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CONSERVATION PERSPECTIVES

THE GCI NEWSLETTER

SPRING 2012 PHOTOGRAPH CONSERVATION



The Getty Conservation Institute

A Note from the Director



The conservation profession does not get to choose what new and unwieldy media might be its next challenge.

From earthquake-damaged earthen buildings in South America to twentieth-century plastic objects in museums, there is no dearth of unsolved problems that find their way to conservators' desks and labs. However, this profession always rises to the occasion to find solutions based on science and integrity. The conservation of photographs was met head-on by the profession in just this way. In the last thirty years, photograph conservation has advanced tremendously because of committed professionals, the strategic support of enlightened foundations, and the education of a new generation of conservators specialized in photography. This integrated approach reflects a profession at its best.

As this edition of *Conservation Perspectives* makes clear, the nature of photography and its conservation is changing. Rapid and transformative innovations in photography and media in general are both exciting and challenging—indeed, particularly challenging for those of us in conservation. Even as chemical photography fades as a popular medium, the conservation field seeks to enhance knowledge of this form of photography in order to preserve the century and a half of images it produced. Simultaneously, we need to move ahead in acquiring the conservation knowledge sufficient to preserve digital images—images already exceeding in number those produced by chemical photography. Furthermore, we have to find effective ways to share this knowledge with those charged with preserving this heritage.

In support of this last need, the Andrew W. Mellon Foundation has provided significant resources for international training programs in photograph conservation, several of which are described in this newsletter's feature article. The article, jointly authored by five prominent photograph conservators working worldwide, offers a glimpse of partnerships that seek to spread knowledge of photograph conservation from the libraries and archives of historically black colleges and universities in the United States to a Buddhist photography archive in Luang Prabang, the historic royal city of Laos. Another article in this edition explores in more detail one of those partnerships—a GCI collaboration with institutions in the United States and the Middle East. The Middle East Photograph Preservation Initiative is working to enhance skills of photograph conservators in the Arab world, as well as to strengthen the network of professionals in that region, using training approaches the GCI developed for a similar program in southern, central, and eastern Europe.

Two other articles focus on GCI scientific work involving collaborations of a different sort. The first offers examples of GCI engagement with the alternative photographic processes community (photographers who have revived historical photographic methods), a collaboration aiding our effort to build an important depository at the GCI of scientifically studied samples of chemical photography. The second article describes Institute research with the National Media Museum (NMeM) in England, analyzing a variety of photographs in the NMeM's collection—work that has enhanced the museum's understanding of items in its collection and added to our body of knowledge of nineteenth-century photography. This edition concludes with a spirited discussion by a senior research curator of photography at the University of Texas, a Southern California fine-art photographer, and the founder and director of the Image Permanence Institute at the Rochester Institute of Technology. Together they explore the ramifications of the tectonic technological shift in image making affecting both the creating and the preserving of images.

No single institution can tackle these issues on its own. What we hope this *Conservation Perspectives* illustrates is what can be accomplished when the field engages in collaborative relationships that pursue shared conservation goals.

A handwritten signature in black ink, appearing to read 'T. Whalen', with a long, sweeping underline.

Timothy P. Whalen

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A selection of photographic materials from the Getty Conservation Institute's Reference Collection. The Reference Collection, established in the early 1990s, is a repository of reference materials for use in the analysis of art objects. Photo: Dennis Keeley, for the GCI.

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FROM RUSSIA TO LAOS

Building Global Partnerships to Preserve Photographic Heritage

BY DEBRA HESS NORRIS, MARTIN JÜRGENS, NORA KENNEDY,
BERTRAND LAVÉDRINE, AND PAUL MESSIER

Photography collections and their preservation needs are universal. From Laos to Lebanon, these materials include human-readable and more recent born-digital materials, each demanding different preservation strategies. Whether housed in museums, libraries, archives, news agencies, archaeological repositories, or private dwellings, and whether located in sub-Saharan Africa, equatorial South America, or arctic regions of Europe, these collections—ranging from daguerreotypes to cellulose nitrate film negatives to digital prints—may be at risk. Silver and dye-based images fade and discolor, albumen binder layers crack and craze, and gelatin emulsions serve as a nutrient for destructive biological decay. Awareness of the vulnerabilities of these at-risk materials must be increased.

From research libraries to museums to archives globally, the resources and opportunities to guide proper photograph preservation practice are often lacking. While workshops, symposia, webinars, and social media have strengthened communications and possibilities for exchange and for preservation education, they are often too modest in scope or too costly to have a full and long-term impact. Innumerable countries have few to no formally trained photograph conservators. Many major collecting repositories are held privately, and some remain hidden; generally, there is an acute need for on-site and sustained training of all kinds—training that is tailored to specific needs and resources.

Demonstrating the significance and vulnerability of photograph collections is essential. Simplistically, photographic collections may be characterized as fine art or documentary. Increasingly it is the latter category—often massive in size, undervalued, and inadequately documented—that faces the greatest preservation challenge. While digitization and reformatting may be the priority for these holdings, the originals remain threatened and

poorly cared for. Unfortunately, digitization programs normally provide little provision for preservation of the originals.

On the positive side, there are a number of photograph preservation initiatives currently under way that offer effective methodologies and strategies for comprehensive and improved collection preservation practices. Although greater numbers of specialized photograph conservators are needed, preservation initiatives that are achievable in the short term ultimately have significant positive impact on collections worldwide. These preservation efforts, some detailed below, have the additional potential to promote international understanding, increase cultural connections, and enhance global awareness of our collective heritage.

U.S. COLLECTIONS IN NEED

In the United States, the libraries and archives of historically black colleges and universities (HBCUs) include rich repositories of important photographic and other artifacts that form the core of primary research material for the study of African American history from Reconstruction through the Civil Rights movement. These materials are in urgent need of conservation treatment, rehousing, increased accessibility, and improved environmental conditions. The HBCU collections exemplify a staggering number of photograph collections in the United States, where, according to the 2005 Heritage Health Index, more than 40 percent are in unknown condition and 22 percent are in need of conservation.

In recent years, a highly effective consortium—always critical to success—has been instrumental in bringing about improved preservation of photographic collections at sixteen HBCUs where photograph conservation is in its infancy. This multi-year initiative, supported by the Andrew W. Mellon Foundation and led by

the HBCU Library Alliance, Lyasis, the Conservation Center for Art and Historic Artifacts, the University of Delaware, and the Image Permanence Institute, is enhancing preservation practice in these institutions. The program provides practical training in photograph preservation for library staff, assists with project prioritization, stabilizes at-risk collections, educates repositories in cost-effective environmental control, and, most important, introduces HBCU undergraduates to careers in conservation and allied fields. Trainers are identified at each HBCU participant institution to ensure that the lessons learned are shared broadly and are relevant to the challenges faced by collections housed within academic institutions.

This initiative has the added benefit of strengthening diversity within the conservation field. The future growth of photograph conservation is contingent on the inclusion of different perspectives. For that reason, aggressively building this pipeline and connecting with a more diverse constituency must be a primary focus for the field at large.

ICCROM AND OTHER INTERNATIONAL TRAINING COURSES

In large archives, the preservation challenges of sound recordings are connected closely with those of image collections. Original color slide and acetate film collections, as well as sound archives, are frequently in jeopardy. Established in 2007, the Sound and Image Collections Conservation courses (SOIMA) of ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property) address the preservation challenges of sound and image collections—related through their materiality and size. Training activities enhance staff capacity to understand and communicate the value, meaning, selection, and use of sound and image collections in various institutional contexts, with the goal of formulating conservation actions while at the same time learning about the materials' physical structures and vulnerabilities. Offered in Rio de Janeiro, New Delhi, and Riga, Latvia, SOIMA incorporates problem-based learning in large classroom settings.

Adaptation to technological changes and cost-effective preservation strategies form a key component of the SOIMA initiative.

This training program is one of many that have emerged in recent years—offered on a regional or international basis and focused on sharing fundamental knowledge, building a cohort of professionals, and strengthening the capacity for collections care. The training methodology that consists of short, focused courses with leading experts is proven for the delivery of fundamental preservation information. However, longer-term connecting of instructors and participants via distance mentoring or follow-up coursework, as pioneered by the Getty Conservation Institute, is clearly an ideal model where practical. This approach was successfully used in the GCI's Fundamentals of the Conservation of Photographs course, organized in partnership with two institutions in

Slovakia—the Academy of Fine Arts and Design in Bratislava and the Slovak National Library in Martin—and designed to advance the field of photograph conservation in central, southern, and eastern Europe. The initiative successfully expanded the number of specialized photograph conservators in the area and established a regional network of photograph conservation professionals.

ARAB PHOTOGRAPH COLLECTIONS

Photographic materials are the focus of an initiative called the Middle East Photograph Preservation Initiative (MEPPI), situated in the Middle East and led by the Arab Image Foundation, the Metropolitan Museum of Art, the Getty Conservation Institute, and the University of Delaware. The treasures in

question include early photographs by travelers to the region, as well as images by indigenous photographers whose renderings of Great Pyramids and sphinxes, holy sites, and Orientalist vignettes opened the world's eyes to the history and culture of the region in the nineteenth century. Twentieth-century collections range from detailed documentation of archaeological excavations to studio work capturing neighborhoods and personalities, to photojournalistic images of political tumult. MEPPI, a three-year strategic initiative designed to promote the preservation and



Jilliann Wilcox, a senior conservation assistant at the Conservation Center for Art and Historic Artifacts, retouching a photographic collage from Kentucky State University. Photo: Keltie Hawkins.



Participants and instructors from a 2011 workshop organized by the Middle East Photograph Preservation Initiative examine a selection of photographs from the Jafet Library at the American University of Beirut. Photo: Tram Vo, GCI.

awareness of these photograph collections—from North Africa and the Arabian Peninsula through Western Asia—has been generously supported by the Andrew W. Mellon Foundation and the Getty Conservation Institute.

MEPPI commenced in 2011 with three researchers traveling to Middle Eastern countries to survey and collect data about collections of photographs. On-site visits with collection keepers not only assisted in learning about important holdings firsthand but also spread the word about the MEPPI program. The initiative includes three eight-day workshops in Beirut, Abu Dhabi, and a location in North Africa, each one followed by eight months of a distance learning applied practicum and a final three-day meeting with the original workshop participants. With approximately eighteen participants per course, MEPPI will train and connect around fifty preservation professionals. Selected literature and a glossary translated into Arabic will provide lasting resources for future generations. An upcoming symposium for regional policy makers and decision makers that focuses on the photographic heritage of the broader Middle East will connect collection care and allied professionals within and beyond the Middle East. In doing so, the symposium will strengthen cultural heritage preservation efforts of all kinds in this part of the world. (For more information on the MEPPI partnership, see page 11.)

STATE HERMITAGE MUSEUM

A four-year initiative, administered by the Foundation of the American Institute for Conservation, to establish a photograph conservation department at the State Hermitage Museum in St. Petersburg, Russia, is currently under way. This initiative represents a significant chapter in the Andrew W. Mellon Foundation's longstanding and generous commitment to develop the field of photograph conservation—a field that does not exist in

Russia—by providing highly focused education and research opportunities and by firmly establishing photograph conservation professionals at the State Hermitage Museum. Based on a comprehensive survey of the Hermitage's photograph collections, a bilingual computerized inventory was created for forty-four repositories holding over 472,000 photographs. Due to the cultural value and vulnerability of these collections, the Hermitage allocated several staff positions, including one in conservation science, for a centralized department of photograph conservation based in a state-of-the-art storage and curatorial facility currently in the final phases of construction.

Led by an international advisory committee composed of experts in the fields of photograph and preventive conservation, conservation education, documentation, cataloguing, and digital imaging, this initiative trains skilled conservation, collection management, and curatorial staff—building a highly functional team is a central goal—to supervise the cataloguing, care, and preservation of the Hermitage photograph collections. As a result, the newly formed department of photograph conservation at the Hermitage will be a model for best practices in photograph conservation, cataloguing, and digital imaging, elevating practices throughout the museum—including practices for collections of all kinds. This department is unique in Russia and establishes the discipline of photograph conservation in this nation.

The Russian initiative is centered on a series of intensive seminars and workshops hosted by the Hermitage and by numerous institutions in the United States and Europe. To date, nine workshops, led by leading experts,¹ have been conducted on-site in Russia and in the United States and Europe, covering topics including cataloguing, digitization and digital documentation, preventive conservation measures for storage and display, photographic process identification, matting, framing,



Conservator Jiuan-Jiuan Chen leading a daguerreotype documentation workshop for conservation and curatorial staff from Russia's State Hermitage Museum. The workshop was held at Paul Messier's conservation studio in Boston in January 2011. Photo: Karina Beeman, Paul Messier LLC.

storage material, and fundamentals of conservation treatment. Future goals include the establishment of a dedicated website and online teaching resource. Whenever possible, workshops are reviewed and recapped through presentations at the Hermitage. Staff members in key departments are invited to these presentations, thereby increasing the dissemination of information within the institution. The work within the newly formed department of photograph conservation is augmented by English-language training—deemed essential, given the preponderance of English-language photograph conservation literature—and by support for key personnel to travel to international conferences and seminars. Roughly a year into the initiative, a consensus is emerging that longer-term internships for the conservators may be required in order to deepen treatment experience and critical thinking ability. The opening of the newly constructed conservation lab will allow future training to be increasingly based at the Hermitage. The major anticipated benefit will be direct access to the astonishingly deep and diverse Hermitage collections, many of which were previously hidden, in addition to the promotion of the long-term preservation of individual works of art.

BUDDHIST PHOTOGRAPHY IN LAOS

The Buddhist Archive of Photography, funded by the British Library's Endangered Archives Program,² has promoted an appreciation of the significance of photographs in Laos and

offers a highly effective collections care training strategy within this developing country, where preserving cultural heritage has only recently become a priority. Located in Luang Prabang, the historic royal city of Laos, this archive is the first and only local nongovernmental institution to systematically collect and preserve a large number of photographs. Despite years of destruction during and since the revolution in 1975, as well as a significant lack of financial resources, Laos is developing at an astonishing pace. And while the Buddhist Archive of Photography may be a modest institution, the results it has achieved in just the last four years are remarkable. Primary goals include the digitization of photographs for safekeeping and access, production of scholarly publications, and preservation of the originals by preventing theft and insect and mold damage. All of this is a daunting task in a country that tends to renew rather than to preserve the historic, and whose environmental conditions are well suited for biological deterioration.

This initiative was developed by the monasteries of Luang Prabang—not by international NGOs. Highly motivated individuals, including monks, former monks, and consulting conservation professionals, collaborated to provide the Buddhist Archive with a sound foundation within the Buddhist community of monks (the *sangha*) and the local community of Luang Prabang. The long-term involvement of dedicated foreign conservation experts has proven central to the initiative's success. Regular

one-month visits by photograph conservators during the four-year period demonstrate a serious commitment to continuity. These sustained interactions are essential.

Although international norms for cataloguing and descriptions were followed in setting up the archive, it proved essential to retain Lao as the primary language. This allowed the staff to write descriptions without language barriers; later, these descriptions were translated into English. Simultaneously, the first English-Lao glossary of technical photographic terms was produced. Training local staff has been a key element of this project. This training has given a small but dedicated group of monks and former monks an education in archival practice and the conservation of photographs. However, despite the fact that regular salaries are offered for the archive's staff, it has been difficult for the archive to compete with the tempting career opportunities in the growing tourist industry in Laos, and staff turnover has been higher than expected.

The Buddhist Archive was built and is operated by Lao locals—local craftspeople and materials were used almost exclusively. The archive therefore comes from within the Lao society. This approach challenged visiting conservators to find new solutions to problems that had long been solved elsewhere. It also meant that materials that might be chosen elsewhere were deemed inadequate for the climate in Laos (e.g., metal cabinets would quickly rust in the hot and humid environment).

The establishment of the Buddhist Archive of Photography in Luang Prabang offers a superb example of what can be accomplished on a local level with a relatively small budget. Support and teaching by visiting experts is often critical to a project's ultimate success, but it must be requested and not imposed. At times, Western models of best practice within photographic archives must be sidelined and more practical approaches adopted instead. Conservation of photographs must be profitable and contribute directly to social and economic improvements and the sustainable development of communities. Alternative solutions—developed locally, appropriated, and

adapted—are essential. These preservation approaches are based on the study of traditional cultures, and combined with innovative technologies allow for more modest operating costs and a wider range of solutions. Likewise, conservation research must integrate traditional knowledge and practices, along with use of local materials.

RISK MANAGEMENT, NEW MATERIALS, AND SUSTAINABLE PRACTICE

With collections around the world, traditional practices for handling, storage, cleaning, pest management, and mold mitigation should be considered as a way to provide affordable and practical conservation approaches for archival collections, while contributing to sustainable development.



Surface cleaning of a formal 1930s portrait of a monk, in the collection of the Buddhist Archive of Photography, Luang Prabang, Laos. This gelatin silver print had been badly damaged by termites. Photo: Martin Jürgens.

Although optimal storage conditions for preservation of photographs are now well understood, many photographic repositories lack the financial resources or expertise to implement change. Therefore, appropriate housings may be hard to purchase regionally, and import fees are prohibitive. Alternatives must be considered. For example, countries in Latin American and Asia have developed their own conservation products made with plants little known at other latitudes. Use of bamboo fibers, wicker baskets, or traditional papers such as Saa paper in Thailand, for instance, offer excellent alternatives to cotton fibers and acid-free double-walled storage boxes. Using standard analytical protocols such as the Photographic Activity Test, we must continue to explore adequate local housing alternatives. Participants in the recent Middle East Photograph Preservation Initiative, for example, will work with the Arab Image Foundation and the GCI to identify more readily available papers, plastics, and mat boards for safe storage of photographic materials.

Relentless natural and human-made emergencies worldwide have focused attention on the critical importance of disaster planning and well-coordinated response efforts. The successful salvage of photographic materials repeatedly serves as a fulcrum for the recovery of cultural identity. Here, the Internet and other technologies unite professionals globally, allowing for more immediate problem solving as the magnitude of these disasters generates vexing challenges—demonstrated recently as conservators and scientists worldwide conferred remotely to advise on the recovery of the hundreds of thousands of photographs immersed in seawater following the tsunami in Japan. Equally challenging is the protection of collections from war and conflict. Emergency preparedness often requires the relocation of displaced collections to safer headquarters or, more tragically, mandates the intentional destruction of images to safeguard identity, resulting in the recent emergence of memory projects such as the UNESCO Memory of the World Program. These projects protect the documentary heritage of humanity against oblivion, neglect, and deliberate destruction.

PHOTOGRAPH PRESERVATION IS UNIVERSAL

Like no other medium, photography is valued across cultural, religious, ethnic, and socioeconomic divides. As such, photograph collections provide an ideal platform for generating awareness and understanding of fundamental conservation precepts, including ethical guidelines, documentation, and preventive conservation measures. Intrinsically valuable in their own right, each of the projects examined here, from Laos to Russia, is united in a greater common purpose aimed at building capacity and making collections of all kinds accessible to scholars and communities now and into the future.

A review of these and other projects and collections worldwide reveals a series of related preservation priorities, including the need for comprehensive collection inventories and conservation assessments. We must introduce standard methodologies and simple tools to better monitor and quantify the changes that alter photographs in continuous and nonreversible ways. We also must establish standardized process terminology and bilingual databases to assist with international documentation and communication, and to further understanding.

All of our activities should be promoted to build visibility. Success spirals and often returns new resources. Partnerships in the Middle East yield new and different preservation opportunities for those regions and beyond. Work at historically black colleges and universities fosters connections for greater diversity, and experiences with on-the-ground emergency response prepare emerging photograph conservators for the out-of-the-box thinking required when working across communities.

While the challenges are imposing, the goals remain clear. We must advance international partnerships; engage policy makers and the public; collaborate across disciplines; demonstrate respect for native communities; strengthen field-based study, training, and diversity; share resources; exploit new technologies; be proactive; think strategically; and affirm the value of our magnificent photographic heritage. Considerable progress has been made, and many promising preservation initiatives are now under way. From photographs on paper to paintings and prehistoric pottery, these targeted preservation efforts are transferable. Through such preservation initiatives, our world can be united—just *imagine*.

Debra Hess Norris is the Henry Francis Chair of Fine Arts and Chair and Professor in the Department of Art Conservation at the University of Delaware. Martin Jürgens is photograph conservator at the Rijksmuseum Amsterdam; he has been traveling to Laos regularly since 2007. Nora Kennedy is the Sherman Fairchild Conservator of Photographs at the Metropolitan Museum of Art and on the adjunct faculty at New York University. Bertrand Lavédrine is professor at the Muséum National d'Histoire Naturelle in Paris and director of the Centre de Recherche sur la Conservation des Collections. Paul Messier, a Boston-based conservator working in private practice, is the codirector of the Foundation of the American Institute for Conservation's Mellon-funded Hermitage Initiative in Photograph Conservation.

1. These workshops have been led by instructors representing institutions such as the Winterthur Museum/University of Delaware Program in Art Conservation, the Conservation Center for Art and Historic Artifacts, Centre de Recherche sur la Conservation des Collections, the Metropolitan Museum of Art, and the Weissman Preservation Center at Harvard University.

2. http://eap.bl.uk/database/overview_project.a4d?projID=EAP086;r
http://eap.bl.uk/database/overview_project.a4d?projID=EAP177;r
http://eap.bl.uk/database/overview_project.a4d?projID=EAP326;r

MEPPI

Preserving the Photographic Heritage of the Middle East

BY SEAN CHARETTE AND TRAM VO

THE HISTORY OF PHOTOGRAPHY IN THE MIDDLE EAST IS RICH AND UNIQUE, offering fascinating glimpses of life, culture, and artistic expression in the region since the medium was adopted there in the 1860s. Strong regional interest in photography persists, as seen in the work of an active community of contemporary artists and photographers. But until recently, despite this interest in the medium, the importance and value of the vast corpus of photographic materials that resides in institutions across the region were not generally recognized, and few provisions were made for the works' preservation. Since photograph collections are often not registered or catalogued, there is little compiled or shared knowledge on any scale that can provide a meaningful picture of this invaluable heritage. Typically, there are few resources allocated for the stewardship of photographic materials, including academically trained photograph conservators who can provide informed care for these collections. This situation is by no means unusual, but the needs in the Middle East are compelling and urgent.

The Middle East Photograph Preservation Initiative (MEPPI),¹ begun in 2011, is a strategic approach to preservation and awareness building that aims to leverage the strengths and experience of each partner in the initiative in order to address these needs. During the next three years, MEPPI will stimulate the growth of a group of professionals in the region who understand the photographic heritage and who are committed to advocating and caring for it over the long term. Importantly, the initiative also seeks to learn and share more about photographic heritage in the region and to promote its value to the public and to decision makers.

THE MEPPI PARTNERSHIP

The organizations that contribute to MEPPI—the Arab Image Foundation (AIF), the Art Conservation Department at the University of Delaware, the Metropolitan Museum of Art, and the Getty Conservation Institute (GCI)—all have a history of working



Portrait of an unknown man in Syria, taken by professional photographer Krikor Missirlian. The photograph is part of the Jenny Marrash Collection of the Arab Image Foundation. Photo: © Arab Image Foundation.

in the Middle East, as well as a commitment to preserving photographic heritage. As MEPPI's work progresses, additional regional partners will join in support of specific aspects of the initiative's program. In this way, MEPPI can bring together like-minded institutions that recognize that more can be accomplished by working collectively than through individual, uncoordinated activities of limited reach. With this unique collaboration, supported partly by generous funding from the Andrew W. Mellon Foundation, the project partners can create a program for sustained learning and communication that encourages a comprehensive commitment to the region's photographic heritage.

At the heart of MEPPI is a series of three successive courses held between 2011 and 2014. The first course was conducted in November 2011 in Beirut. Venues for the second and third courses will be in Abu Dhabi and in a location in North Africa. The courses—each with a different group of participants—consist of an eight-day workshop followed by an eight-month program of distance learning, during which participants carry out practical assignments at their own institutions and report on



A panorama of Cairo. Photographer unknown. Photo: © Fouad Debbas Collection.

these through a course website. The assignments are intended to help each participant put newly gained knowledge into practice; the work is guided by course instructors and shared with the larger group. Each course ends with a final meeting that reconvenes participants and instructors to discuss their accomplishments and challenges and to share perspectives on how best to advance photograph preservation in the region. Over the three years of the initiative, these activities will provide training, resources, and many opportunities for dialogue to approximately fifty collections keepers from Middle Eastern institutions.

The MEPPi course curriculum was developed by Debra Hess Norris, Henry Francis DuPont Chair in Fine Arts and Professor, Art Conservation Department of the University of Delaware; and by Nora Kennedy, Sherman Fairchild Conservator of Photographs at the Metropolitan Museum of Art. Both Norris and Kennedy have long histories of contributions to photograph conservation, and through MEPPi they are sharing their experience with professionals in the Middle East. Both women have written about the photographic heritage in the region and its preservation, including articles that describe a two-week training institute they conducted in 2009 with the Arab Image Foundation. (Norris and Kennedy also contributed to this newsletter's feature article, which highlights some other priorities for the field; see page 4.)

The Arab Image Foundation, under the leadership of Director Zeina Arida, is crucial to the initiative as the lead

regional partner. The foundation has an extensive record of building relationships with the larger world of photography and with those who work within it—including collectors, preservation professionals, archivists, and photographers. Since its founding in 1997, AIF has been a strong advocate for the importance of collecting and preserving photographs, as well as a leader of research into collections in the region. Indeed, as part of MEPPi, AIF is surveying collections in the region to identify and record pertinent information about these collections, including size, significance, mission, condition, and resources; this information will be compiled into a database by the AIF to assist individuals interested in the care and study of these collections. AIF's daily work to collect, exhibit, and preserve the photographic heritage of the Middle East places it in an ideal position to sustain the relationships created through MEPPi and to serve as a hub for a growing regional network of photograph professionals.

GCI INVOLVEMENT

The GCI is also working to improve the field of photograph conservation in several underserved parts of the world, including the Middle East. As part of its mission to advance the conservation profession internationally, GCI Education seeks ways to make the learning experience more meaningful and productive for learners and looks for ways to build sustainable professional communities.

A number of GCI Education activities—including MEPPi and an earlier GCI course, Fundamentals of the Conserva-

tion of Photographs, in southern, central, and eastern Europe (2008–10)—use a model of extended learning that integrates classroom teaching and distance learning activities to provide an ongoing opportunity for learning and communication. This model offers significant benefits, including the capacity to build knowledge in a cumulative way, by revisiting key subjects from different perspectives over time. Opportunities to apply new skills and information in the workplace with expert guidance, as well as the potential for the development of strong professional networks in a region, are other important benefits. As described earlier, MEPPi incorporates this model through its structure of three separate but connected courses, each including face-to-face meetings complemented by a program of distance learning and mentoring. Given the number of people involved in the MEPPi training over its three years—and the opportunities it provides for dialogue among participants, instructors, mentors, and the wider world of photography professionals—the initiative has the potential to make a powerful impact.

In addition to the three MEPPi courses, the GCI will organize a regional symposium, to be developed in partnership with a regional museum authority, which will bring greater attention to the photographic legacy of the region by gathering professionals and policy makers to explore the rich and varied photographic collections of the region and to consider the challenges and opportunities for their stewardship and preservation. The MEPPi partners are also engaged in translating key texts on the care of photographic collections into Arabic; these texts will be made available to course participants as they are completed,

and they will be compiled as a resource on the GCI's website for wider distribution at the initiative's conclusion in 2014.

GCI involvement in MEPPi grows out of its desire to sustain and expand previous efforts to preserve the photographic heritage of the Middle East. Strategic partnerships like MEPPi increase the universe of possible solutions to a challenge by putting the resources and expertise of all of the partners to work to make the greatest impact over the long term. While all of the MEPPi partners are committed to the preservation of photographs, each brings a unique approach, experience, and mission well aligned with the need for preservation training and advocacy. Through the complementary contributions of the initiative partners, this collaboration will provide tailored training to at least fifty collection caretakers in the region. MEPPi will make this training more meaningful by creating a learning environment that supports participants as they apply their new knowledge to their own collections, and encourages them to explore the wider context of other collections, professionals, and resources in the region. Ultimately MEPPi's success depends upon the professionals who care for the photography of the Middle East. Their increasing engagement with photograph preservation—and with one another—has the potential to make MEPPi far more than the sum of its parts.

Sean Charette and Tram Vo are project specialists with GCI Education.

1. For online information about the Middle East Photograph Preservation Institute, see: www.meppi.org/ or www.getty.edu/conservation/.



Instructors and participants in the November 2001 MEPPi course in Lebanon visiting the library and archive at the American University of Beirut. Photo: Nora Kennedy.

COLLABORATIVE RESEARCH

Working with the Alternative Photographic Processes Community

BY DUSAN C. STULIK AND ART KAPLAN

AS DIGITAL PHOTOGRAPHY TECHNOLOGY REPLACES CHEMICAL (or classical) photography, there is a danger that this transition will result in a decrease in knowledge of and scientific research into chemical photography. The consequence would be the loss of crucial information about past artistic, commercial, and experimental photographic processes and technologies.

During the chemical photography era, photographs were created using more than 150 different photographic processes, starting with the so-called First Photograph, created by Joseph Nicéphore Niépce in 1826, and virtually ending in 2005, when Kodak discontinued production of black-and-white photographic paper. The countless photographs produced in this period now reside in numerous historical and art museums, as well as in libraries, archives, and personal collections around the world.

Unfortunately, the chemical nature of many of these photographs usually is not obvious. Photographs in collections are often described in registrar databases simply as photographs (or listed according to their subject matter), without indication of the photographic process used to create them. In many instances, even when a process is specified, the information might be wrong. Without knowing the chemical nature and physical structure of a photograph, it is difficult to prescribe conditions for its storage or exhibition that will help ensure its preservation, and it is difficult as well to determine appropriate conservation treatment.

GCI PHOTOGRAPH RESEARCH

For a number of years, Getty Conservation Institute research on photographs has focused on the development of a scientifically based methodology that would allow photograph curators, collection managers, and conservators to not only recognize all of the major processes from the chemical photography era but also to identify minor processes and process variants that are sometimes difficult to ascertain.

An important element of GCI research is to collect and analyze well-known and well-identified photographs that were



A platinum-palladium print (overprinted with gum dichromate) by photographer Alan Razo, along with its analytical report, in the GCI Reference Collection of artist materials. Photo: Dusan Stulik, GCI.

created using all of the photographic processes of the chemical photography era. While few professional, art, or amateur photographers may use these photographic processes today, there remains an important segment of the photography community that not only employs many of these historical processes but also keeps these processes alive by conducting historical research, experimenting with different formulas and recipes, and using many of these processes in creative work. Several photographers revived old or historical photographic processes in the 1960s, and their activity is best known as the alternative photographic process movement.

In early 2009, GCI scientists established connections with members of the alternative photographic processes community through an alternative photography website (www.alternative-photography.com). Members of this community were invited to join the GCI in the Institute's quest to preserve the material heritage of chemical photography and to help build and maintain an important depository at the GCI of well-described and scientifically studied samples of alternative-process photographs.

To make this collaboration mutually beneficial, GCI researchers have been sharing scientific findings with project participants and with the conservation community at large, using project updates and dissemination of the work through publications and presentations.¹

ALTERNATIVE PHOTOGRAPHIC PROCESSES

Of the many photograph types sent by the alternative photography community to the GCI for analysis, the most frequent submissions were cyanotype photographs—process variants, as well as toning and coating modified cyanotype images. Cyanotypes were also both the largest and smallest photographs analyzed by the GCI. The largest cyanotype was hand delivered from Argentina from the studio of Juan Manuel Ipiña. Elemental analysis of this cyanotype showed the presence of small amounts of manganese, which is not usually found in cyanotype photographs. Analysis of the uncoated and unprocessed paper substrate showed that manganese, together with iron, is responsible for the dark brown color of the paper substrate and is not a component of the cyanotype process.

Monitoring by GCI staff of online alternative-process discussion groups revealed that the quality and consistency of printing papers is a critical issue for most alternative photography artists. Changes in paper chemistry or in paper manufacturing have a great and often negative effect on an artist's work. After conducting hundreds of analyses of different papers from the GCI's Reference Collection and of submitted samples, we found differences in the chemistry of various papers (including different fillers, such as calcium carbonate, white clay, and titanium dioxide) that were sufficient, in some cases, to enable us, through the use GCI lab instruments, to identify the company that manufactured the paper. GCI analysis of modern iron-process prints also provides artists with insight into their success when clearing residual iron from the print. This helps to predict potential changes of print tonality due to aging—knowledge that can ultimately assist in the future conservation of these images.

New York platinotypist Bruce Beck sent the GCI several platinum-palladium photographs printed with different, well-defined and recorded proportions of platinum and palladium sensitizing solutions. Analysis of these photographs showed that the 1995 print did not contain any titanium dioxide, the 1998 photograph had a small amount, and the 2001 print contained a substantially higher concentration. Finding different amounts of titanium in photographs provides an important clue for dating papers—i.e., the capability to sort them according to pre- and post-1995 categories.

Quinn Jacobson in Belgium uses different wet collodion photographic processes. When creating his modern ambrotype photographs, he selected a black glass used by contemporary stained glass artists as his substrate. The GCI's X-ray fluorescence

(XRF) analysis of Quinn's ambrotype proved more complex than expected. Besides the glass components of silicon and calcium, analysis also detected chemical elements responsible for the glass's black color (chromium, manganese, iron, and cobalt). Also detected were high concentrations of barium, strontium, and zirconium, elements not present in nineteenth-century glass—again, a marker for distinguishing modern ambrotypes from earlier ones.

Photosynthesis and anotype prints sent by New Zealand photographer Rosemary Horn offered the first opportunity to measure the light stability of these photographic processes. Using the GCI's microfademeter—an instrument for determining the light sensitivity of an object—the GCI has been able to develop initial data on how fast these images fade. This information contributes to our long-term understanding of the image stability of the different processes from the chemical photography era.

The case studies discussed here represent just a few results generated by the ongoing collaboration with the alternative-process photography community. Even as digital photography becomes the leading photographic technology, the alternative photographic process movement remains the main descendant of almost two hundred years of chemical photography. Because chemical photographs created today will be historical photographs of the future, now is the time to prepare the conservation and research methodology that will be needed for their long-term preservation.

Dusan C. Stulik is a GCI senior scientist. Art Kaplan is a GCI research lab associate.

1. Dusan Stulik and Art Kaplan, "Glorious collaboration: Working with the alternative photographic process community," presentation at ICOM-CC Interim Meeting 2010, Athens, Greece, 19–22 October 2010. Art Kaplan and Dusan Stulik, "Saving the heritage of the chemical photography era: Working with the alternative process community," presentation at APIS 2011, Santa Fe, New Mexico, 6–8 October 2011. Dusan Stulik and Art Kaplan, "Alternative process photography and science meet at the Getty," 7 March 2012; www.alternativephotography.com/wp/alt-proc/alternative-process-photography-and-science-meet-at-the-getty.



Microscopic investigation of a cyanotype print, donated to the GCI study collection by photographer Tatiana Parnikova. Photo: Dusan Stulik, GCI.

PHOTOGRAPHS UNDER THE LOUPE OF SCIENCE

BY DUSAN C. STULIK AND ART KAPLAN

FOR OVER A DECADE, the Getty Conservation Institute has conducted extensive research on the conservation of photographs. This work has included the development of new, scientifically based methodologies for the identification of over 150 historical photographic processes and their variants. In recent years, this work has been enhanced by GCI scientists using the latest advances in scientific and analytical technology to create a portable analytical laboratory. This traveling laboratory can be packed into a container the size of a suitcase and transported to museums, galleries, and existing conservation laboratories.

The portable laboratory has modified the usual *modus operandi* of the analysis and scientific investigation of photographs. Instead of bringing photographs to the scientific laboratory, sophisticated analysis can be performed using nondestructive, and sometimes even noncontact, instruments directly in collection storage areas. Taking the analytical equipment to the photographs (instead of the other way around) eliminates the need for insurance, the potential for damage to the material during transportation, and the removal of the material from its controlled environmental conditions.

The portable analytical laboratory has two main parts: (1) an X-ray fluorescence spectrometer (XRF) for the detection and quantitative analysis of the inorganic components of photographic images, and (2) a powerful infrared spectrometer (ATR-FTIR) for identifying the organic components of the imaging layer of photographs (e.g., albumen, gelatin, and collodion), the substrates of photographic prints and negatives (e.g., cellulose, cellulose nitrate, and cellulose acetate), and a large variety of photographic coatings and varnishes. To study and record the microscopic structure of the imaging layer of photographs, the portable laboratory also contains a portable digital microscope. When needed, other instruments can be included. The GCI portable laboratory can be made operational in approximately forty minutes and requires no more space than a desk measuring 120 by 180 centimeters.

Work with the portable laboratory has facilitated a number of important collaborative research projects that are beneficial to both the GCI research project and to the collaborating collec-



An experimental 1854 collodion photograph by William Henry Fox Talbot, in the collection of the National Media Museum in Bradford, England. This is among the photographs analyzed by the GCI. Photo: Dusan Stulik, GCI.

tions, which gain access to scientific data that allow for the reliable identification of photographs—and, in many instances, lead to corrections, changes, or enhancements of registrar information for a collection.

THE NATIONAL MEDIA MUSEUM

One of the most extensive collaborative projects to utilize the GCI portable laboratory was initiated in 2006 between the GCI and the National Media Museum (NMeM) in Bradford, England. The NMeM's collection of historical photographs is one of the most wide ranging in the world; it includes more than 250,000 images—among them more than 6,500 photographs by William Henry Fox Talbot and several photographic images made by the inventor of photography, Joseph Nicéphore Niépce.

Curators of the NMeM photographs collection identified a number of unusual photographic images that either were not well described in their registrar records or were missing photographic process information. Working closely with curators who conducted historical and art-historical research on the same images, the GCI team solved a number of photograph identification puzzles that had bothered museum curators for a long time. The examples described below illustrate different aspects and challenges of the scientific and historical study of photographs from the NMeM collection.

Photographer William Willis's original platinotype formula was patented in 1873, and his new, improved, and "silverless" platinotype process was patented in 1878. The NMeM collection has a mounted and framed display of Willis's different platinotype photographs, starting with his first attempt to coat a paper substrate with platinum chloride. Later successful examples of different silver- and gold-toned platinotype prints, using both the 1873 and 1878 platinotype processes, are also displayed. It is not known exactly who put the display together and when. After the analysis was conducted, it became evident that some of the descriptions on the display mount did not accurately reflect the chemical composition of the materials. It is important for the future care and interpretation of these photographs that we can now prepare a corrected version of the notes related to Willis's platinotype experiments.

Frederick Evans's photograph *Height and Light, Bourges*, taken in 1900, was presented in 1937 to the Royal Photographic Society Collection of Photographs, currently housed within the NMeM. While the photograph was described on the back as a platinum print, its brownish tonality raised questions among NMeM curators. The XRF analysis, together with the microscopic investigation of the image microstructure, showed that the print is actually a photogravure, printed using iron pigment-based printing ink. This finding indicates that the mere visual identification of platinum prints is not always accurate, and that much cheaper photogravures may pass as expensive platinum prints. (We do not know if Evans himself originally advertised this print as platinum!)



A print labeled "First Photographic Print Made with Vanadium." The GCI conducted XRF and FTIR analysis of the photograph—attributed to William de Wiveleslie Abney—and identified it as a salt print with no vanadium. Photo: Dusan Stulik, GCI.

Infrared (ATR-FTIR) analysis of a William Henry Fox Talbot experimental photograph from 1854 confirmed the inscription clearly visible on the photograph: "Collodion process on paper." If the date on the inscription is genuine, this experimental print might be the first successful test of a collodion-based light-sensitive layer coated on a paper substrate. The history of photography does not describe the use of collodion on paper prior to the second half of the 1860s. What made this Talbot experimental photograph even more interesting was the XRF analysis of the print. The analysis showed a relatively high concentration of barium and strontium, which usually indicates the presence of a baryta layer—a smooth, inert, white coating layer of barium sulfate in gelatin applied to the photographic base in

some processes. To find the application of a baryta layer on an 1854 Talbot photograph was a surprising result. If future historical research proves that the experimental print was indeed made by Talbot in 1854, we will need to change not only the date of the first use of collodion on paper but also the date of the first known application of a baryta layer in photography. If this is proven, Talbot will gain two more important photographic inventions, adding to his already long list of photography firsts.

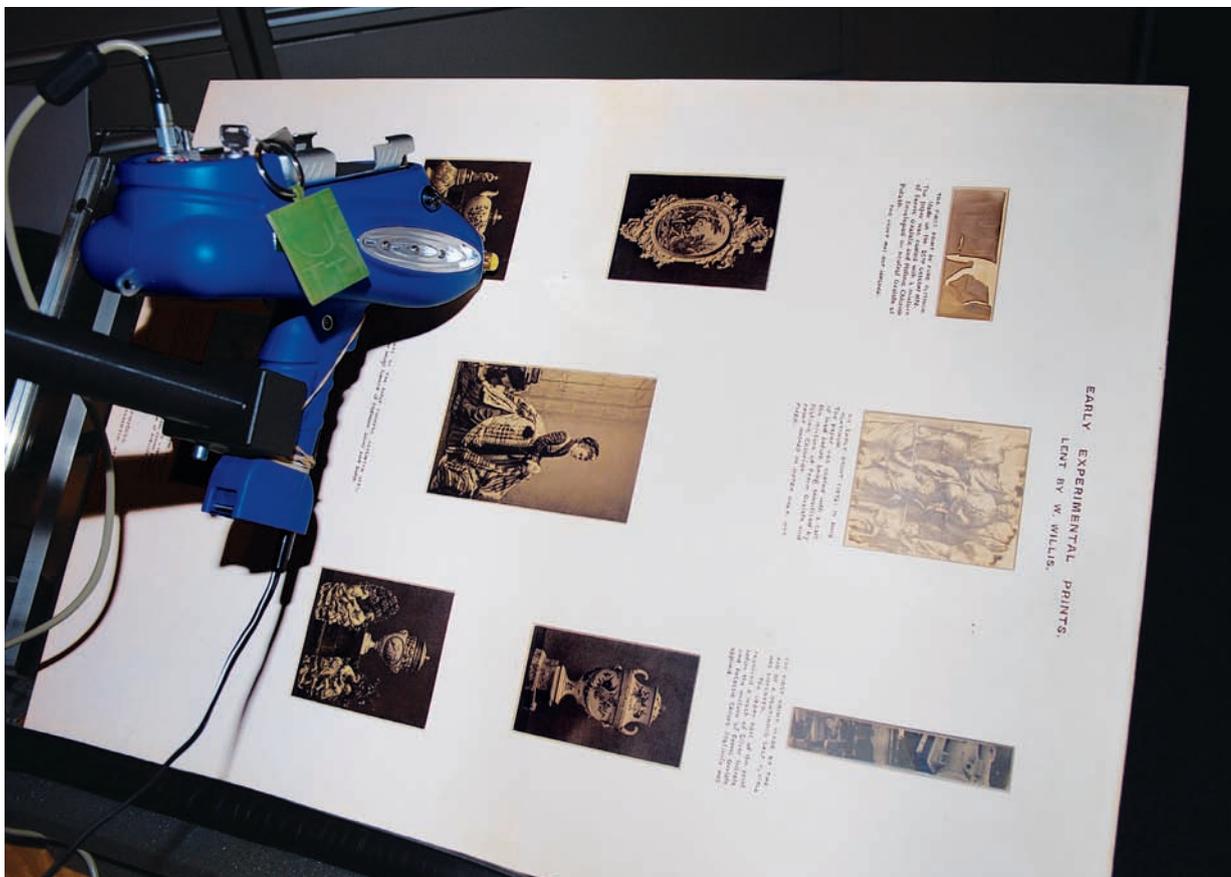
Some of the findings from the GCI–NMeM collaboration have been less exciting, even disappointing. One of the photographs in the NMeM collection was described on its mount as “First Photographic Print Made by Vanadium” by Captain William de Wiveleslie Abney, an important British photochemist of the second half of the nineteenth century. The project team looked forward to the opportunity to record the first analytical signature of the vanadium process. Our historical investigation of the vanadium process in nineteenth-century photographic literature suggested that analysis should reveal a gelatin coating and detect vanadium as the image-forming element.

However, the XRF analysis of the “vanadium photograph” did not reveal any trace of the expected vanadium. Instead, a high concentration of silver was found. Moreover, the infrared

analysis of the photograph did not yield evidence of a gelatin coating. In fact, it would appear that the photograph is just a silver-based salt print. We know that a vanadium photograph is out there somewhere—but we will need more time to find one to use as a sample.

The GCI–NMeM collaboration will provide a wealth of information, not only to both institutions but also to the photographic research community and the public visiting the NMeM. The new information obtained on a number of photographs will add another level of information to the NMeM photography collection. We hope that other museum collections will follow the lead of the NMeM and attach results of analytical investigation to their registrar information, for the benefit of photograph conservators and art historians studying material aspects of photography and photographic technology. Many elements of the GCI–NMeM collaborative project have been published and presented at conferences of the photograph conservation community, and more publications and research tools will be available in the future to conservators and conservation scientists researching photographs.

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XRF analysis by the GCI of a display of platinotype examples by photographer William Willis from his early experiments in the platinotype process, as well as several examples of platinotype photographs using recipes described in Willis's 1873 and 1878 patents. Photo: Dusan Stulik, GCI.

“TECHNOLOGY: NO PLACE FOR WIMPS”

A Discussion about Photography in the Digital Age

ROY L. FLUKINGER is senior research curator of photography and film at the Harry Ransom Humanities Research Center at the University of Texas, Austin. He has lectured and published extensively on regional, cultural, and contemporary photography; the history of art and photography; and film. He has also produced nearly eighty exhibitions, with subjects ranging from classical photographic history to contemporary photography.

CAROL HENRY is a Southern California fine-art photographer whose work has been seen internationally in over two hundred exhibitions. She has been represented in over twenty galleries, including the Ansel Adams Gallery, where she is also a fine-print specialist with expertise in Ansel Adams photographs. She has over thirty years of darkroom experience, and her images are in many private and public collections.

JAMES M. REILLY is founder and director of the Image Permanence Institute at the Rochester Institute of Technology in Rochester, New York. He received a Technical Achievement Award from the Academy of Motion Picture Arts and Sciences and was given the Silver Light Award for Lifetime Achievement from the Association of Moving Image Archivists. He was also the first winner of the Hewlett-Packard Image Permanence Award from the Society for Imaging Science and Technology.

They spoke with **DUSAN STULIK**, a GCI senior scientist, and with **JEFFREY LEVIN**, editor of *Conservation Perspectives*, *The GCI Newsletter*.

DUSAN STULIK Photographs in general occupy a special place in most people’s minds. In an emergency like a fire or flood, people save children first, spouses second, and pets third—but right after that are photographs. What is it about photographs that makes them a high priority to save in an emergency?

JIM REILLY They’re a record of people’s lives, the embodiment of memory. It’s what Kodak was always selling as a subtext about photography—the capture of memories and your life’s experience. If someone is no longer with you and your house is on fire, it’s like saving your collective life together.

ROY FLUKINGER It’s an extension of what [Eastman House curator] Alison Nordstrom once so famously said: “Photographs look like the truth but they feel like memory.”

CAROL HENRY I’ve lived in the Santa Monica Mountains for decades and have gone through the process of packing up in an emergency. I never lost my home, but I was in that scary place more than once. At the time, I had my fine-art archive in the house, and it was a toss-up whether I took my professional archive or family snapshots. Normally, I would do anything to protect my professional work, but when it comes down to it, it’s those family snapshots that help you frame your existence—and that’s why you reach for those things.

STULIK With the change in photography from analogue to digital, instead of grabbing a photo album, you might be reaching for a laptop or a stack of CDs. What are the general ramifications of this huge transition in photography?

REILLY Analogue photography has always embodied a tangible object. It might be a negative, it might be a positive, but there’s something physical there. In digital, it’s divorced from something you can see or touch or relate to in many ways. Even the activity of making digital photographs is kind of cerebral. It’s mostly manipulation—and most of the time, the digital file is not rendered into a tangible object. Analogue has a physical embodiment, and digital mostly does not. That’s the huge difference.

FLUKINGER I agree with Jim completely, but it’s even more complex than that. Technology, in changing to digital, has also changed the human experience of that process. As Marshall McLuhan once said, “It is the framework which changes with each new technology and not just the picture within the frame.” This generation of young people has the ability to change the image digitally. And it’s become much easier and simpler. Previously it was much more obvious when the image had been altered in some form—or it was very difficult to alter it to begin with. So the whole atmosphere around the creation of the image has changed, in terms of its human quotient.

HENRY With digital, there are many opportunities to indulge in a vast range of creativity. The ease of access and sheer volume of creative captures is a visual feast. However, with the new digital media, I feel we've lost the quiet and purposeful time spent planning and the artful practice of executing an image. From the photographers' perspective, the situation is different as well, regarding post-photograph manipulation. These are very powerful and seductive tools. Dedicated photographers from previous generations sought those "ah-hah!" moments. It was part of the addiction to the art form. Now the image is more about the result than about the stalking of the perfect moment. There is a temptation to do your exploring on the computer software level. Which means more time sitting and less time engaged with the subject, whatever your subject is. That affects your connection to the sensitivity and vulnerability of your subjects.

JEFFREY LEVIN Has this transition changed the way you think about creating your work?

HENRY Most of the work that I do is without a camera, and it's on Ilfochrome paper, which will soon stop being produced. So yes, it will change the way I work, because the medium I've been working with is disappearing. I'll be forced to find other creative ways to work. I think when you have a creative mind and eye—and you're used to looking at the world—it doesn't make that much difference which tool you use to document it. But the technical aspects are different.

STULIK Several years ago, the National Museum of Photography, Film and Television in the United Kingdom changed its name to the National Media Museum, to reflect the merging of different visual arts categories under a broader term—media. What are the implications for conservators, curators, and photo artists of this change?

REILLY For a long time, photography fought to be taken seriously as an art form. That was the battle of a century ago. In the last fifty years, nearly all major museums accepted photography as an important form of art and established photography departments. Now you can see that this is coming undone. Photography per se is merging into a broader category of contemporary art and contemporary media, because it has so much in common with video and various other things. The important point is that, as the analogue structure goes away, it further erodes the notion that photography is a major art form in and of itself. I think the analogue photography period—and the objects that were made during it—will become subsumed administratively into museum departments of prints and drawings, because analogue photography will become another graphic medium that has a limited palette or is defined by a particular historical period, like engravings or pencil drawings.

It will be another historical technique and a means of expression that had its moment in time. And we won't speak so much about photography in a broad sense. Digital has undermined the notion of photography as an art form in itself. With digital, yes, you start with something, but it doesn't even have to be a camera image. It's so cerebral and manipulative. The art is in the manipulation. There is still a final product, but getting there is so different.

STULIK For us in conservation, the situation is increasingly complicated. Millions of photographs were created by different chemical processes, and we have to take steps to ensure they are with us in the future. At the same time, we face the challenge of preserving digital photographs—which are objects when they are printed, but are also those illusive ones and zeros.

REILLY The traditional photograph conservation profession is spectacularly ill prepared to deal with preservation of ones and zeros. It's a very different discipline, and we're only at the early stages of figuring that problem out. I'm not sure photography conservation, which grew out of paper conservation, is well equipped yet to address it.

FLUKINGER Any sensible decision you're going to make in the future has to take into account not the world as it is but the world as it's going to be. And this depends in large part upon the commercial field and how that's going to eliminate some practices of photography and bring in other media forms. It also depends on how collecting institutions define themselves in the future. There are many factors involved in that—not only what you collect but why you collect, as well as practical things such as budget, staff, and patronage. Essentially it is still Darwinism. You're going to adapt or you're going to die, and the question of how you're going to do that is what's important. The administrations of these organizations are just beginning to tackle this. It's analogous to what we've done with the literary collections at the Harry Ransom Center. The use of computers by writers preceded the digital applications for photography, and so there have been solutions proposed for the digital written word that now are being adapted for our institution. It's going to have to be the same for digital images. Different things are being tried. Some will work, some won't. It'll be trial and error—and problems and catastrophes are inevitable. I'm not sure solutions are. But you're going to have to adapt as you go.

LEVIN Carol, as an image maker, how concerned should you and other image makers be with these unanswered questions regarding preservation?

HENRY As an artist, long-term preservation was never my primary concern—if it was ever a thought. Once you have a body of work, then, yes, you think about it. Maybe it has to do with



Artists worth their salt should not ignore how these techniques and processes are changing, nor should they be ignorant of what conservators are trying to do to predict the durability of this stuff and to preserve it.

ROY FLUKINGER

age, I'm not really sure. But the drive to create is certainly separate. People are going to reach for the tools and medium that are available and accessible. I'm pleased to know that there are those thinking about preservation, because as artists, of course, we want to see our work preserved.

FLUKINGER Of the image makers I know, some are fascinated by this question of preservation, and some could care less. It depends on the individual artist. But artists worth their salt should not ignore how these techniques and processes are changing, nor should they be ignorant of what conservators are trying to do to predict the durability of this stuff and to preserve it. It's not up to artists to find answers, but it's up to artists to do their part. What's the old Dilbert slogan—"Technology: no place for wimps."

REILLY During the heyday of analogue photography, some photographers, like Ansel Adams, were very interested in the long-term survival of their work. Adams sought out technical information that could help him do that. For manufacturers, by and large, there wasn't much incentive for focusing on permanence and preservation. It's similar today with the information technology world, which is larger and more diverse than photography ever was. Digital technology underlies so many applications in the world. The information technology industry is not very concerned with permanence and preservation either.

FLUKINGER Jim, I recall a Rochester Institute of Technology conference many years ago on conservation and materials, where you guys spent the first morning terrorizing the hell out of us with how the present technologies are not permanent. Then we all went to lunch at the cafeteria, and as we passed the campus store, there was a big display in the window from Kodak with the slogan "Photographs Are Forever." I thought that was a great irony—and not a bad comment on just why we were all there that week.

STULIK Driving to work, I heard a news story that Kodak, which invented digital photography in 1975, is getting out of the field. They are not going to produce any more digital cameras.

FLUKINGER That's the way it is in business—even after decades of success, some businesses fall. It happens in all sorts of commercial enterprises with photography. In the meantime, other ones are now taking their place. The growth of photography was as much commercial as it was independently created.

STULIK But what's interesting is that artists always find a way to adapt. I can imagine people in the past complaining about the unavailability of daguerreotype equipment or plates or whatever. That is very similar to now.

FLUKINGER And yet, right now there are a number of extremely creative artists using what we're calling alternative processes—the old historical processes. Some of them are doing brilliant work that rivals some of the digital work. Artists will always attempt to learn from the past, adapt to the future, and try to do something with it. That's what's exciting about the art of photography.

HENRY There is a great satisfaction from the tactile sense of being in a darkroom creating something. Obviously, the next generation is going to take things to a different place, but you can't stop thinking about the fact that you had this ability to create these amazing and beautiful pieces of art with your hands. I think some are reaching out to find a substitute for the printing ability that they might have had in the past. There's a population of photographic artists out there who have looked at defining themselves in this day and age and have said, "I really want to try these historic or alternative processes," and they have not gotten on the digital bandwagon entirely.

STULIK Carol, you also work for Ansel Adams Gallery. For many people who love photography, Adams represents a pinnacle of black-and-white photography in the United States. But he was a very forward-looking person. He experimented with Polaroid and worked as a consultant for them. With his ability to adapt, do you think Adams would embrace digital photography?

HENRY Ansel was masterful on all levels, and not just as a darkroom printer. He was a visionary, and I believe he would embrace it.



When you have a creative mind and eye—and you're used to looking at the world—it doesn't make that much difference which tool you use to document it.

CAROL HENRY

FLUKINGER He would run full tilt at it.

HENRY He wouldn't quit working in the darkroom, but he would be excited by some of these new tools, and he would definitely indulge in them.

STULIK He spent a lot of time manipulating photographs. His photographs are examples of the best printing techniques, and also of the best darkroom manipulation techniques.

HENRY It's true. Ansel's mastery of darkroom printing was able to bring so much attention to some of the great geographic features that we have in the United States, and to help create the environmental movement through awareness. That was enhanced by the drama that Adams was able to capture at these very dramatic locations. But his printmaking skills amplified the drama of those places, and he was very influential.

FLUKINGER From the beginnings of photography, the creative individual has always wanted to manipulate and alter the image in some fashion—starting with the early daguerreotypes that were tinted by hand. The big issue comes with the medium of communication. At what point does truth have to come forward and present itself in the medium in the communication of fact? It becomes an issue when you are talking about the communication of truth versus non-truth. But the manipulation of photography for a creative purpose has existed from the beginning.

REILLY In digital photography, the process of manipulation has been elevated to a much bigger role in the creative act. There is less and less the notion of being true to what you saw, because software allows you to rearrange color, tone, and objects seamlessly. The manipulation becomes a thing in itself. It takes over the consciousness of the artist and includes a lot of what you had to master to become a good craftsman in photography. Those of us who have experience in the darkroom know very well what those elements of the craft are. But these days, it's inkjet prints. The craft is largely manipulation, sometimes to the detriment of the ability to go out and capture from the world.

With inkjet printing, once you've done your manipulation, virtually your only choice is what kind of paper to print on. That choice was always a part of photography. Certain papers were favored by certain photographers because of their characteristics. But these days, the printers are nearly a given. The next-generation pigment printer from Epson is the one that almost everyone will use. A handful of printer manufacturers are essentially doing the same thing, and what the artist gets to choose is how big it is and whether it's on glossy or luster or matte paper or canvas. The expression, and the dimension where craft comes into image making, are now very different because of digital.

STULIK According to one estimate, in 2011 the number of existing digital photographs—1.9 trillion—surpassed the number of analogue photographs—1.8 trillion. What are major challenges when dealing with the exhibition and acquisition of digital material?

REILLY It's vexing enough with analogue photography to talk about what is a vintage print, and what is an image of similar content unworthy of our attention and preservation. That problem has always been there and is becoming more acute. But with digital, the question of terminology looms large. From the conservator's or curator's point of view, how do you identify all this new digital-output type material? In today's world, they're all inkjet prints, and everybody's making them from digital files. In theory, you could take that digital file and output print after print, so if something gets scratched or it fades or gets torn, you just reprint it. But that doesn't hold up to scrutiny, because the print materials today are evolving so quickly. Every year there is a new generation of papers, inks, and dot sizes, to the point where curators have to admit that a print made five years ago and one printed today from the same digital file are not very likely to be the same thing.

FLUKINGER One institution that is making a serious stab at this problem is the Met. They've changed the way they acquire digital prints, and the type of information they get from artists is much more demanding. I believe they even acquire two copies of the print when they decide to select it—one for immediate use and exhibition and one for deep storage. When the first one

deteriorates, they have a policy of destroying it and eventually using the other. So there are attempts on the part of many curators to adapt to the storage and care of that technology, in the same fashion that artists are trying to adapt to the technologies in the creation of the imagery.

REILLY At the end of the day, if something should happen, yes, it's good to have one to pull out of the deep freeze. But it's not safe to assume that if something happens to the original object, it could be re-created and be the same. It could be re-created, but it would be different.

LEVIN This issue of changes in technology and materials forcing an adjustment in the way artists work has personal meaning for you, Carol, doesn't it? It inevitably affects the character of the work that you'll be doing five years from now.

HENRY Yes, absolutely. Until now I have made one kind of image—a unique print. I have been fortunate to have available Ilfochrome paper, which is a positive receiving print material that works beautifully with the art form as I visualized it—projecting light through the subject directly onto the surface of the paper. In the case of flowers, this process captures and reveals qualities that you wouldn't ordinarily see when photographing the flowers with a camera and reflected light. With the disappearance of Ilfochrome paper, these prints become more special, even though they were already one-of-a-kind prints. I will look back on these days and on the body of work I produced and be proud of it. But at the same time, staying creative and looking toward the future is very exciting!

STULIK A lot of print material is in question now. Kodak stopped producing black-and-white paper in 2005 and later stopped production of all color paper. Now it's Ilfochrome. These technologies are so complex that there is no way for individuals to re-create those processes at home. They need huge machinery using complex chemistry. The knowledge is dissipating very quickly.

REILLY About the limit of what could be done in the kitchen or in the workshop of a serious and determined person or group is to produce a light-sensitive film-like material and maybe a reasonable black-and-white paper, although it may never be the equal of Ilford Multi Grade 4. That's about as complex as that kind of investment, and that kind of technology available to people, would ever get.

REILLY Do you think they'll ever be able to equal a silver gelatin print with an inkjet printer?

FLUKINGER Not yet, but I don't discount whatever is possible in the future.

STULIK But whatever technology we have, technology cannot create a great photograph. Right?

FLUKINGER What's the basic rule of creativity? It's allowing yourself to make mistakes. Art is just knowing which ones you're going to keep. That's the bare bones of it. Technology will constantly change under our feet. Some artists will try to imitate older things, and others will go on to do something entirely different. I don't fear that. What I fear is that they may lose being in touch with their own humanity. But I don't fear that artists won't be able to adapt to new technology. Don't tell artists they can't do anything—because they'll do it.

STULIK Jim, the Image Permanence Institute received a grant from the Andrew W. Mellon Foundation in support of continued research into the preservation of digitally printed materials. Can you tell us about that work?

REILLY Well, there're a lot of different technologies available to make images. What we're doing is studying the major families of technology and trying to understand their strengths and weaknesses. For example, pigment inkjet prints are very susceptible, relatively speaking, to abrasion and physical handling problems. A lot of photographers have discovered how easy it is to mar the surface of matte fine-art inkjet papers and how these papers may not be very resistant to cracking when flexed. Electrophotography, on the other hand, is more robust in some ways, but most people would say it doesn't yet offer the image quality that inkjet can. So what we're trying to do is help people think about broad preservation policies. If you can identify the technology that a print came from, you can be aware of problems that afflict it and adjust your handling and storage policies.

But there's a limit to how far you can take this approach, because there's a lot of product specificity. Liquid toner is different from dry toner in some respects. And one inkjet paper is different from another, or one inkjet-system pigment has different characteristics and dyes. Even within pigments, some are more lightfast and some are more susceptible to pollutants. It's impossible for consumers to know what they're buying, curators to know what they've acquired, and photographers to know precisely what they have, because the products are different and are evolving. What you bought under the same brand name six months ago is likely to be different now. We have to give some knowledge of the broader characteristics of each technology, but it isn't easy to specify what you should buy. The problem was always there, but in the past, products didn't change as much or as fast as today's materials. It takes us months to study these permanence properties, and in some cases years. We find ourselves studying materials no longer on the market.



With digital, the question of terminology looms large. From the conservator's or curator's point of view, how do you identify all this new digital-output type material?

JIM REILLY

FLUKINGER Arthur C. Clarke said that each new technology has its own set of problems. You can also say that each new technology creates its own set of questions. That doesn't necessarily mean it's going to create its own set of answers in the same amount of time. It gets more complex, not less.

REILLY Yes, but we have to try to do the best we can.

FLUKINGER I know, and I admire conservators for being able to tell me not only that this is their best guess but why this is their best guess—and also to be able to say, “We don't know that yet.” That's important. That tells us more than we poor curators know. I value that.

STULIK Is there something we can do regarding the education of artists, conservators, and curators that can help us all understand those issues better, as well as better prepare for the situation in the future?

FLUKINGER I think we've progressed along that road. A lot of the curators now attempt to either have a conservator on staff or know conservators whom they can go to for answers. That was not as true twenty years ago. It has become a more valid part of our education and our thought processes. I think you guys have really had an impact in that respect.

LEVIN How likely is it that members of the artistic community would put energy into documenting the material elements of the creation process—the paper, the printer, and the ink used?

HENRY I think this is a rare opportunity because we're at a point in history where major change is occurring. There is all this concern, and rightfully so, because we don't know about the longevity of these materials. But do I think fine artists will do that? Do I think they will be motivated? Not so much. To be involved with the creative process is like having blinders on. I don't think it will be a high priority for most, even though it would be useful to document this new art form in transition.

LEVIN If we were having this conversation ten years from now,

what would be the most significant considerations, in terms of the making and preserving of images, we'd be discussing?

FLUKINGER The simple answer belongs to Stuart Brand, that great thinker, who once said that when a new technology rolls over, you're either part of the steamroller or you're part of the road. Change will keep coming. Technologies will increase not only in their permanence but in their impermanence, museums will be transforming at the same time, and users are going to be transformative in their own fashion too. There's going to be so much change on both sides of the equation that it's hard to predict.

HENRY I think I have the easiest answer, which is to say, I will still be creating. Every day that I get up, I have this calling and the responsibility to create. I will still be playing with light and creating imagery that pleases my own need for visual stimulation, in whatever medium I can. I will be pursuing that in ten years, and it will be a surprise to me to see what the output is!

REILLY The trends we see today will still be there, but to an accelerated degree. Analogue photography will have more or less completely receded, because it's an economy-of-scale business, and the economics won't be there to support it. People will make more images than ever, and they will make them with ever more personal and more portable devices. The flood of imagery and the ease of transmitting, manipulating, and viewing will continue and grow. But in fine-art photography, there will be greater understanding of the historical differences of technology, and of what it took to create an analogue photograph—the mastery of craft in the darkroom and the boundaries and the challenges that chemistry presented. When people walk through the galleries of an art museum, they'll be more aware that an analogue photograph is a special kind of creation. I don't think we'll be having photography shows of contemporary work—instead, it will be in the form of contemporary art, and the art will be less defined by the technology and more by all the other things that go into it. Any historic analogue photograph will have an extra-special value because it will be recognized as being of another time and another technology.

Key Resources

Photograph Conservation



ONLINE RESOURCES

American Institute for Conservation of Historic and Artistic Works—
Photographic Materials Specialty Group [www.conservation-us.org/
index.cfm?fuseaction=Page.viewPage&pageId=485&parentID=476](http://www.conservation-us.org/index.cfm?fuseaction=Page.viewPage&pageId=485&parentID=476)

Atelier de Restauration et de Conservation des Photographies
de la Ville de Paris [www.paris.fr/loisirs/musees-expos/
atelier-de-restauration-et-de-conservation-des-photographies-
de-la-ville-de-paris/p7672](http://www.paris.fr/loisirs/musees-expos/atelier-de-restauration-et-de-conservation-des-photographies-de-la-ville-de-paris/p7672)

Conservation Online—Albumen Photograph: History, Science,
Preservation <http://albumen.conservation-us.org/>

Foundation of the American Institute for Conservation of Historic &
Artistic Works and the New York Public Library—Characterization
of Silver Gelatin Photographs [www.nypl.org/audiovideo/brief-
history-silver-gelatin-papers-paul-messier?nref=90288](http://www.nypl.org/audiovideo/brief-history-silver-gelatin-papers-paul-messier?nref=90288)

Fundamentals of the Conservation of Photographs, Teaching &
Learning Resources of the Getty Conservation Institute
[www.getty.edu/conservation/publications_ressources/teaching/
photographic_materials.html](http://www.getty.edu/conservation/publications_resources/teaching/photographic_materials.html)

George Eastman House: Notes on Photographs
<http://notesonphotographs.org/>

ICOM-CC Photographic Materials Working Group [www.icom-cc.org/
35/working-groups/photographic-materials/](http://www.icom-cc.org/35/working-groups/photographic-materials/)

Image Permanence Institute www.imagepermanenceinstitute.org/

Institute of Conservation (ICON)—Photographic Materials Group
[www.icon.org.uk/index.php?option=com_content&task=
view&id=28&Itemid=](http://www.icon.org.uk/index.php?option=com_content&task=view&id=28&Itemid=)

Photograph Conservation Research at the Getty Conservation Institute
www.getty.edu/conservation/about/science/photo_cr.html

Regional Alliance for Preservation www.rap-arcc.org/



BOOKS, JOURNALS & CONFERENCE PROCEEDINGS

The Digital Print: Identification and Preservation by Martin Jürgens
(2009), Los Angeles: Getty Publications.

*Encyclopedia of Printing, Photographic and Photomechanical
Processes* (vols. 1 and 2) by Luis Nadeau (1994), New Brunswick:
Atelier Luis Nadeau.

Fundamentals of Photograph Conservation by Klaus Hendriks et al.
(1991), Toronto: Lugus.

A Guide to the Preventive Conservation of Photograph Collections
by Bertrand Lavédrine (2003), Los Angeles: Getty Publications.

History of Photography by Josef Maria Eder (1978), New York:
Dover Publications.

The Illustrated History of Colour Photography by Jack Coote (1993),
Surbiton: Fountain Press.

Issues in the Conservation of Photographs edited by Debra Hess
Norris and Jennifer Jae Gutierrez (2010), Los Angeles: Getty
Conservation Institute.

Memoirs of a Photochemist by Fritz Wentzel (1960), Philadelphia:
American Museum of Photography.

A New History of Photography edited by Michel Frizot (1998),
Cologne: Könemann.

The Permanence and Care of Color Photographs by Henry Wilhelm
and Carol Brower (1993), Grinnell, Iowa: Preservation Publishing
Company.

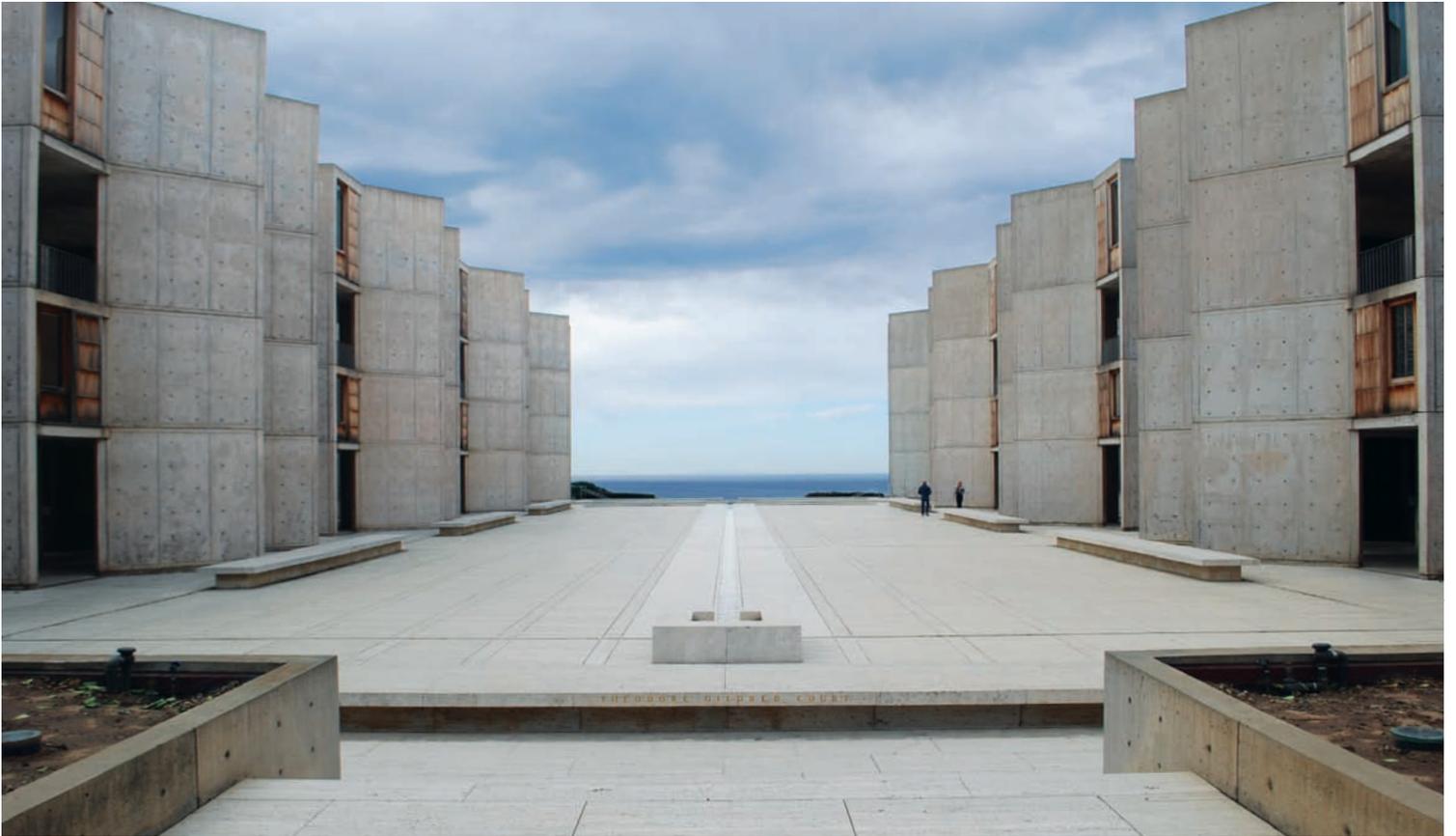
Revoir Henri Cartier-Bresson, papers of a 2008 symposium held in
two parts, the first on 4–7 Oct. at the Centre Culturel International
de Cerisy-la-Salle, Normandy, and the second on 14–15 Nov. at
the Petit Palais, Musée des Beaux-Arts de la Ville de Paris, edited
by Anne Cartier-Bresson and Jean-Pierre Montier (2009) Paris:
Editions Textuel.

“Understanding 20th Century Photographs: The Baryta Layer,”
abstracts of a symposium held on 24 Jan. 2006, Getty Conservation
Institute, Los Angeles. [www.getty.edu/conservation/our_projects/
science/photocon/blr_sympos_abstracts.pdf](http://www.getty.edu/conservation/our_projects/science/photocon/blr_sympos_abstracts.pdf)

Le Vocabulaire Technique de la Photographie by Anne Cartier-Bresson
(2008), Paris: Marval.

For more information on issues related to Photograph
Conservation, search AATA Online at aata.getty.edu/nps/

GCI News



Salk Institute, designed by Louis Kahn, 1965, La Jolla, California. Sited on a bluff above the Pacific Ocean, the Salk Institute is a masterpiece of poured concrete construction. Photo: Gail Ostergren, GCI.

New Projects

MODERN ARCHITECTURE INITIATIVE LAUNCHED

In March 2012 the Getty Conservation Institute launched the Conserving Modern Architecture Initiative (CMAI), a comprehensive, long-term international program to advance the practice of conserving twentieth-century heritage, with a focus on modern architecture. Through research and investigation, the development of practical conservation solutions, and the creation and distribution of information through training programs and publications, the CMAI will work with international and local partners, including professional and organizational networks focused on modern architecture conservation, to expand the existing knowledge base.

In the late 1980s and early 1990s, new conservation challenges emerged, as the seminal

works of the Modern Movement reached fifty years of age and became eligible for heritage protection. Many of these buildings have not aged well. The new and innovative construction methods and materials that typify the era challenge traditional conservation approaches and raise new methodological and philosophical issues. Despite increased recognition of modern architecture's cultural significance, there is a lack of practical conservation knowledge that addresses the many complex challenges. Effectively tackling these issues demands leadership, strategic research, and brokering with industry to develop appropriate repair techniques that translate research into practice and achieve conservation aims. A concerted effort to bring together and distribute existing information, as well as identify and fill information gaps, is also needed.

The CMAI will identify and address conservation challenges particular to modern archi-

itecture through a comprehensive research and implementation program. Complementing the GCI's international role in advancing the conservation of modern and contemporary art, the CMAI will build on the Institute's scientific research capacity in modern materials and establish it as a major resource for professionals working in modern architecture conservation. This program will include the identification of key research questions and issues related to technical, methodological, and implementation problems relevant to the conservation of modern architecture across a wide range of building types and geographic areas. The program will develop model field projects, which draw upon methodological and technical research outcomes that demonstrate improved approaches and methods.

The program will also implement training programs for practitioners targeted to specific needs in the field, as well as develop new key

literature resources that will include philosophical and technical materials, guidance on applicable conservation methods, and lessons learned from GCI field projects. These activities will be coupled with public programming events, lectures, and workshops on topics related to the conservation of modern architecture that are relevant to a wide professional audience.

The Getty's location in Los Angeles provides opportunities for the CMAI to bring local experience to international efforts and to apply international experience locally. The Getty Research Institute's Architecture and Design Collection, with its vast array of architectural drawings, photographs, models, papers, and ephemera, provides an important resource for the initiative.

More information on the Conserving Modern Architecture Initiative can be found at www.getty.edu/conservation/cmai.

EAMES HOUSE CONSERVATION PROJECT

The Eames House Conservation Project—the first field project under the banner of the Conserving Modern Architecture Initiative—focuses on the 1949 Los Angeles home designed by Charles and Ray Eames, an iconic work of modern architecture. The GCI has partnered with the Eames Foundation, with an aim to develop a long-term conservation management plan that embodies a sustainable approach to the care and conservation of the site and includes a maintenance program. The project—undertaken with the support of the GCI Council—will address a number of interrelated conservation issues that include the building envelope, the internal fabric, and the development of an appropriate internal environment for the interior fabric of the house with its varied collection, which draws on the history of the former occupants. The GCI is currently providing conservation advice to the project by investigating the environmental conditions of the house and performing scientific analysis of the material fabric—including paint finishes and wood treatments—with assistance from Getty Museum conservators.

Information on the Eames House Conservation Project can be found at www.getty.edu/conservation/eameshouse.



James Cuno, president and CEO of the Getty Trust (center right), and Tim Whalen, director of the GCI (center left), talk with Lucia Dewey Atwood (far left) and Eames Demetrios (far right), board members of the Eames Foundation, at the Eames House. Photo: Susan Macdonald, GCI.

Upcoming Events

WORKSHOP: RECENT ADVANCES IN CHARACTERIZING ASIAN LACQUER

The GCI is pleased to announce the workshop “Recent Advances in Characterizing Asian Lacquer” (RADICAL), to be held October 22–26, 2012, at the Getty Center. This five-day workshop will explore recent developments in the analysis of organic materials in Asian lacquer, with the aim of instructing conservators and conservation scientists in newly developed procedures for acquiring detailed compositional information and exploring the implications for the conservation of lacquered objects. This workshop grows out of the GCI's Characterization of Asian and European Lacquers project and is presented as part of the Institute's Research into Practice Initiative.

The workshop provides a unique opportunity for scientists and conservators to work in close collaboration, facilitating dialogue on such diverse topics as understanding compositional variation in lacquered objects made in different countries and time periods, identifying research priorities, expanding the network of lacquer researchers, and exploring the relevance of analytical research to the conservation of lacquered objects. Conservators and scientists will work together in research teams

to prepare and test samples of historic lacquer and present their analytical findings to the workshop on the final day.

Applicants should be midcareer conservators, scientists, or conservation scientists. Conservators should have experience working with lacquer and a record of research on the subject. Scientists should have an established record of using Py-GC/MS (pyrolysis gas chromatography–mass spectrometry). A maximum of eighteen participants will be accepted. Workshop instruction and materials will be in English. The application deadline is May 31, 2012. For a complete workshop description, eligibility requirements, costs, and application form, visit www.getty.edu/conservation.



Detail of a lacquer panel from a French cabinet, dated around 1765. The cabinet is part of the collection of the J. Paul Getty Museum (JPGM). Photo: Arlen Heginbotham, JPGM.



Mogao Grottoes Cave 85 with its new viewing platform, information panels, and lighting, designed to enhance the visitor experience. Photo: Anna Zagorski, GCI.

Project Updates

PRESENTATION AND INTERPRETATION FOR CAVE 85

In 1997 the GCI began its collaborative project Wall Paintings at Mogao Grottoes, with the Dunhuang Academy (DA) under the State Administration for Cultural Heritage (SACH) in China. The goal of this project was to design, implement, and disseminate a methodology for the conservation of wall paintings in Cave 85 at Mogao, following the *Principles for the Conservation of Heritage Sites in China*, which is adaptable to other cave temples at Mogao and to other Silk Road sites.

The conservation of the wall paintings and sculpture of Cave 85 was completed in 2009 after more than a decade of research, analysis, and testing, followed by implementation of treatment and preventive measures. Since the culmination of the project, the GCI and the Dunhuang Academy have been developing lighting and presentation schemes to enhance the experience of visitors.

Until recently, Dunhuang Academy guides used flashlights to illuminate the art of the caves. In larger, darker caves, this did not make for a satisfying experience for visitors, who were unable to assimilate or appreciate the visual entirety of the wall paintings or the details on the high ceiling panels. In order to enhance and diversify visitors' experience in larger caves, the GCI and DA undertook a new approach to presentation and interpretation in Cave 85. A raised platform now allows visitors a better vantage point from which to appreciate the art, illuminated bilingual interpretation panels explain the conservation approach, and LED lighting provides better illumination for the walls. Together, these enhancements offer an experience that has been well received both by guides (who still use flashlights, but as pointers) and by visitors.

While LED lighting is deemed safe with levels of 80 lux, color temperature of 2900 K, and a color rendering index of 90, light dosimeters have been deployed in the cave to measure the effects, if any, of lighting on the wall paintings. The approach developed for Cave 85 is especially

suitable for the larger caves at Mogao, and will enhance the visit for those who would like to spend more time absorbing information and reflecting on the art and conservation efforts. This approach has been developed to meet evolving visitor expectations and interests and to address, in part, the challenges of increasing visitation at Mogao. Based on this model, presentation and interpretation concepts are being developed for other selected caves.

POPART COMES TO THE GCI

Participation in the international project POPART (Preservation of Plastic Artefacts in Museum Collections) has been one of the main activities of the GCI's Preservation of Plastics research project over the last three and a half years. In December 2011 the GCI hosted the penultimate meeting of project partners, with twenty-seven conservation scientists, conservators, and researchers attending. At the Los Angeles meeting, each partner presented its progress and results to date, and plans were finalized for the POPART conference—which was held in Paris from March 7 to 9, 2012—and for a publication outlining the research undertaken in the project, which was distributed at the conference (the publication is now available through the POPART website: popart.mnhn.fr/). The meeting also gave project members the opportunity to see and discuss the GCI's work in the Getty's Pacific Standard Time initiative, which includes a study of many artists using synthetic resins and plastics in the creation of their work.

The POPART project has involved thirteen partner institutions and researched four important areas in the conservation of plastics in cultural heritage: improving methods of polymer identification, undertaking collection surveys, investigating degradation in a few selected plastics known for their poor stability, and evaluating conservation treatments. The GCI has had two main roles in the project: first, to establish appropriate protocols for the identification and characterization of plastics, which included a complex interlaboratory round-robin to enable proper comparison of results and to determine reproducibility among differing instruments and laboratories; and second, to investigate further the degradation mechanisms of cellulose acetate,

focusing on the migration of plasticizer through a film and the effect this has on environmental stability and mechanical performance.

At the March conference in Paris, the GCI presented its work on improving methods for the analysis of plastics—both in the laboratory and via the use of handheld portable instruments—and its research on the aging behavior of cellulose acetate. The GCI also offered a practical workshop in the use of handheld, portable ATR-FTIR (attenuated total reflectance Fourier transform infrared spectroscopy) as a tool for identifying plastics. In total, twenty-three talks and six workshops were given. The diversity of topics and approaches covered in the talks, from analyses to understanding of deterioration and research into novel conservation treatments, reflected the impressive amount of knowledge accumulated by the project partners in three years. Over two hundred delegates attended the conference, testimony to the growing interest in plastics preservation by the conservation community.

More information on the GCI's Preservation of Plastics project and its research into modern and contemporary art can be found at www.getty.edu/conservation.

ARTISTS' MATERIALS AND PROCESSES: LARRY BELL

As part of the GCI's ongoing research into the conservation of modern and contemporary art, the Institute has been studying the novel materials and fabrication processes used by artists active in Los Angeles in the 1960s and '70s. To this end, GCI Assistant Scientist Rachel Rivenc visited the studio of Larry Bell in Taos, New Mexico, early in 2012 to interview him on the nature of his art and to solicit his thoughts on the conservation of his work. She was also given access to the wealth of photographs, drawings, and documents in his archives. While at his studio, Rivenc videotaped Bell as he prepared a number of glass panels to be used as replacement panels for an earlier work.

In the mid-1960s, Bell, fascinated by the interaction between light and reflective surfaces, came across an industrial process called vacuum deposition of thin films. In this

process, selected metals are heated in a vacuum chamber until they vaporize in the presence of a selected substrate. The vaporized metals deposit as a micron-thin film on the surface of the substrate, making it reflective. The metallic coating essentially modifies the way light is absorbed, reflected, and transmitted by the substrate's surface. Using this process on glass panels and playing with the type of metal used, the thickness of the film, and the introduction of gradients, Bell was able to create infinite variations in the color, transparency, and reflectivity of the glass. Bell used this process to create his signature glass cubes and large glass installations, as well as many works on paper.

The Bell footage and interview will be used to create a video demonstration of the artist at work, one of a series of videos planned over the next two years, each featuring a Los Angeles-based artist. The videos will be available through the GCI website and YouTube channel (youtube.com/gettyconservation).

For more information on the GCI's research into modern and contemporary art, visit www.getty.edu/conservation.

Recent Events

MURAL ARCHIVE NOW AVAILABLE

The GCI is pleased to make available through the Getty Research Institute's Digital Collections the Ernest A. Long Outdoor Mural Image Archive. This archive features more than five hundred images taken in the 1970s and early 1980s by mural enthusiast Ernest Long, documenting nearly two hundred public murals in Southern California and beyond. In 2007 Long donated digital copies of his images to the Getty Conservation Institute to support the Institute's research into mural painting conservation. More recently, Long granted permission to the Institute to make the images available to the public for viewing at the Research Library at the Getty Research Institute (GRI) and online. The archive includes images of works by Kent Twitchell, Leo Limón, Elsa Flores Almarez, and Ed Ruscha. Visit the Digital Collections section of the GRI website (getty.edu/research/tools) to access the archive.



Strother Martin Monument by Kent Twitchell (1971) in Los Angeles. Photographed in 1973. Ernest A. Long Outdoor Mural Image Archive, J. Paul Getty Trust. Photo: © Ernest A. Long III Trust. Mural: © Kent Twitchell.



TECHNICIAN TRAINING HANDBOOK REVISED

Significantly revised and updated in the context of the Getty's MOSAIKON initiative, this handbook provides written, graphic, and photographic documentation methodologies and lesson summaries on topics ranging from the deterioration of mosaics, to an introduction to lime-based mortars and their use for stabilization treatments, to the fundamentals of mosaic reburial—an indispensable preventive conservation intervention.

These didactic materials are a reference document for technicians during and after training and are meant to accompany theoretical lessons and practical training on site. While step-by-step instructions are provided for documentation of mosaics and of technicians' work on them, this resource is not intended as a manual for the treatment of in situ mosaics.

This handbook is available on the GCI website in PDF format in English, French, and Arabic, as well as in a print-on-demand edition (English and French) through Lulu.com.

GUIDELINES FOR SOLID-STATE LIGHTING

Eight years ago, LED lighting was little more than a hardware store novelty. As one museum lighting specialist noted at the time, LEDs didn't shine—they barely glowed. With poor color rendering, unknown stability, and unpredictable life span, it is hard to imagine a less auspicious debut for LED lighting. However, in the few years since, LEDs have begun occupying a respected place in museum displays.

As with any paradigm shift, these changes create uncertainty and raise questions. Facilities managers are attracted by the claims of energy

efficiency, yet they ask, given the cost per lamp, if cost recovery is realistic. Conservators resist exposing the most sensitive artifacts to new light sources. And curators wonder if the color quality offered by LEDs is capable of communicating an aesthetic message as well as daylight or incandescent lighting has done for almost a century.

In answer to these questions, the GCI is pleased to make available *Guidelines for Selecting Solid-State Lighting for Museums* by GCI Senior Scientist James Druzik and Stefan Michalski, Senior Conservation Scientist, Canadian Conservation Institute. *Guidelines* compares LEDs to traditional lighting and points readers to high-quality Department of Energy resources for further information. Not only does the document discuss lighting efficacy, life span, lumen maintenance, color rendering, glare, cost, and payback, it is also the only publication that includes information on warranty coverage.

To receive your free copy of *Guidelines for Selecting Solid-State Lighting for Museums* in PDF format, please send an email to Jim Druzik at jdruzik@getty.edu and include the following: (1) your name and title, (2) the name of your institution, and (3) a short statement outlining the reasons for your interest in solid-state lighting.

For more information about the GCI's work to improve museum lighting, visit the Museum Lighting Research project at www.getty.edu/conservation/our_projects/science/lighting/index.html.

AATA ONLINE UPGRADED

In early February, an extensive upgrade was completed for AATA Online (aata.getty.edu). AATA Online—a key resource for the conservation field—is the GCI's comprehensive database of over 117,000 abstracts of literature related to the preservation and conservation of material cultural heritage.

While the site's user interface is similar to the previous version, a number of improvements to functionality have been made. These include: faster searching; access to special features without a login; easier-to-use consolidated search screens; greater ability to refine searches; results from Category Browsing and Refine Search now included in Search History; and easier customization of results. The ability to export to EndNote, to ProCite, or as text files is now also available.



GCI CHANNEL ON YOUTUBE

You can now watch videos from GCI projects, lectures, and conferences on the GCI's YouTube channel—youtube.com/gettyconservation. Subscribe to our channel and be among the first to view new video content from the GCI.

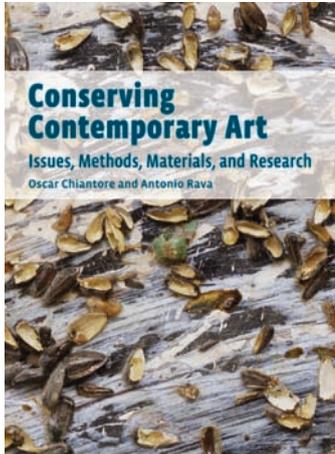


GCI FACEBOOK ANNIVERSARY

March 2012 marked the one-year anniversary of the launch of the GCI's Facebook page. During this time, nearly two thousand people have "liked" our page, and more than seventeen hundred unique users view our content weekly. Our Facebook audience resides in twenty countries, with the United States, Spain, Italy, Portugal, and the United Kingdom at the top of the list. More than 60 percent of our Facebook users fall between the ages of twenty-five and forty-four.

If you would like to be part of the GCI's Facebook community, visit facebook.com/gettyconservation-institute and "like" us, to discover the latest in GCI news and programs.

New Publications



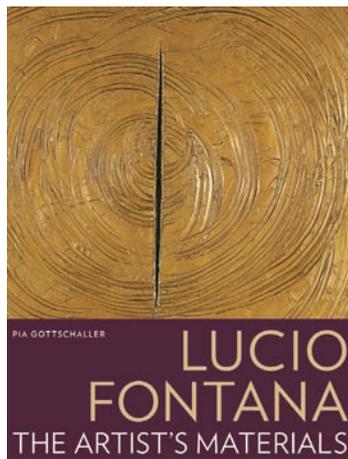
Conserving Contemporary Art Issues, Methods, Materials, and Research

By Oscar Chiantore and Antonio Rava

Since the advent of the avant-garde in the early twentieth century, visual artists have adopted new techniques and materials, some of whose characteristics of aging and wear are still largely unknown today. The conservator's intervention has become increasingly delicate, problematic, and experimental and requires not only technical knowledge of these materials but also a greater awareness of an artist's intellectual universe. Translated from Italian to reach a wider audience, *Conserving Contemporary Art: Issues, Methods, Materials, and Research* is one of the first books to give a comprehensive overview of the many considerations faced by the conservator of modern and contemporary art.

The book takes into account both the material and ethical aspects of contemporary art, focusing on the enormous variety of techniques and materials used by contemporary artists, as well as on their deterioration. It also emphasizes the need to understand the meaning of these works when devising an appropriate conservation strategy. A number of chapters are dedicated to specific conservation treatments, such as cleaning and reintegration, while the many issues introduced are illustrated with examples from painting, photography, sculpture, installation art, video, and web-based art.

Oscar Chiantore is a professor of chemistry and polymer technology at the University of Turin. Antonio Rava is a conservator, also based in Turin, where he has headed the conservation firm Rava & C. for over thirty years.



Lucio Fontana

The Artist's Materials

By Pia Gottschaller

Lucio Fontana (1899–1968) is widely regarded as one of the most influential and innovative post–World War II Italian artists. Best known for his *tagli*—slashed, mostly monochromatic canvases—Fontana fashioned a remarkably multifaceted oeuvre that encompasses architecture, sculpture, and ceramics, as well as painting. In his quest to expand the vocabulary of his art, Fontana subjected the pictorial surfaces of his paintings to a remarkable assortment of punctures, gashes, and slashes, and he added adornments of glass fragments, glittering aluminum flakes, and sand.

This richly illustrated book, the third in the Getty Conservation Institute's Artist's Materials series, presents the first technical study in English of this important painter. Initial chapters present an informative overview of Fontana's life and work. Subsequent chapters examine the nine major cycles of work on canvas that constitute his most important achievement, focusing on the physical genesis of these landmark paintings: How did Fontana's philosophical concerns influence his choice of materials? Once he had settled on an aesthetic concept, through which precise means did he realize it? Did physical constraints imposed by the material force him to adjust his concepts? In considering these questions, this book illuminates how Fontana's material choices over the course of his career related to the evolution of idea into form.

These publications can be ordered online through the Getty Museum Store (shop.getty.edu).

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Conservation Perspectives, The GCI Newsletter is distributed free of charge twice a 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 website, www.getty.edu/conservation/.

The Getty Conservation Institute works internationally to advance conservation practice in the visual arts—broadly interpreted to include objects, collections, architecture, and sites. The Institute serves the conservation community through scientific research, education and training, model field projects, and the dissemination of the results of both its own work and the work of others in the field. In all its endeavors, the GCI focuses on the creation and delivery of knowledge that will benefit the professionals and organizations responsible for the conservation of the world's cultural heritage.

The GCI is a program of the J. Paul Getty Trust, an international cultural and philanthropic institution that focuses on the visual arts in all their dimensions.



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