to share the results of research in a practical way with conservators so that the knowledge gained can be applied in a way that makes a difference?*

James Reilly: Much more. It should be a two-way flow of information from the field. Private conservators formulate very good questions. There should be more ways that their questions and successes and failures can be shared with the research community and with the field, and vice versa. Research that's done that doesn't get translated into recommendations or useful background information isn't very good research at all. It's critically important that research be communicated to the field in a form that can be used. I also think we should integrate research into the educational opportunities for photographic conservators to a better extent than it is. Student conservators should become aware that the field has a research agenda that they can participate in during their training and their internship experiences.

Bertrand Lavédrine: In good research, the problem has to come from the field and not from the the scientist. And in the end, the results have to be given back to the community, which is not always the case. Dissemination is sometimes a problem.

Teresa Mesquit: There's an albumen photography Web site that, as far as I know, was put together by private conservators. Among other things, it's a forum for exchange of treatment methods that have been tested and found useful or less useful, and it has a database that can be added to. It also gives historical background on the albumen process, along with a demo. That's a huge contribution from private conservators. It's also a great template for any other aspect of photo conservation that would be addressed on the Web in the future.

Marc Harnly: I frankly believe there are good avenues for sharing knowledge. Organizations of conservators meet frequently, there are numerous publications, and the Web has proven useful in disseminating information. The Web is only going to get more useful in sharing information. I think more could be done to get information out to countries that don't have access to these organizations and publications. I do agree that researchers should always consider what venue is going to be used to present results to ensure that they're going to reach as wide an audience as possible.

Jeffrey Levin: *Does more need to be done to convey scientific research and its results into the hands of the people who are actually working on the objects?*

James Reilly: Yes, I think so.

Jeffrey Levin: *And how can that be done?*

James Reilly: You build it into the project right from the beginning by picking good problems that you can make progress on and by thinking them through as far as you can. You don't know what you're going to find when you embark on research. But you can have at least some tentative thoughts on how it might be communicated, beyond writing a technical article or giving a paper at a conference. You build it into your research. You may also conceive projects that are primarily about consolidating and communicating knowledge. The default in research is always to go for discovering something new. But it's also very interesting and exciting to put together, in a creative way, knowledge that exists and to communicate it. That's a legitimate kind of research project—a project to figure out ways to communicate to the field what's already known.

Conservation of Photographic Collections

A New Collaborative Project at the GCI

By Dusan Stulik



A few examples from the GCI's study collection of photographs and photographic material. Composed of over 500 items from 1869 to the present, the collection provides GCI scientists with examples of various types of photographic processes. *Photo: Dusan Stulik.*

THE ART OF PHOTOGRAPHY is near infancy when measured against the histories of other disciplines in the visual arts such as painting, sculpture, and decorative arts. For that reason, the conservation of photographic collections and photographic material—when compared to other museum conservation areas—is relatively young, lacking the level and sophistication of scientific and research support for the more established fields of art conservation.

Yet despite its relative youth, it is possible that classical photography—or, as we can call it, chemical photography—will not survive the 200th anniversary of the 1839 public announcement of Daguerre's invention.

Since the 1980s, there have been significant advances in both digital technology and digital imaging. As in the 1960s, when the number of colored photographs produced worldwide first surpassed that of black and white, it is likely that the time is not distant when digital photography will be the primary technology used by photographers. With the increasing acceptance of digital photography, chemical photography might be relegated to a category of alternative photographic techniques and used primarily by enthusiasts of historical photographic processes and photographers wanting to explore those aesthetics that are unique to chemical photography.

If such predictions come true, there is a danger that these dramatic changes in photography will trigger a decrease in scientific research and knowledge related to chemical photography. In addition, the shift of major manufacturers of photographic material from chemical to digital photography or to some other industrial production (a move already under way) will jeopardize the preservation of manufacturing information and collections of materials related to chemical photography technology.



Quantitative X-ray fluorescence (XRF) analysis of photographs. XRF analysis—a nondestructive technique requiring neither sampling nor direct contact with the photograph—provides qualitative and quantitative information about inorganic elements in photographic material. *Photo: Dusan Stulik.*

Identifying Research Needs

It was with these issues in mind that the Getty Conservation Institute, in collaboration with other organizations, began exploring ways that it could help expand the existing body of knowledge regarding photographic conservation. The first major step in this process of identifying the essential needs in the field was a three-day meeting organized by the GCI and the Image Permanence Institute (IPI) in Rochester, New York, in August 2000. More than 30 conservators, conservation scientists, educators, and curators from around the world participated in the discussion, centering on the identification of the most important research issues related to the conservation of photographs and photographic materials.

At the meeting, a number of research ideas were suggested that encompassed many branches of photographic conservation and scientific research; there were also ideas focusing on ancillary issues, such as the presentation and exhibition of photographs, as well as art historical research. By the end of the meeting, one research issue emerged as dominant: the development of methodologies to enable more detailed characterization of photographic material. While other questions related to conservation treatment, handling, exhibition, storage, authentication, provenance, and the artistic techniques of individual photographers were held to be important, it was the consensus of the group that the first task should be a better understanding of the chemical structure and context of the photograph.

Subsequent to the meeting, the GCI Science group decided to test research ideas put forward in Rochester by conducting a small feasibility study in order to define the methods, structure, and goals of a possible full-scale research project more clearly. As part of that

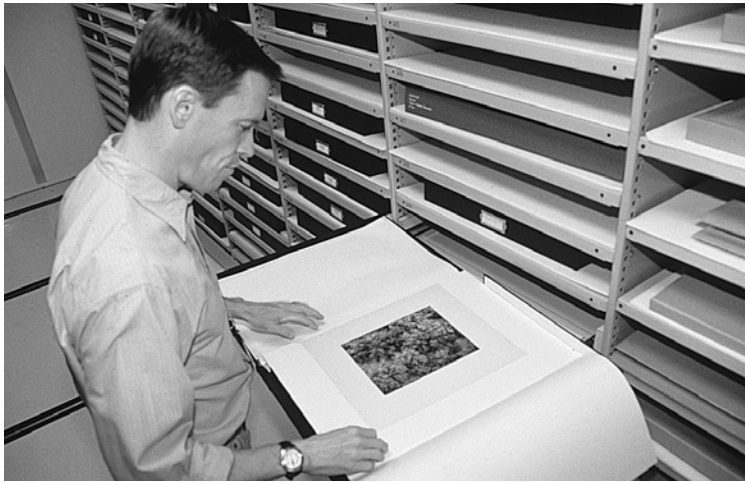
study, GCI scientists analyzed the Durieu Album (see *Conservation*, vol. 16, no. 2), one of the important objects in the photographic collection of the George Eastman House in Rochester. This private album of French photographer Eugène Durieu (1800–1874), renowned for his artistic collaboration with French painter Eugène Delacroix, contains 115 mounted photographs of landscapes, portraits, and nudes, as well as photographs of etchings by Rembrandt and Watteau.

In studying the Durieu Album, GCI scientists used nondestructive techniques—X-ray fluorescence (XRF) and Fourier transform infrared spectrometry (FTIR)—to analyze the photographs. XRF spectrometry, an important tool in conservation research and museum analytical practice, can identify and quantify the majority of chemical elements of the periodic table. Just as XRF analysis provides both qualitative and quantitative information about inorganic elements present in photographic material, FTIR provides information on organic components. Both techniques are nondestructive: neither sampling nor direct contact with the photograph is required.

XRF spectrometry and FTIR analysis of the Durieu photographs in the album indicated that Durieu experimented with different toning procedures on photographs throughout the album. For example, a number of photos were apparently toned with platinum; several were toned with gold; and several were not toned at all. Even more intriguing, some photos combined both platinum and gold toning.



GCI assistant scientist Herant Khanjian conducting an analysis using Fourier transform infrared spectrometry (FTIR). FTIR provides information on organic components in a photograph without sampling or direct contact. The new GCI project will further develop a methodology of FTIR analysis of photographic material. *Photo: Dusan Stulik.*



Photographic conservator Marc Harnly of the J. Paul Getty Museum inspects photographs in the Museum's photographic storage room. Photo: Dusan Stulik.

These results were unexpected, because the earliest published reference to platinum toning was in 1856. A number of photographs in the album were printed in 1854, so it is possible that Durieu's photographs are the oldest existing examples of platinum toning. Furthermore, the findings suggest that these photographs are the earliest known examples of combination toning. The FTIR results also provided interesting insights into early experimentation with organic coatings and varnishes.

The successful use of XRF spectrometry and FTIR analysis on the Durieu photographs demonstrated the potential for employing these nondestructive techniques for research on the characterization of photographic material and for the identification of photographic processes.

A Collaborative Project

Following the completion of the feasibility study, a full collaborative research project focusing on the identification of photographic material was developed. The project on the conservation of photographic collections, officially begun in July 2001, is a collaboration among the GCI, the IPI, and the Centre de recherches sur la conservation des documents graphiques (CRCDG) in Paris. The project seeks to advance techniques for identifying important variations in photographic processes, providing greater insight into the processing chemistry and postprocessing chemical treatment of photographs. The first phase of the project is focused on the characterization of photographic material by use of instrumental analytical techniques.

The project partners are working both independently and collaboratively on several areas of research. For the identification of photographic processes, the IPI and the GCI are expanding a "decision tree" that was first developed by James Reilly, director of the IPI. The decision tree, once expanded by the inclusion of analytical techniques, can help identify process variants.

The CRCDG is currently developing microsampling techniques for the study of multilayer structures of photographic prints and film plates, paper-based photographic substrates, and the chemistry of both baryta and gelatin layers on 19th- and 20th-century photographic material. The CRCDG is also collaborating with the GCI on the preparation of well-defined test samples needed for the development and testing of scientific methodology for the identification of photographic material.

At the GCI, the project team is concentrating on analytical research using XRF spectrometry and FTIR analysis. A major focus of the project is to develop a methodology of nondestructive FTIR analysis of photographic material using reflection, attenuated reflection (ATR), and angle-resolved ATR analysis, as well as molecular mapping of cross sections of photographic material.

As with all GCI projects, an important component of the work is the dissemination of project results to the broader conservation community. The collaborative research team meets regularly to exchange ideas and results, some of which were shared at the interim meeting of the ICOM Photographic Material Group in Paris in September 2001. Results of the collaborative research project with the George Eastman House and the Mellon Graduate Fellowship Program on the photographic analysis of the Durieu Album will be presented at the ICOM-CC conference in Rio de Janeiro in September 2002. And GCI studies on the quantitative XRF analysis of photographic material and on the FTIR analysis of photographic coatings and varnishes will be presented at the Conservation Science 2002 conference in Edinburgh in May 2002.

Dusan Stulik is a GCI senior scientist and the Institute's manager for the conservation of photographic collections project.

Conserving Mosaics in Tunisia

By Thomas Roby and Jeffrey Levin



View from the central restored garden of the Maison de la Cascade at the Roman site of Utica in Tunisia. The view is north toward the reconstructed main doorway. Excavation of this large house during the 1940s to 1960s uncovered numerous figurative and geometric mosaics. In a room off the peristyle, trainees carry out maintenance operations on the mosaic pavements. *Photo:* Richard Ross.

MUCH OF THE ART BEQUEATHED TO US from the ancient Mediterranean world is in the form of mosaics.

“Mosaics are among the most durable forms of decorative art to have survived from antiquity,” writes Katherine M. D. Dunbabin in her *Mosaics of the Greek and Roman World*. “Pavements of this type have been found by the hundred thousand in buildings of the Roman period from northern Britain to Libya, from the Atlantic coast to the Syrian desert.”

Preserving this vast heritage, which provides a window into life in the distant past, is a considerable conservation challenge. Roman mosaics typically served as pavements in structures that long ago fell into ruin. Subsequent excavations have left many mosaics exposed to the elements in a way never intended, and the result has been their deterioration. Early excavators frequently removed mosaics, which may have preserved the mosaics themselves, but in the process they deprived sites of significant elements that were important for an understanding of their architectural and historic character.

Today there is greater recognition of the importance of preserving in situ the archaeological elements of a site, and mosaics are more likely to be left in their original locations. To effectively conserve and maintain mosaics in situ requires an understanding of the causes that lead to their deterioration, the development of methods to reduce the impact of those forces, and the training of professionals and technicians to carry out those methods.

With all this in mind, the Getty Conservation Institute began a project in the late 1990s to address a number of important issues related to the conservation and management of ancient mosaic



Assessment of the condition of a mosaic after reburial. Different materials and techniques used for reburial of mosaics were introduced during the training. Here, the effectiveness of a temporary protective covering of sand is evaluated after three years. *Photo: Richard Ross.*

pavements in situ. Focused on the Mediterranean region, the project builds upon previous GCI activities related to the conservation of mosaics. These included coorganizing a 1995 conference on the conservation of Mediterranean archaeological sites and cosponsorship of the 1996 conference of the International Committee for the Conservation of Mosaics, held in Nicosia, Cyprus.

The aim of the current project is to improve the conservation and management of mosaics in the Mediterranean area. One component of the project is research and testing that can contribute to a better understanding of the causes of deterioration of mosaics in situ and to the development of methods and approaches for their conservation—which include stabilization treatments and ongoing maintenance (i.e., regular monitoring, protective measures, and additional stabilization interventions when required).

The other focus of the project is improving the skills of technicians and professionals in the areas of maintenance, conservation, and management of sites with mosaics. Recently the GCI has been providing training in mosaic maintenance for conservation technicians in a country where a substantial number of Roman mosaics have been found.

Tunisian Mosaics

The areas of North Africa along the Mediterranean that were once part of the Roman world are abundant in preserved mosaics—particularly in modern Tunisia. French archaeologist Henri Lavagne, a mosaics expert, has described the mosaics of the region as unquestionably the most inventive of those produced in the Roman provinces.

To preserve these mosaics, those responsible for excavations have, in the past, followed a policy of detaching mainly the valued figurative mosaics from their original locations and installing or storing them in a museum environment. Other detached mosaics, considered of lesser value (such as those with simple geometric designs), were frequently lifted and relaid in situ. While the value lost by removing mosaics from their architectural context is now acknowledged and while detaching is no longer common practice, conserving the mosaics in situ presents a formidable task.

In 1998, as part of the GCI's project on in situ mosaic conservation, the GCI and Tunisia's Institut National du Patrimoine (INP) initiated a program to save this immensely rich heritage from further deterioration. In that year, the GCI began to provide training for INP staff who would specialize in in situ mosaic maintenance.

In 2001, the GCI continued training in conservation of mosaics in situ with a program that involved most of the Tunisian technicians who participated in the 1998 course. As with the 1998 campaigns, this more recent program provided practical training to help the conservation technicians address the basic maintenance

and stabilization needs of in situ archaeological mosaics. The trainees will eventually become an important part of a national strategy to safeguard Tunisia's archaeological heritage by creating maintenance teams based at sites in different regions of the country.

"We have thousands of mosaics," says Aïcha Ben Abed, head of research for the INP. "We have to try to bring the techniques of in situ mosaic conservation into our reality. That means using the technicians we have already—some with a good educational background, some with little education—and introducing them to these techniques."

The hands-on training initiative was carried out at the site of Utica, which 2,000 years ago had been a port city (today the coastline is approximately 10 kilometers away). Excavations undertaken at Utica between 1940 and 1960 revealed numerous and intricate Roman floor mosaics created between the first and fifth centuries. The INP-GCI training campaigns were conducted on mosaics that are part of the remains of a Roman house—the Maison de la Cascade—that dates from the first to the third century. This house includes geometric marble pavements and ceramic pavements, as well as mosaics. The polychrome mosaic for which the house was named was originally the decoration for a fountain and basin; the mosaic depicts a boat with fishermen casting their nets into a sea filled with a wide variety of fish.

The Training Campaigns

The principal aim of the 2001 Tunisian training, which involved nine employees of the INP, was to provide a methodology that would guide the work of the technicians in the future. The method-

ology includes three consecutive phases: study, maintenance planning, and implementation. The study phase involves documenting and assessing the condition of a mosaic. The second phase includes determining the type, extent, and urgency of the maintenance operations, as well as the personnel, materials, and time required, based on the condition assessment. The third phase involves carrying out and recording maintenance interventions.

The methodology taught to the trainees requires that during the above phases, conservation technicians complete written forms that become the core of the documentation file for each mosaic, along with graphic and photographic documentation. That file provides the basis for planning maintenance interventions and the frequency of future monitoring, and it is updated each time maintenance work is carried out.

The training activities were divided into three campaigns. Between campaigns, the technicians had the opportunity to gain additional practical experience on their own, which was later reviewed together with the instructors.

The first campaign was devoted to learning and practicing written, graphic, and photographic documentation techniques in order to gain an understanding of the present situation by recording current conditions (including previous interventions) and then later recording maintenance treatments on the mosaics. The second and third campaigns were dedicated to hands-on, maintenance implementation. They included training on how to select the appropriate lime-based mortars for the various types of stabilization and repair treatments; when and how to carry out specific maintenance interventions, such as removal of vegetation, cleaning, and mortar repairs; and how to carry out ongoing monitoring of the

Graphic recording of mortar repair treatments. Trainees use previously prepared drawings or photographs of the pavement to document different types of treatments. The recording becomes part of a documentation file for the mosaic which

provides the basis for ongoing monitoring of the mosaic's condition and for planning of future interventions, as required, to prevent further damage and loss. Photo: Richard Ross.



mosaics and how to keep a maintenance file for each mosaic.

To support the learning in the classroom and on-site instruction, the GCI prepared sets of didactic and reference materials for the technicians. In addition, the technicians were equipped with tool kits and other practical job aids that will assist them in future work. The tool kits contained basic equipment for treatment activities, such as spatulas, sponges, brushes, dental tools, and scalpels.

As the job profile of a mosaic maintenance technician does not yet exist but rests somewhere between that of a conservator and a worker, these training activities must be considered experimental, and their success can be determined only with time. However, in a country that lacks many trained conservators, this type of technical worker—operating under the supervision of a site director but with a certain degree of autonomy regarding work methods and materials—presents the best possibility for carrying out the regular monitoring and routine interventions of maintenance that are necessary to prevent the loss of in situ mosaics.

Aïcha Ben Abed of INP believes that while this training approach is new to Tunisia, “the results that we can see are more than positive, more than encouraging.” She observes a greater awareness among the technicians for the value of the mosaic itself, as well as the development of a new way of thinking about and handling the mosaics. Unexpectedly, over the course of the training, the group coalesced into a team. “They work together, they discuss together, they make decisions together. The big decisions are group decisions. That is a change.”

A fourth and final training campaign for this group of technicians is planned for late spring 2002. In the fall, the GCI and the INP will begin another series of campaigns at the Roman and Byzantine site of Mactaris, with a new group of trainees primarily from the central region of the country. The continuing training activities are part of a developing strategy to create regional teams of maintenance technicians in order to respond to the great need for regular care of mosaics at numerous sites throughout Tunisia.

In addition, to complement the training initiative for mosaic conservation technicians and to strengthen the institutional framework and support for their work, the GCI and the INP are developing together workshops in site management planning for directors of archaeological sites and for other INP staff. This initiative will give site managers, archaeologists, and mosaic conservation technicians an opportunity to interact and to develop a mutual understanding of the technical and administrative means required to prevent the gradual loss of in situ mosaics.

Thomas Roby is a senior project specialist with the GCI and is the Institute's manager for the mosaics training program in Tunisia. Jeffrey Levin is editor of Conservation, The GCI Newsletter.



Trainees and instructors performing cleaning and stabilization treatments. Stabilization work utilizes different lime mortar mixes to reset and fill gaps between the individual elements of two different types of Roman pavements—*opus tessellatum* (foreground) and *opus sectile* (center). Photo: Richard Ross.

Copán

This winter, Getty Conservation Institute staff continued their conservation assessment of the hieroglyphic stairway at the Maya site of Copán, with two field campaigns to the site in December 2001 and February 2002. The conservation of the stairway is part of the Institute's Maya Initiative and is a collaboration with the Instituto Hondureño de Antropología e Historia (IHAIH).

In order to develop an appropriate conservation strategy for the stairway, the project team had proposed last spring to undertake a limited range of treatment trials for the stairway (see *Conservation*, vol. 16, no. 2). In December, the team traveled to Copán to carry out the first of these trials.

The trials are designed to evaluate methods and materials to support and protect those areas of the carved stone where localized flaking and fissuring of the surface are taking place. They will also help develop potential interventions to address the poor condition of the jointing mortars on the stairway. Further trials and analysis will be undertaken at the Institute's laboratories to evaluate the behavior of the material used in past treatments and to test for other potential treatment materials in preparation for the next two campaigns.



Local personnel and GCI staff member Thomas Roby (right) constructing sieves for use in the preparation of repair material for the hieroglyphic stairway at the Maya site of Copán in Honduras. The project team developed mortar mixes from both local material and a combination of local and imported materials. The mixtures were then placed in molds for a range of mortar testing. *Photo: Richard Ross.*

In February, GCI team members traveled to Copán to adjust the site monitoring equipment installed at the site in spring 2001. Team members also continued training of IHAIH personnel in the control and maintenance of monitoring equipment.

Between campaigns, the team continues to conduct important archival and bibliographic research. The information gathered will contribute to the team's evaluation of the range of damage to the stairway.

Wall Painting Conservation and the China Principles at Mogao Grottoes



The ongoing project for the conservation of wall paintings at the Mogao grottoes, a collaboration of the Getty Conservation Institute and the Dunhuang Academy, continues this spring with a six-week campaign.

The project has posed great technical challenges. Among the most taxing problems is the extensive detachment of the one-inch-thick painted mud plaster from the conglomerate rock into which the cave temples are cut. This problem is pervasive in the site's 500 caves. In Cave 85, the large Tang dynasty grotto selected by the Dunhuang Academy and the GCI as the model for the development of a conservation methodology, large areas of wall painting have separated and require grouting to reattach them to the rock.

This spring, members of the project team will return to Cave 85 to begin grouting of the wall paintings. After extensive lab and simulation testing of some 80 grout formulations, a grout was selected for use. Because the grout is water-based, it will mobilize damaging soluble salts, mainly sodium chloride, bringing them to the surface. Solving this problem requires simultaneous grouting and poulticing to remove salts. Special presses to hold the poultice packs in place as the grout sets and dries have been developed, and the efficacy of poulticing is being monitored.

With completion of the physical conservation of Cave 85, expected by mid-2003, it is hoped that the cave will be presented to delegates at the Second International Conference on the Conservation of Silk Road Sites, scheduled for August 2003 (see *Conservation*, vol. 16, no. 2). Some 200 delegates are expected to attend the weeklong conference, which will focus on wall painting conservation, China Principles-based planning methodology, and visitor management issues.

The Mogao grottoes have also played an important role in the development of the China Principles, China's national guidelines for conservation and management of sites, developed by China's State Administration for Cultural Heritage (SACH) and the GCI, in collaboration with the Australian Heritage Commission. The long-standing relationship between the GCI and the Dunhuang Academy, and the support of the Academy's director Fan Jinshi for the Principles, has led to the selection of Mogao for the application of the Principles to the master planning for the site as a whole. The bilingual plan has been completed and will be presented to senior personnel of SACH in Beijing this spring. The process is expected to become a model for Chinese site plans.

In an additional undertaking, the China Principles implementation team at Mogao—the GCI, the Dunhuang Academy, and the Australian Heritage Commission—are developing the visitor management component of the master plan. Now readily accessible to visitors, Mogao is rapidly being transformed into one of China's premier tourism venues. The goal of the Principles team is to determine the safe carrying capacity for the site so that the fragile wall paintings and desert environment will not be adversely impacted by overuse. This multifaceted undertaking involves research in environment and condition monitoring in selected caves, visitor surveys, analysis of interpretation needs, and development of a safe lighting system prototype for the caves.

In a further development for conservation in China, the Dunhuang Academy and Lanzhou University have recently signed a protocol to establish a post-graduate wall painting conservation training school. Professor Sharon Cather from the wall painting conservation program of the Courtauld Institute of Art in London and staff from the GCI are providing advice on curriculum development. Detailed discussions will be held during the spring campaign at Mogao.

Project Terra

In January the partners of Project Terra—the Getty Conservation Institute, the International Centre for Earth Construction–School of Architecture of Grenoble (CRATERre–EAG), and the International Centre for the Study of the Preservation and the Restoration of Cultural Property (ICCROM), Rome—met in Los Angeles to coordinate current activities and to design and develop long-range plans for future projects to promote the study and conservation of earthen architectural heritage worldwide. Project Terra partners also renewed their commitment to the project by formally agreeing to extend Project Terra through June 2007.

Current initiatives of Project Terra include: (1) cooperative scientific research projects on binding and deterioration mechanisms of earthen materials; this research seeks to address gaps in current information and research in earthen architecture conservation; (2) a *Bibliography of Earthen Architecture*, compiled over the past decade by the GCI, which will be posted in PDF format in the Conservation section of the Getty Web site during 2002; and (3) a critical review of the trends and needs found in the research literature of the conservation of earthen architecture and allied fields over the last 20 years, to be published in 2003 as a volume of the GCI's Research in Conservation series.

St. Petersburg Center

The St. Petersburg International Center for Preservation—whose mission is to advance conservation through professional programs in education, information, science, and heritage advocacy—reached several milestones over the past 18 months, strengthening its role as Russia's only independent, nonprofit organization devoted exclusively to art and cultural heritage preservation.

With support from the Getty Conservation Institute, the Center was able to recruit professional staff during 2001. Lyudmila Pechourina, formerly program manager for the British Council in St. Petersburg, was hired as the Center's first full-time Russian director. Sergey Serey-chick, previously with the St. Petersburg Public Library, is the new deputy director.

On February 1, 2002, the Center opened its Nicolaas Witsen Information Facility. The state-of-the-art facility includes a specialized library in conservation, a computer laboratory that accesses online databases, desktop publishing capability, and Russia's first outlet of the Art Loss Register (the London-based international database of stolen and missing works of art). Funding for this new facility—which occupies a substantial wing of the Center's headquarters in the historic Trubetskoy–Naryshkin Mansion—was provided by the government of the Netherlands (see *Conservation*, vol. 13, no. 1). The facility is used daily by conser-



The library room of the Nicolaas Witsen Information Facility. Photo: Courtesy the St. Petersburg International Center for Preservation.

vators, curators, archivists, librarians, and other professionals seeking access to information about cultural heritage preservation issues and technology.

The Center library's core collection includes basic reference materials, as well as donated books from the J. Paul Getty Trust and other partners. A major donation of conservation works came from the library of the late Stephen Rees-Jones Sr., a distinguished scientist and professor of conservation at the Courtauld Institute of Art in London. The donation was made to the Center by Stephen Rees-Jones Jr. in his father's memory.

In September 2001, the Center began a new collaboration with the U.S. Department of State to enhance professional exchanges between Russian and U.S. experts in conservation. The project includes joint partnerships in specialized areas of conservation practice, and it promotes Western expertise that is directly adaptable to the preservation needs and challenges in Russia.

For additional information on these and other developments, visit the Center's Web site (www.artsave.ru).

GCI Lecture Series

As part of its ongoing public programming, the Getty Conservation Institute hosts “Issues in Conservation,” a series of public lectures examining a broad range of conservation issues from around the world. The aim of this series is to introduce lively and interesting speakers from the field of conservation to the general public and to acquaint the public with the broad range of fascinating and complex issues facing those who work to preserve the sites, buildings, and objects that make up the world’s cultural heritage.

Lectures are held monthly on Thursday evenings in the Harold M. Williams Auditorium at the Getty Center. Events are free, but reservations are required. To make a reservation or for further information, visit the Getty Web site (www.getty.edu/conservation/activities/). Reservations can also be made by calling 310 440-7300.

Upcoming lectures for spring and summer include:

Fallingwater: Preserving a 20th-Century Icon

Lynda S. Waggoner, executive director of Fallingwater, will provide an overview of the ongoing preservation efforts to safeguard this Frank Lloyd Wright masterpiece, including the major structural repairs completed during the winter of 2001–02. She will be joined by structural engineer Robert Silman, president of Robert Silman Associates, P.C., the firm chosen to carry out the structural analysis and conservation of the cantilevered terraces.

May 16, 2002

England’s Green and Pleasant Land: Recent Experiments to Link Building Conservation with the Wider Field of Environmental Sustainability

John Fidler, head of Building Conservation and Research at English Heritage, United Kingdom, will discuss recent conservation experiments in England that link the conservation of buildings with the wider, and much better known, field of environmental conservation.

June 27, 2002

Restoring the Light: Recent Developments with the Conservation of Benjamin Henry Latrobe’s Baltimore Cathedral

John G. Waite, principal architect, and Wayne T. Ruth, chairman, Basilica of the Assumption Historic Trust, will discuss the state-of-the-art methods of nondestructive evaluation and testing used to better understand and restore the first Roman Catholic cathedral in the United States.

July 18, 2002

Recent Events

The Potala Thangkas

Conservation as a profession faces many conundrums relating to choices about treatment, storage, or intervention. Such was the case recently when the GCI was asked to advise on the storage and handling of a significant collection in Tibet of *thangkas*—textiles that epitomize Tibetan religious art and that serve as a rich source of Buddhist iconographical information.

Hung in temples and homes or carried by monks in procession, *thangkas* have an important function in meditation and devotion. Typically they include images of the Buddha, representations of the Buddhist wheel of life, and mandalas, or horoscopes, used for prophecy.

Near right: A room in the Potala Palace with some of the wood and leather chests traditionally used to store rolled-up *thangkas*. *Photo:* Neville Agnew.

Far right: GCI Staff members Martha Demas (*left*) and Valerie Dorge (*right*) with the deputy directory of the Potala Palace Administrative Department, Wangdai Duoji (*center*), and Director Qiangba Gesang (*upper right*) examining one of the large *thangkas* from the Potala collection. *Photo:* Neville Agnew.





The Potala Palace in Lhasa, Tibet. Photo: Neville Agnew.

Thangkas first appeared in about the 10th century, some 200 years after Buddhism arrived in Tibet. Traditionally painted on cloth, thangkas are also embroidered, woven, or appliquéd. A fabric border, often of silk brocade, surrounds the cloth panel. There is a small dowel at the top for hanging and a larger dowel at the bottom, the ends of which are usually capped with metal or ivory knobs.

The GCI's guidance was requested on the storage of a collection of thangkas housed in the Potala, the traditional home of the Dalai Lama, in the city of Lhasa. Vast and awe inspiring, the Potala dominates Lhasa, at 12,000 feet the highest capital in the world. Inscribed on the World

Heritage List in 1994, the labyrinthine complex houses thousands of religious texts, scrolls, and artifacts.

The thangka collection, one of the many glories of the Potala, includes some 6,000 items. Although a few of the thangkas date to the 12th century, most are from the last 200 to 250 years; many are in good condition, with their colors still vibrant. While significant collections of ancient and historic horoscopes are found elsewhere—notably in China and in museums in the West—the most important collection in the world may be that of the Potala.

The question that faced the GCI staff invited to examine the collection's storage was whether to recommend that the traditional Tibetan wood and leather chests that have been used for storing the thangkas be replaced by modern metal cabinets. The chests, some with exterior decoration, have themselves become part of history. However, the storage method of tightly rolling the thangkas and packing them into these chests is detrimental to long-term preservation. The tight rolling results in some stress on all types of thangkas, but the painted thangkas are most seriously affected; the paint layer is prone to cracking and flaking as a result of repeated rolling.



At present, the rolled thangkas are stacked upon one another in chest after chest. Given the long history of the collection, its high religious and artistic values, and the fact that some representations are not found in other thangka collections, Potala staff anticipate an increasing demand for research access. Exhibition would be limited, although some thangkas are always hung in shrines in the Potala.

Concerns regarding the suitability of using modern steel cabinets instead of the traditional chests centered on several issues: loss of the traditional storage method; the visual intrusion of metal cabinets in a historic building that continues, in some respects, its traditional functions; the trunks as a part of the history of the collection; and the weight of the metal units on an uneven floor of rammed earth.

The recommendation of GCI staff was that the fragile, painted thangkas be stored flat in museum-quality metal cabinets. Ideally, all of the thangkas should be stored this way. However, flat storage is not feasible for the particularly large thangkas, nor is it practical for the remainder of the collection, in view of the sheer numbers of thangkas. GCI staff further recommended that, where practical, flat storage be introduced in stages and also that consideration be given to modifying the traditional chests with removable spacers to prevent contact.

Much needs to be done, including comprehensive documentation, to safeguard the thangka collection and other treasures of the Potala. Fortunately, the dedicated staff are now receiving help and advice from other institutions, such as the Tibet Museum (which itself has a significant thangka collection) and the Palace Museum in Beijing. The GCI was pleased to play an advisory role in one aspect of the effort to preserve Tibetan heritage.

Alberto de Tagle

Alberto de Tagle, the Getty Conservation Institute's chief scientist, resigned from his position at the Institute, effective January 2002, to accept the post of director of scientific research at the Netherlands Institute of Cultural Heritage in Amsterdam.

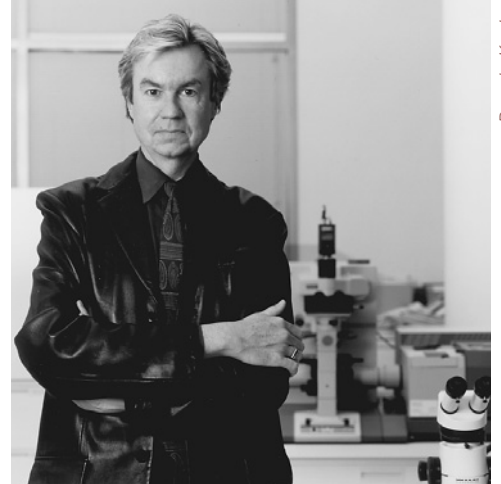
During his tenure at the GCI, de Tagle oversaw work on a number of the Institute's scientific projects, including research on the use of gels cleaning systems and their long-term effects on painted surfaces; studies on the efficacy of sustainable climate control strategies for improving collection environments in hot and humid regions; and research on materials and application procedures used in the treatment of lime-based mortars and plasters.

Prior to his appointment at the GCI, de Tagle was head of the analytical laboratories at the Winterthur Museum and Gardens in Delaware and adjunct associate professor in the Art Conservation Program at the University of Delaware.

Jeanne Marie Teutonico, associate director for field projects and conservation science, will assume oversight for the Science group until a new chief scientist is appointed.

Gary Mattison

Department Coordinator, Science



Dennis Keeley

Rogene Ullman

Senior Staff Assistant, Administration



Dennis Keeley

Gary Mattison is department coordinator for the Science department, overseeing budgets and contracts, coordinating staff support, and working with administration and other areas of the Getty Trust on operations and related issues.

Born and raised in St. Paul, Minnesota, Gary has lived a life greatly centered around the arts. At six, he began piano lessons, and by high school, he was serving as the musical director and pianist for musicals at local high schools. At St. John's University in Minnesota, he majored in piano and then earned a master's degree in piano performance from Wichita

State University. Although interested in film scoring and drawn to California, he returned to St. Paul and spent seven years as the cofounder and director of the St. Paul Piano Conservatory, performing, teaching music, and writing published pieces for piano.

He moved to California in 1986, going to work at South Coast Repertory in Orange County, working his way up to annual fund manager. In 1990, he was hired as development director for the Orange County Philharmonic Society. He then moved to Los Angeles in 1994, where he worked briefly as director of development for an AIDS organization before being hired as the office manager for Disney Television Legal, coordinating the handling of

contracts for Disney TV shows and placating attorneys' egos.

In 1996 he was hired as the administrative manager for a large shopping mall. At the same time, he joined the Gay Men's Chorus of Los Angeles; in addition to singing, he was elected to the board, organized fund-raising events that helped fund a tour of Russia, and served as editor for the Chorus's nationally recognized newsletter, *Choruspendence*. Four years later, he assumed the presidency of the West Hollywood Orchestra, established a board of directors, hired a musical director and staff, and created marketing and fund-raising strategies—all while working full-time at other jobs.

Gary started at the GCI in 1998. He enjoys his work immensely, both because of the engaging character of his colleagues and because of the continuous learning curve the job provides. He also appreciates the wide variety of projects and the opportunity to meet conservation professionals from around the world.

As for music, Gary continues to perform solo piano recitals and compose—of late, mostly songs for friends to use as audition pieces. He's now writing a musical theater show about the rise and fall of televangelism.

Rogene Ullman is the senior staff assistant to the GCI's assistant director of Administration, providing administrative support for the department as well as assisting staff with matters relating to human resources.

Rogene grew up in Green Bay, Wisconsin, the only community in the United States that owns its own National Football League team (Rogene, an avid fan, owns one share, courtesy of her mother). She was still in high school when she secured her first job—an after-school position at a local bank.

Following graduation, Rogene had her first major glimpse of the world beyond Green Bay when she traveled to Europe for a month, stopping in New York City on the way. Returning home, she attended cosmetology college and for the next few years worked as a hair stylist. She also took writing and business classes at a technical institute. What she enjoyed most was her weekend volunteer work as a disc jockey at the radio station of the local branch of the University of Wisconsin.

In 1989 she moved to Los Angeles, where she found a job as the office manager and publicist for a company that

provided celebrity look-alikes for movies and events. Ten months later she returned to Green Bay and went to work as an administrative assistant for a small business that sold electronic machines and parts. By 1994 she decided that if she didn't leave then, she never would. Rogene packed up her belongings and drove across the United States with a friend, back to Los Angeles.

With the help of her sister, who lived in Los Angeles, she signed up with a temporary help agency, and within two weeks she was assigned to the GCI. From the moment she walked into the Institute's offices—then in Marina del Rey—she felt that it was the

right place for her. She started as a temporary staff assistant in the Director's Office and later worked for Administration. After six months, she was hired as a limited-term employee, answering phones, filing, and doing light accounting. About a year later, she was made a regular staff member and became more involved in assisting in matters related to staff benefits and orientation. Today she is a senior staff assistant.

Rogene finds her career and the work of the Institute fascinating—and she loves the people she works with.

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