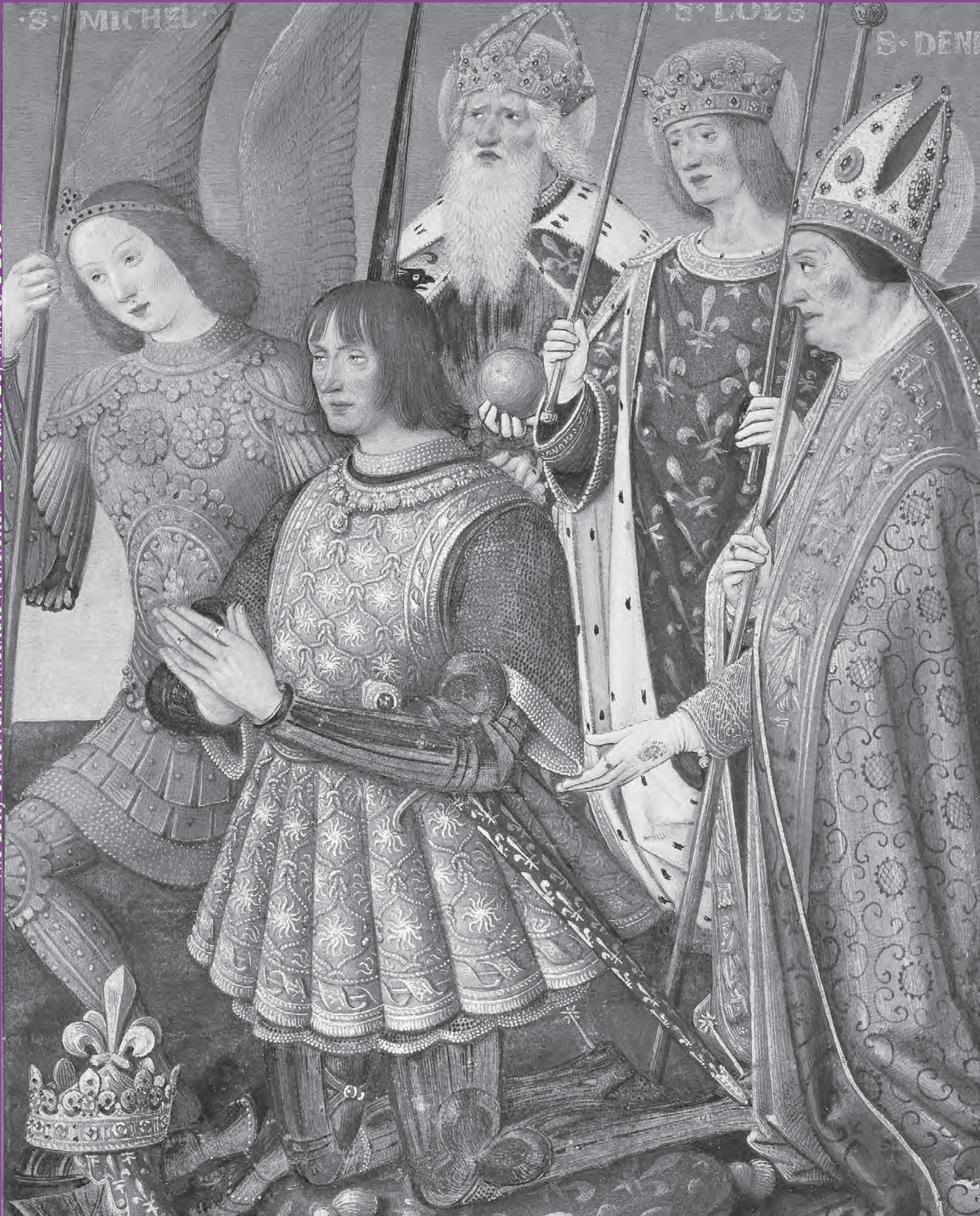


# Conservation

The Getty Conservation Institute Newsletter ■ Volume 20, Number 1 2005



# The Getty Conservation Institute Newsletter

Volume 20, Number 1 2005

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The Getty Conservation Institute (GCI) works internationally to advance the field of conservation through scientific research, field projects, education and training, and the dissemination of information in various media. In its programs, the GCI focuses on the creation and delivery of knowledge that will benefit the professionals and organizations responsible for the conservation of the visual arts.

The GCI is a program of the J. Paul Getty Trust, an international cultural and philanthropic institution devoted to the visual arts that also includes the J. Paul Getty Museum, the Getty Research Institute, and the Getty Foundation.

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

[www.getty.edu](http://www.getty.edu)

*Front cover:* A detail of *Portrait of Louis XII* from the 16th-century illuminated manuscript *The Hours of Louis XII*, by Jean Bourdichon. Raman spectrometry—a technique relatively new to the field of art conservation—was used to investigate the pigment palettes and painting methods of the Bourdichon work. *Photo:* The J. Paul Getty Museum.



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*By Maryan W. Ainsworth*

Once the realm of a small group of connoisseurs, object-based art history has been transformed over the last century through the scientific examination of works of art. Employing a wide range of analytical tools, researchers from the fields of art history, conservation, and conservation science are working together in an interdisciplinary manner to evaluate art objects. These collaborative efforts, originally called technical studies, now compose a burgeoning field known as technical art history.

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Through a variety of means, conservators and their colleagues in the humanities and the sciences are developing new interpretations and meanings for works of art and cultural artifacts. Improvements in technology, the combining of technical analysis with primary source research, new periodicals and monographic studies, and interdisciplinary grant making are among the elements that are driving these recent initiatives in technical art history.

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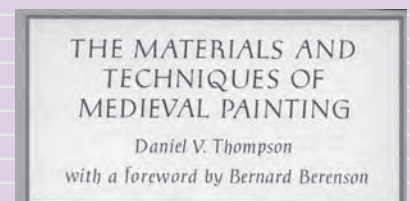
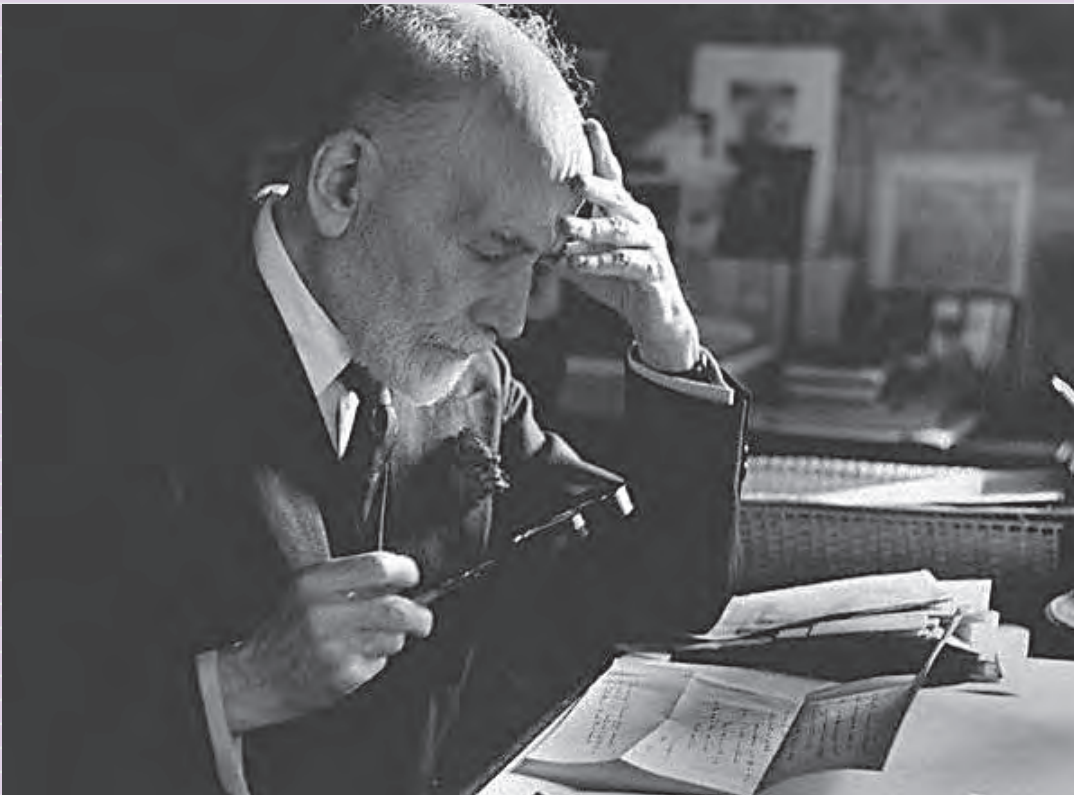
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# From Connoisseurship to Technical Art History


## The Evolution of the Interdisciplinary Study of Art

*By Maryan W. Ainsworth*



Art critic and historian Bernard Berenson (1865–1959). The opinion of this authority on Italian Renaissance art greatly influenced American art museums, guiding institutions in the purchase of many important works. *Photo: Felix Man © Hulton-Deutsch Collection/CORBIS.*

*The Materials and Techniques of Medieval Painting* by Daniel V. Thompson of Yale University. In the 1930s, Thompson's translation of historic material helped to provide art historians and conservators with much-needed information on the techniques of medieval painters.



ANYONE INTERESTED IN THE EARLY DEVELOPMENT of connoisseurship will find detailed historical accounts in the excellent volume *Historical and Philosophical Issues in the Conservation of Cultural Heritage* (Getty Publications, 1996). In this anthology, one can follow the issues and the chief players in this admittedly subjective field of study that, nonetheless, is the foundation of object-based art history. Yet, it is undeniable that connoisseurship has gotten a bad name over the years. This is partly due to the conflict of interest that can develop in relationships between curators and dealers (the names Bernard Berenson and Joseph Duveen readily come to mind), the undeniable connection of monetary value with attribution, and the inexact science of it all. Perhaps most perplexing is the seeming exclusivity of connoisseurship, fed by the notion that some have “an eye” (often touted as an inborn trait) and others do not.

The development over the last century of the scientific examination of works of art has completely altered the way that we evaluate objects. Employing an increasingly wide range of analytical tools, researchers from the fields of art history, conservation, and conservation science are demonstrating the value of working together in an interdisciplinary manner. Originally simply called “technical studies,” these collaborative efforts now compose a burgeoning field of study called *technical art history*.

## Early Developments

Just when Berenson was gaining both renown as a connoisseur and personal wealth by advising, among others, Isabella Stewart Gardner in her purchases for her famous Boston villa, Edward Forbes was promoting the new field of technical studies nearby at Harvard University’s Fogg Art Museum. With great foresight in 1920, Forbes—then the Fogg’s director—articulated his vision for the future: “I hope that some day a technical school may be established, perhaps at Harvard, where painters, restorers, and museum officials may learn about the chemistry of paintings and the care of them, on truly scientific principles.” In 1928 he established at the Fogg the first department for conservation research in the United States, hiring George L. Stout as the head of the department and Rutherford J.

Gettens as chemist and fellow for technical research. In 1931 this unit officially became the Department for Conservation and Technical Research, and it is today known as the Straus Center for Conservation and Technical Studies. Calling attention to investigations of the materials and techniques of art, as well as to issues of origin and manufacture, the Fogg’s journal, *Technical Studies in the Field of the Fine Arts*, which first appeared in 1932, helped establish conservation science as a new academic discipline in the United States.

Concurrently at Yale University, Professor Daniel V. Thompson was providing translations of the early sources about the technique of painters—initially with the 15th-century *Craftsman’s Handbook “Il Libro dell’Arte”* by Cennino Cennini, which appeared in 1933, dedicated to Edward Forbes. Thompson followed this in 1936 with *The Materials and Techniques of Medieval Painting*, which, in its 1956 Dover edition, carried a forward by Bernard Berenson, then a venerable old man. Berenson admitted there: “I regard all questions of technique as ancillary to the aesthetic experience. Human energy is limited, or at least mine is; but if I had greatly more, there is nothing about all the ancillary aids to the understanding of a work of art that I should not try to master.” Somewhat begrudgingly, he finally acknowledged the importance of understanding the technique of the painters about whose works he so readily gave pronouncements.

Slowly, new scientific techniques—especially X-radiography, applied through the efforts of Alan Burroughs of the Fogg at a number of American museums—began to play a more significant role. The resulting studies, which provided a real impetus for art historians and curators to work more closely with conservators and scientists, are still consulted for their observations; they formed the foundations of our knowledge in certain fields of study. In my area of concentration, northern Renaissance painting, key studies include scientist Paul Coremans’s 1953 volume on Jan van Eyck’s Ghent altarpiece, *L’Agneau Mystique au laboratoire: Examen et traitement*, one of the early publications of the ongoing series of technical studies of early Netherlandish painting from Brussels’s Centre National de Recherches, “Primitifs Flamands” (as it was initially called). Equally influential on the field (but mainly after it was published some 20

years later in a 1976 issue of the *Nederlands Kunsthistorisch Jaarboek*) was Johannes Taubert's art history dissertation for Marburg University ("Beobachtungen zum schöpferischen Arbeitsprozess bei einigen altniederländischen Malern"). Taubert's dissertation was among the first discussions of the interpretive value of underdrawings for connoisseurship questions in early Netherlandish paintings. Therein lay the seeds of Dutch physicist J. R. J. van Asperen de Boer's interest in harnessing infrared technology (then used for military surveillance purposes) to serve the study of underdrawings in panel paintings.

Since van Asperen de Boer first developed infrared reflectography in the 1970s, there have been enormous advances both in new equipment and in technology, and in the publication of the results of these studies. In the mid-1980s came the development of dendrochronology for the dating of wood panels, mainly through the efforts of Peter Klein, wood biologist at the University of Hamburg. A little earlier, in 1976, the *Nederlands Kunsthistorisch Jaarboek* devoted a volume to the "Scientific Examination of Early Netherlandish Painting: Applications in Art History," which laid out the basic scientific tools available for providing new information for art historians to use in their assessments of the paintings of northern artists. It included models of interpretive studies for artists such as Jan van Scorel, Cornelis Engebrechtsz, Lucas van Leyden, and Pieter Bruegel the Elder. The 2003 volume *Recent Developments in the Technical Examination of Early Netherlandish Painting: Methodology, Limitations, and Perspectives* (edited by Molly Faries and Ron Spronk), provides an up-to-date evaluation of the enormous debt owed to new technical investigations of studies in early Netherlandish painting. The oeuvres of individual artists are still being redefined, and great strides continue to be made in our understanding of the workshop practices of these painters.

### Interdisciplinary Collaboration

From the early days of Edward Forbes at the Fogg Art Museum, cooperation or collaboration between conservators and museum curators advanced cautiously without a clear modus operandi for interdisciplinary investigations until the 1970s. In 1972 the National Gallery in London began to publish the *National Gallery Technical Bulletin*, which has shown a steady increase in the exemplary collaboration of the gallery's curators, scientists, and conservators for the study of paintings. Greater impetus for building the conservator-curator relationship in the United States came with the 1975 appointment of John Brealey as the chairman of the Paintings Conservation Department of the Metropolitan Museum of Art. A garrulous man and a gifted orator, Brealey was passionate about every aspect of painting. He took it upon himself, in crusade-like fashion, to educate art historians about the physical characteristics of paintings and the profession of conservation. He began with graduate art



Alan Burroughs of Harvard's Fogg Art Museum viewing an X-ray of an art object in 1941. Burroughs's research on the use of X-radiography in the examination of art formed one of the first extensive archives of technical documents on art objects. *Photo: Courtesy Harvard University Archives; HUP Burroughs, Alan, A.B. 1920(1).*

history students at New York University's Institute of Fine Arts; the Met's galleries were his classrooms.

By the early 1980s, Brealey realized that while it was important to teach predoctoral students, a more immediate need existed among those already in curatorial positions in major museums across the country. To address this need, he set up weeklong intensive seminars for museum curators and directors. These were held in the Paintings Conservation Department of the museum and were taught by Brealey and his entire staff. The invitation to join one of these seminars was much sought after, and those fortunate to attend still tell of their impact. Chief among the lessons was learning the language to use in discussing a painting's state and condition with conservators. The results of new and more effective communication between curators and conservators were manifest particularly in one aspect of the curator's job—that of acquisitions. Auction houses and private dealers soon discontinued the routine practice of cleaning paintings before their sale, instead leaving them for the careful consideration

Hired as the principal investigator for this three-year project, I quickly learned that this confluence of different disciplines and new technologies could not be learned from books. Nothing in my art history graduate study at Yale had prepared me for this. It was strictly on-the-job training—a component, I came to understand, of any interdisciplinary project involving curators, conservators, and conservation scientists. By the time we had completed the Rembrandt study and published its results in 1982, Brealey had decided that the interdisciplinary approach was indispensable for the study of paintings. He added a research scientist to the Met's Paintings Conservation Department, as well as an art historian. In the latter position, I took up the research of the Museum's early Netherlandish paintings with van Asperen de Boer's newly developed technique of infrared reflectography. The conservators, the scientist, and I all took on interns to train, thereby spreading the department's interdisciplinary approach. Today many graduates of this program head conservation departments in American museums—including the

John Brealey, then chairman of the Paintings Conservation Department of the Metropolitan Museum of Art, conducting a seminar for museum curators and directors in the early 1980s. Among other things, these seminars instructed curators and directors in the language to use in discussing a painting's state and condition with conservators. *Photo: Dorothy Mahon, Metropolitan Museum of Art, New York.*



of the buyer's own conservator. Today better-educated and discerning buyers increasingly resist acquiring works in poor condition, even those by important artists.

Brealey was also a great proponent of interdisciplinary study and research, and he supported two research projects in technical art history. With the Met's research scientist, Pieter Meyers, and the then curator of 17th-century Dutch and Flemish painting, Egbert Haverkamp-Begemann, Brealey initiated a study of the museum's Rembrandt paintings using neutron activation autoradiography.

J. Paul Getty Museum, the Los Angeles County Museum of Art, the Art Institute of Chicago, the Seattle Art Museum, the Kimbell Art Museum, and the Museum of Modern Art. At least 15 former art historian interns have taken up positions as curators in museums and as professors of art history in the United States and abroad. Departments of scientific research sprang up at the Getty Conservation Institute, at the National Gallery of Art in Washington, D.C., under René de la Rie, and most recently again at the Metropolitan Museum of Art under Marco Leona. The enlightened view and support

offered to scientific research by the Mellon Foundation, in particular by Angelica Zander Rudenstine, has been pivotal for new developments in instrumentation and techniques, treatment methods, and museum environment research.

Although it is the conservators and scientists who have the knowledge and skills to provide new technical information that can alter interpretations in art history, their day-to-day duties seldom permit them to devote time to in-depth research. Special projects, such as the preparation of the scholarly catalogues of a collection, offer such an opportunity, as do reinstallations—like that of the Gubbio Studiolo at the Metropolitan Museum—that involve the close physical examination of the components of a room, their treatment over the years, their original placement, and questions of authenticity. The joint study of the Gubbio Studiolo by curator Olga Raggio and conservator Antoine Wilmering led to its reconstruction and installation. The arrangement of the paintings of the Liberal Arts by Joos van Wassenhove and Pedro Berruguete in the Studiolo, however, has been challenged by Lorne Campbell, research curator at the National Gallery in London, on the basis of inconsistencies he sees in the coordination of real and faux architectural details and the placement of the intarsias (mosaic inlaid elements in wood). This lively debate continues, demonstrating that it is not just the technical information per se but also the interpretation of it that are open for discussion.

The recent reconsideration of the early Italian Renaissance paintings collection at the Yale University Art Gallery, including the Jarves Collection (acquired by Yale in 1871), became the focus of two paintings conservation departments—one at Yale and the other at the Getty—in a collaboration to study and define treatments for the panels. This collaboration involved curators, conservators, and conservation scientists in the reexamination of every aspect of the materials, technique, execution, and current condition of numerous early paintings. The recently published volume of essays, *Early Italian Paintings: Approaches to Conservation: Proceedings of a Symposium at the Yale University Art Gallery, April 2002* (edited by Patricia Sherwin Garland), should be required reading for all students of Italian painting and for those interested in the history and care of a collection.

Representative of the interdisciplinary and collaborative study of paintings are several projects concerning Rembrandt. The Rembrandt Research Project was begun in 1968 by a group of art historians, all with the same background and training. As the project evolved, Ernst van de Wetering took the helm and changed the makeup of the group to a truly interdisciplinary one, with specialists from different fields, including conservation science. The involvement of diverse specialists invigorated the project and enabled more authoritative conclusions that led to changes of mind on questions of attribution and dating, as well as an important reconsideration of

Rembrandt's workshop procedures. In 1988–89 Rembrandt was also the subject of one of the National Gallery in London's exemplary interdisciplinary exhibitions and publications in the series of *Art in the Making*. Here the individual entries do not carry the name of one author but are the product of group discussions, writing, and editing by curators, scientists, and conservators. Such consensus is not always the case; in the Metropolitan Museum's 1995 exhibition *Rembrandt/Not Rembrandt*, the collaboration of conservator and curator ultimately produced two separate volumes representing disparate views.

In the Modern field, there has been increased dialogue between conservators and curators about artists' working procedures, including those of Gauguin, van Gogh, and Mondrian. Just as important are interdisciplinary discussions regarding the preservation of the works of Modern artists such as Eva Hesse, Mark Rothko, and Barnett Newman. It remains baffling to me why this kind of in-depth discussion between conservators and curators has not routinely become part of the apparatus of a catalogue raisonné or of any monographic exhibition.

*Personal Viewpoints, Thoughts about Paintings Conservation* (edited by Mark Leonard and published in 2003 by the GCI), offers papers and discussions from a June 2001 seminar of conservators, museum scientists, and curators held at the Getty Museum. The seminar was a welcome initiative in establishing the importance of communication among the fields as a standard, ongoing *modus operandi*. Such meetings, of course, don't occur without the financial support of a foundation or institution. In the past 20 years or so, the College Art Association (CAA) and the American Institute for Conservation of Historic and Artistic Works (AIC) have offered a number of sessions that have highlighted projects and studies featuring collaborative work. An incentive for carrying out these investigations has been offered by the CAA, which yearly acknowledges achievement in this area through its CAA/NIC Joint Award for Distinction in Scholarship and Conservation. The number of worthy candidates for this award remains small, indicating the paucity of ongoing collaborative projects in conservation and art history/curatorship.

Such initiatives have been fostered since 1996 through the Kress Paired Fellowships for Research in Conservation and the History of Art and Archaeology, offered by the Center for Advanced Study in the Visual Arts at the National Gallery in Washington. In 2000 an additional application was made to the Getty Trust for a three-year cycle of fellowships. Although the Kress fellowships limit the fields of research to Western art up to the early 19th century, the Getty grant allows fellows to pursue research in any branch of art history or archaeology, regardless of field, period, or culture. This exciting (but as yet underutilized opportunity) has enabled new collaborative research on a wide range of topics, from wall paintings along the Silk Road of China, to Renaissance bronze statues, to the

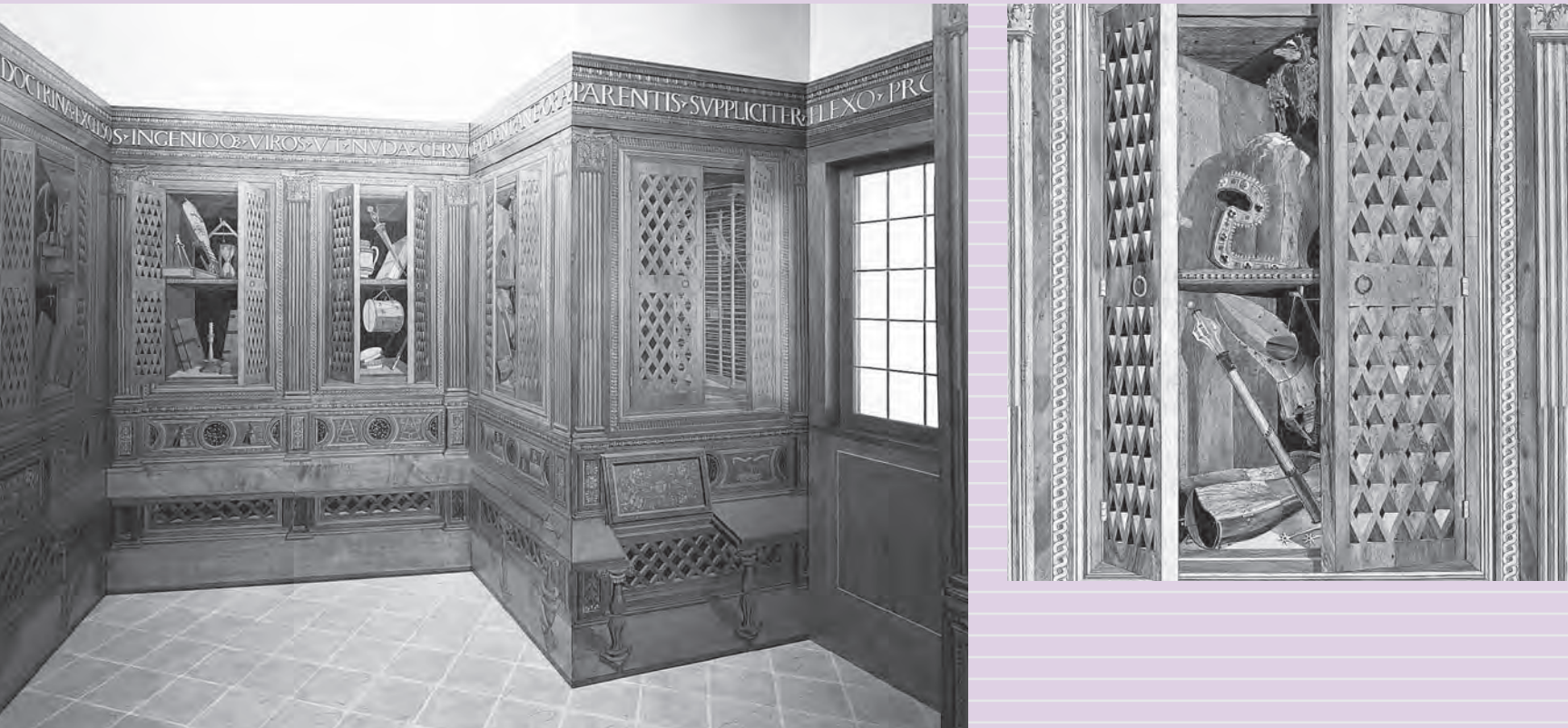


history and technology of Renaissance and Baroque hand-colored prints. The benefits reaped from these paired fellowships are not restricted to new findings but encompass the refinement of the very methodologies employed. Support for such groundbreaking studies must continue.

## Fostering Communication

How can we encourage closer communication among conservators, conservation scientists, and curators?

First, we need better education at an earlier stage about what these specialists do and about the enormous interpretative value of technical investigations of art. I have often thought that the elective course I teach on technical art history for senior art history majors at Barnard and Columbia colleges ought not only to be required but also offered earlier than the senior year. With the diverse approaches today to the study of art history in colleges and universities, I fear



Details of *Studiolo from the Ducal Palace in Gubbio*, 15th century (ca. 1479–82), designed by Francesco di Giorgio Martini (1439–1490) and executed by Giuliano da Maiano (1432–1490). The reinstatement of the Gubbio Studiolo at the Metropolitan Museum involved extensive interdisciplinary collaboration. Made in Gubbio, Italy. Walnut, beech, rosewood, oak, and fruitwoods on walnut base; H. 15 ft., 10<sup>15</sup>/<sub>16</sub> in. (485 cm), W. 16 ft., 11<sup>15</sup>/<sub>16</sub> in. (518 cm), D. 12 ft., 7<sup>3</sup>/<sub>16</sub> in. (384 cm). The Metropolitan Museum of Art, Rogers Fund, 1939 (39.153). Photo: © 1996 The Metropolitan Museum of Art, New York.

that firsthand investigations of art objects lag behind.

For graduate students, there is an even greater need for a course in technical art history. The Institute of Fine Arts in New York is one of the few places where graduate art history students are required to take a course in the practice of conservation and conservation science, and the conservators must achieve a master's degree in art history. The effect of the lack of these offerings elsewhere is apparent when we consider applicants for curatorial positions in our museums. Too many applicants have little or no firsthand experience

with objects, and they are unaware of judgment calls on the state and condition of works; they may not even know how to talk with conservators about these issues. We need more opportunities for internships at the graduate level in order for students to gain intimate knowledge of interdisciplinary, collaborative work. Since the early 1980s, I have offered an interdisciplinary internship for graduate art history students. It aims to teach an approach that marries the fields of conservation, scientific investigation, and art history. Identifying funding for this ongoing internship is not always easy; supporting new acquisitions, galleries, or exhibitions is a far more high-profile investment for interested donors. Yet the rewards of such an internship program are readily measured. These interns have found important curatorial positions in this country and abroad, where their unique experiences and training have made them stand out from other applicants and have afforded them a more mutually satisfying curator-conservator relationship from the outset.

Second, we need more opportunities for collaborative study

discussions, interactions, and forums.

Third, institutions should take a more aggressive lead in publishing the results of joint projects in art history and conservation. Despite the great number of art books published yearly in this country, very few deal directly with questions of technical art history. The Belgium publisher Brepols stands out as being notably adventurous in this regard. The *Me Fecit* series, of which I am the editor, is dedicated to the technical investigation of the works of one artist's oeuvre or of one work, either by a single author or by a group of authors. We need greater recognition at other publishing houses that this topic is essential for the future development of curatorial and conservation work. More publications in this area will provide greater access to information for those who are not part of a museum setting—that is, colleagues in universities and colleges, both students and their professors.

Great strides have been made in the relationship between the conservator and the curator since Edward Forbes first articulated his



*Above: Self-portrait by Rembrandt Harmensz. van Rijn, 1660. Oil on canvas, 31 $\frac{1}{8}$  in. x 26 $\frac{1}{2}$  in. The Metropolitan Museum of Art, Bequest of Benjamin Altman, 1913 (14.40.618). Photo: The Metropolitan Museum of Art, New York.*



*Right: An autoradiograph of Rembrandt's Self-portrait. In the late 1970s, a team of scientists and art historians from the Metropolitan undertook an interdisciplinary study of the museum's Rembrandt paintings, which included neutron activation autoradiography. Photo: The Metropolitan Museum of Art, New York.*

in our museums. Directors must recognize the extraordinary benefit of projects among their curators, conservation scientists, and conservators. Such projects could be part of the yearly objectives of staff members. For those who are unfamiliar with how such investigations work, there should be demonstrations as part of staff training. New curators should become acquainted with the appropriate conservators at the earliest possible moment, in order to begin working in collaboration. This partnership should lead to more opportunities in museums and educational institutions for

desire for interdisciplinary, collaborative work. But this mutually beneficial association must be supported and developed in order to maintain momentum toward new discoveries about art and artists. Technical art history—an enhanced and more scientific connoisseurship—provides the foundation for our appreciation and understanding of human artistic endeavor.

*Maryan W. Ainsworth is curator of European Paintings at the Metropolitan Museum of Art in New York.*

# A Matter of Teamwork

## A Discussion about Technical Studies and Art History

*Technical art history is a term that is often used but not necessarily universally embraced. Is it a separate area of study or simply another aspect of art-historical research? And how can the interdisciplinary collaboration that the work requires be encouraged and strengthened? Conservation put these and other related questions to three prominent experts with extensive experience in technical studies.*

*Heather Lechtman is professor of Archaeology and Ancient Technology in the Department of Materials Science and Engineering at the Massachusetts Institute of Technology. She is also director of the Center for Materials Research in Archaeology and Ethnology, a consortium of eight Boston-area universities and museums. Ms. Lechtman is the recipient of a John D. and Catherine T. MacArthur Foundation award (1984–89).*

*Richard Stone is senior museum conservator in the Department of Objects Conservation at the Metropolitan Museum of Art in New York, where he has been on staff for nearly 30 years. His main interests lie in the technology of artworks in nonferrous metals, especially Renaissance bronze sculptures.*

*Katharina Walch-von Miller is a trained harpsichord maker and has a degree in furniture conservation. Since 1988 she has been at the Bayerisches Landesamt für Denkmalpflege (Bavarian State Department of Historical Monuments), where she is responsible for painted and wooden church interiors, as well as secular interiors. Her particular interest is research on historical materials and techniques, especially lacquers and varnishes.*

*They spoke with Brian Considine, conservator of decorative arts and sculpture at the J. Paul Getty Museum, and Jeffrey Levin, editor of Conservation, The GCI Newsletter.*

**Jeffrey Levin:** *The first and most obvious question is what the term technical art history means to each of you.*

**Heather Lechtman:** I think that for a variety of reasons it would be a mistake to use the term *technical art history*. When one describes an activity by calling it technical art history, one is really defining a new field. Art history is an intellectual pursuit that has had a long time to develop and that has a whole menu of methods brought to the intellectual enterprise. In art history, there are people who do philological studies, iconographic studies, or stylistic studies. And now there are people who do technical studies of one kind or another within this discipline. Those are all methodological approaches to a particular intellectual tradition. Of course, as you bring newer methods to the tradition, the tradition changes. But saying “technical art history” is a practice akin to the use of the word *archaeometry*, which, in my view, was a term mistakenly used early on to describe a technical investigation of archaeological materials. Archaeometry has almost developed as a discipline unto itself and has not been successful in illuminating what archaeologists are trying to understand. The use of terms like *archaeometry* and *technical art history* tends to define some new kind of field, and the payoff is negative. I don’t think that it’s necessary to say more than “this group of people in this lab performs scientific analyses or technical studies on objects of art with the intent of illuminating historical issues.”

**Richard Stone:** I couldn’t agree more strongly. I consider the whole enterprise simply as art history continued by other means. Art history implies that the artifact that you are looking at is worth individual contemplation. And, second, that the questions asked are historical. My own life’s work has been solving rather basic art-historical problems. Who cast this bronze and why do we have more than one version of it? Why do they look similar—or why don’t they

look similar? These are straightforward art-historical questions that are direct extensions of the stylistic techniques that most art historians were trained on.

However, there is the temptation to become wedded to a procedure—say neutron activation, Raman spectrography, stable isotope ratios, or even traditional stylistic analysis. You know a technique and you exploit it. There's nothing inherently wrong with this. However, sometimes the material that comes out is not really of direct interest for answering significant historical questions. It is more fruitful to first pose a question and then to find a way of answering it. This frequently demands collaboration, and collaboration means surmounting interdisciplinary barriers—getting art historians, scientists, and conservators to do things that they have not been in the habit of doing with one another. For instance, art historians basically do not collaborate. This isn't unique to art historians. It's true of all the humanities. People are used to doing things a certain way, and collaboration is regarded by many in the humanities as equivalent to playing tennis with the net down, somehow an unsporting activity.

I agree with Heather. We don't want to create another field. We want to enlarge and enrich an existing field. We want to be able to bring new types of evidence to bear on old questions, and also discover new questions that we never thought of asking.

**Katharina Walch-von Miller:** For me, this term, *technical art history*, is confusing, but maybe it's a question of language. In German, we more often use the term *historical art technology*, which perhaps means the same. For me what's most important is that there is teamwork among at least three different disciplines—the conservator, the conservation scientist, and the art historian—to study an object of interest. Everyone has a part. For the art historian, it could be looking at the artist's instructions or bills or contracts. For the conservation scientist, it could be analyzing historical and modern materials to compare the results, information, or written historical sources. And for conservators, it is the very important study of sources.

In my work, I usually start with observations and initial research, and during this process certain questions arise in connection with materials and techniques. To answer these questions, it's very important to look for the allusions in written or printed sources. The aim has to be a correct comparison between the object and theoretic technical studies. The quality of that step depends on the quality of research—which itself depends on the good teamwork of the specialists involved. I agree that this is seldom the case and that we have to do more.

**Lechtman:** Using the term *technical art history* would provoke people to define a new field rather than stimulate them to mend the breach between conservators and conservation scientists, on the one hand, and curators or art historians, on the other. Art history is a historical

**“What we’ve all been striving for is to find ways in which the common expectation that we have—whether we’re conservators or whether we’re art historians—can be realized by working together.”**

**Heather Lechtman**

discipline; history is the architecture on which it is built. In archaeology, that architecture is anthropology. When archaeologists look at artifacts, regardless of the methods that they use, they are really trying to answer questions about people. That's also true about art historians. They're using an object that somebody considers a work of art, not so much to say something about the object but ultimately about how it got to be what it is—the way it was designed and built and used and people's attitudes toward it. These matters have to do with the social and cultural context in which these things functioned. What we are looking for are new approaches to answer large questions about human beings who made these items for specific reasons and used them for specific purposes.

What we've all been striving for is to find ways in which the common expectation that we have—whether we're conservators or whether we're art historians—can be realized by working together. The only recent program that I know of that has tried to bring these groups together is the National Gallery program called the Kress Paired Fellowships for Research in Conservation and the History of Art and Archaeology. The National Gallery internationally solicits applications for conservators and art historians to come forward with research projects that can only be accomplished if they work together.

**Brian Considine:** *Heather, I hear your message of the need for increased interdisciplinary collaboration. My sense is that the conservators, conservation scientists, and art historians within the museum community—which is the community within which I work—are working this out, sometimes awkwardly, sometimes more effectively, but I do think that we are making a lot of progress. I am encouraged by the outreach that I see to the university research community. For example, we have a project with the Department of Neurobiology at USC [University of Southern California] working on antibodies in the identification of pro-*



Photo: Donna Coveney

*teinaceous materials. And there's the scholar program here at the GCI, which encourages people to make the best possible use of Getty-wide resources, the original documents in the library, the museum's collection, that kind of thing. I do think we're moving in the right direction.*

**Walch-von Miller:** I had a very good experience with teamwork during my six years on a project of research and conservation of lacquered and varnished surfaces. Together with my colleagues, conservation scientists Ursula Baumer and Johann Koller from the Doerner Institute in Munich, we researched the technique and the use of materials on a famous lacquer cabinet, the so-called Cabinet of Miniatures from the Munich Residenz. Hermann Neumann, a trained architect, headed the project and was responsible for the historical aspects. The cabinet was destroyed in World War II, and the aim was to reconstruct the original red gloss lacquer, based upon two doors that survived the war. After our conservation research and the very complicated analysis conducted by the conservation scientists, we tested for the reconstruction. At the beginning, we were not very successful. We had problems with the hardness or the softness of the different lacquer mixtures, of the various layers, problems with the color of pigment and the dyestuffs, with the structure of the paint, and so on. We found the solution only through intensive study of the contemporary published literature, and there we discovered technical details and materials that we had not observed before.

Conservation scientists can find only what they are looking for, so if you're not looking for camphor or other materials, you will never find them. Although we worked side by side with the conservation scientists of the Doerner Institute, intensive dialogue was necessary. We got to know a lot of materials that we didn't know previously. If you want to work together and have success, it's only possible with continuous dialogue and collaboration.

*Levin: I see two themes emerging here. One is the need for greater interdisciplinary collaboration, which you all seem to be saying can be impeded by thinking of "technical art history" as a separate discipline. The other goes to the issue of addressing questions, as opposed to simply using techniques. With respect to collaboration, do you agree with what Brian is saying in terms of there being increased collaboration among conservation scientists and conservators and art historians and curators over the last 10 to 15 years—or is this something that's still a struggle?*

**Stone:** There has definitely been progress. However, that progress is essentially on a personal, one-to-one, basis. One can find scientists, conservators, curators, and art historians who work together and find one another's work mutually supportive. Nevertheless, the habit of sustained and regular collaboration has not reached the critical mass necessary for it to be self-sustaining. It has certainly not yet penetrated into the great bulk of "usual and customary" research.

**Walch-von Miller:** I have seen some development in collaboration in Germany and in Europe over the last 10 or 20 years, and this work has influenced all professional disciplines in art. But it is happening very slowly. Professional work is not influenced enough by this approach to research. I am often asked the reason for this. Aren't colleagues curious enough or is it a question of art historians working with other disciplines? And one reason could be that perhaps it is too difficult to obtain all the possible information and technological know-how.

It would be helpful to organize special Web sites that are so well known that scientists in that field are interested in publishing results there. But there has to be professional quality control. In my opinion, that's a big problem. I read a lot of research that I can't believe has been published. In any case, there's a great opportunity, in my opinion, to develop the dialogue between conservator and art historian, as well as conservation scientist, but we have a lot to learn about teamwork. Every discipline is of equal importance, regardless of its age.

*Levin: Katharina, you just offered one suggestion for supporting greater collaboration. What other things can and should be done to encourage interdisciplinary work?*

**Lechtman:** I don't think we're going to make very big strides in meaningful collaborations until such time as the academic discipline of art history—that is, the way it is taught—undergoes dramatic change. In the 1930s and 1940s, places like Harvard and other great institutions made an effort to teach students about the materials and the techniques of artists. Over the years, I've seen that trend end. Art history students these days almost don't even look at objects. Everything is done with slides or on a computer screen. There is nowhere in the curriculum, either at the undergraduate or graduate level, that makes them aware of the fact that materials matter, that technique matters, that social context matters. It has all simply disappeared.

**Stone:** Well, it hasn't entirely disappeared. I give a course!

**Lechtman:** Dick and I were both in the same class at the New York University Institute of Fine Arts Conservation Center, and the good thing about that program has been its insistence that the conservation students also get a master's degree in the history of art. Students in that program have a pretty good idea of what art history is all about, what the intellectual issues are all about, what the traditions are all about, so that when they do their work, they are able to handle the issues and the data both from the scientific side and the traditional historical side. But that has not happened in art history academic education. Art historians are trained, more or less, with no input from the scientific side, which is going to be required for them to understand not only that they need to collaborate but that these issues matter. In the 1970s, when we established our Center for

Materials Research in Archaeology and Ethnology—which is an eight-university consortium—we had two or three graduate students every year from Harvard who were getting their doctorates in art history and who came to learn about materials. I haven't seen a student from the art history department at Harvard in 20 years or more. They come from archaeology.

**Stone:** Art history has changed since Heather and I were graduate students. The last 25 years have been a period in which the notion of art-historical “theory” has become of almost obsessive concern. People now study art not so much from the point of view of the explication and illumination of a given work of art, but as part of a thematic data bank for what are actually other disciplines—frequently political history and sociology, but especially the various “new” disciplines of the later 20th century, with their frequently cumbersome ideological freight. Many people now studying art history—especially those outside of museums—are dealing with issues where an individual work of art as a primary historical document has no very great significance and where the physical examination of individual artworks seems like an arcane irrelevance.

**Levin:** *Katharina, do you sense the same change in the way art history is taught and thought about in Europe as Dick and Heather are describing here in the United States?*

**Walch-von Miller:** I would say the problem is that the training of art history students often does not look enough to other fields. It is the opposite for conservation students. In Germany, conservators have to study art-historical fields and scientific fields, so they might not be experts in these disciplines but they are open to their problems. This is very important. I'm also convinced that it's very important to teach our students to read historical sources or technical history and to tell them what that offers to us. They have to learn step-by-step to read this kind of literature. That means a handwritten manuscript can be very difficult, but most difficult, in my point of view, is a correct understanding and interpretation—here you can make a lot of mistakes. So I would say it's necessary for every discipline to have a better education in the other fields. In Germany, in the last few years, many students of conservation have made a good start.

**Considine:** *I'd like to follow up on this point about the change in art historians. My experience within the museum is different because I see them keenly interested in the objects, and particularly interested in working with us on the technical study of those objects. Twenty years ago, when we started taking X-radiographs and bronzes with Peter Fusco, who was then curator of sculpture at the Getty, it was tremendously exciting. He was seeing things that he was not used to seeing, and he realized the potential that technical study had for bringing completely new information to the study of bronze sculpture.*

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**“The habit of sustained and regular collaboration has not reached the critical mass necessary for it to be self-sustaining.”**

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**Richard Stone**

*That has only continued. We are dating ceramics with thermal luminescence. We are dating furniture with dendrochronology, and also comparing analysis of the materials in our collection with published period treatises from the library. That's the kind of information that we can contribute to the dialogue and that has captured the attention of the art historians with whom we work. In a sense we're preaching to the choir because they're in museums, they're object-oriented people. I do acknowledge the difference in people who come to the discipline from a theoretical approach. But I find the dialogue with the art historians now to be very exciting.*

**Stone:** Katharina said something that I strongly agree with: that it is a good thing to return to the primary documents. These are the old recipe and trade books. There are a surprising number of them, but while bibliographies are growing, not enough people seem to be reading the texts. Reading this material is, no doubt, difficult. One frequently does not know whether the difficulties are actually in the text or the product of one's own ignorance.

The major problem is that while the history of science is flourishing, the history of technology—at least outside of archaeological disciplines—is not. There is amazingly little new concrete information on even the most pervasive technical processes and devices, especially for the early Modern period. It is almost as if scholars were ashamed to be caught writing about mere nuts and bolts. It should, after all, be the job of a scholar of technology to explain what actually happened, as well as its social significance. Technology existed long before there was anything called science. It is an independent and universal human activity, which hasn't received nearly enough attention in recent years—hence the difficulties with the primary texts. We simply do not have sufficient antiquarian knowledge to read them properly.



Photo: Elizabeth Rosen Stone

**Walch-von Miller:** An example of how difficult this can be is our research on Venetian turpentine. This term changed during the centuries, and since the second half of the 19th century, it often meant a mixture of larch turpentine and pine resin. That's why you can read in the modern literature on painting techniques that Venetian turpentine has a strong tendency for yellowing and drying badly and so on and that it should not be used for lacquers. Reading historical recipes, I was surprised that Venetian turpentine was recommended so often. With the help of a critical study of printed sources, I learned that Venetian turpentine in the 17th century was also called Cyprus or Chios turpentine, and it was obtained from the so-called turpentine tree—*Pistacia terebinthus*. Because of trade problems, it was replaced more and more with larch turpentine. With the help of historical sources, we also learned that this Venetian turpentine mostly was not used as a balsam but as a resin that was very helpful for drying. The gas chromatography–mass spectrometry [GC-MS] analysis, which was undertaken in parallel, confirmed the knowledge that we learned from the sources. This was the impressive result of very productive teamwork with conservation scientists Ursula Baumer and Johann Koller, as well as with Dietger Grosser, a biologist, doing research on historical literature.

**Stone:** I have a pressing issue right now that involves the same problem that Katharina is talking about. I'm working on a long-term project on the patination of Renaissance bronzes, and a problem I have is that at present the Metropolitan Museum does not have an organic chemist—although this is scheduled to be remedied. While most of the primary analytical research on Renaissance varnish patinas was done as early as about 1990—in the National Gallery in London—I only recently began doing experimental reproductions of Renaissance patinas based on these analyses. Almost surprisingly, they were actually rather successful. Now, however, I realize that some of the materials that I used were not what I thought they were. Consequently, I am very anxious to get some help securely distinguishing them. It's not a simple question of the museum having enough personnel—it's a question of finding the right person to work together with me in a common endeavor.

**Considine:** *One area in which collaboration has made progress is exhibitions—particularly the opportunity to undertake technical study in preparation for an exhibition catalogue or technical study of the objects, once they have been gathered at one place for an exhibition. The work that Jane Bassett did following the Getty exhibition on Adriaen de Vries is a good example of that. In general, the field has come to expect some technical information in a scholarly catalogue. In fact, the Getty Foundation really expects that of an applicant seeking funding for a permanent-collection catalogue.*

**Stone:** But the technical information isn't integrated into the text. One frequently reads catalogues where it's obvious that the people who wrote the art-historical part and the people who wrote the technical part did not read one another's work. I find this over and over again. It's as if they were in different countries and communicating by carrier pigeon.

**Considine:** *I agree. But I think we just have to take heart that it's a long process and that we are making progress.*

**Walch-von Miller:** As I've said, I think we need a medium to come together in collaboration. It's really hard to develop this conversation between fields. What we need, on the one hand, is education that explains to young people how necessary it is. On the other hand, we have some responsibility ourselves—we have to provide good examples of the wonderful output that can come through teamwork and collaboration.

**Considine:** *I guess the final question is why are we doing this? To what end is our research—what does it serve, and is it worthwhile?*

**Stone:** One can at least hope that both humane and scientific studies will continue to be driven by our curiosity, even if their ultimate end remains obscure, like most everything else. It is the simple enlargement of our curiosity that makes the most difference. While there may be many wrong answers, there are few wrong questions.

**Levin:** *I think what may be partly behind Brian's question is something that I heard early on in this conversation—this notion that in some instances technology or a new technique drives the research, rather than an important question.*

**Stone:** Well, that's not unique to any one discipline. The technique tends to drive the research rather than curiosity.

**Levin:** *In this particular field, is that more or less of a problem than in other endeavors?*

**Stone:** One thing that is obvious to me—at least about life in a museum and life in a university, because I've been in both—is that success at a university and success at a museum are based on different predicates. Success in an academic setting, especially the sciences, means succeeding in an area where others are succeeding—that is, in a “hot” field. You can work on exceedingly clever projects and discover marvelous facts, but if they are not of interest to your contemporaries, you're nowhere. But in a museum setting, where objects are being acquired and you're forced to say something about them at short notice, it is more a question of sheer survival. You're not so much trying to keep up with your peers as trying to prevent yourself from being caught up in some strikingly outrageous error.

In such a situation, you are obliged to be curious about virtually everything, and I find that very exciting.

**Lechtman:** At least in this country, we're being embarrassed by the failure of the liberal arts education system. The liberal arts once really did allow you to operate in a complex world, giving you the ability to handle data from the sciences, the humanities, and the social sciences—maybe not all of it in the same depth, but you had to be able to manage disparate data fields and perspectives. Now that's disappeared. We are trying in this field—which joins art history, archaeology, science—to put back what was once available to students in their higher education and what is no longer there because of the fractionation that's occurred. The only way to be successful in our field is to be able to manage several sets of data and to be able to ask questions that can be solved by combining those data sets. When I look at a museum catalogue these days, I am gratified to see how much more technical information there is—and not just in the appendix. But it's slow. What Dick tries to do in the museum, what Katharina tries to do with her institution, and what I'm trying to do at an institute of technology is to break down this divide between science on one side and the rest of the world on the other. And in my tenure here, I would say that I've been barely successful.

**Stone:** I have art history students now who—it is clear from their responses—have managed, in the 21st century, to get to a graduate education without once having been exposed to a physical science.

**Lechtman:** This is what we're against. But I think a great deal of progress has been made. You're quite right, Brian—in museums and catalogues, that's where we see it most obviously. We just have to keep up the fight. It's extraordinarily important. A couple of years ago I visited the Metropolitan Museum of Art at a time when it was about to receive a major gift in support of its conservation center. I met with the museum's director and I said, "You know, if you really want to keep your conservation staff interested in doing things that they feel are important, of the five days a week that those people are working in the lab, you've got to give them one day a week to do their own research. People need to be able to do their own thing—and if they can, then the likelihood is higher that they will reach out to work with other people on subjects that they find interesting and exciting."

**Considine:** *The Getty Foundation had a category of grants for midcareer training for museum conservators. The grant could have paid for the conservator's leave and a replacement position. Nobody even applied for them.*

**Lechtman:** That's probably because their bosses said that they couldn't.

**“For me what’s most important is that there is teamwork among at least three different disciplines—the conservator, the conservation scientist, and the art historian .”**

**Katharina Walch-von Miller**

**Stone:** Well, it's not quite that simple. If you're working in a museum, you're trapped by the museum schedule. You may ultimately have time to do your own work, but it has to be worked in around the schedule of shows and acquisitions. We always seem to have three major shows coming in at exactly the same time. The museum tries to schedule it otherwise, but something always seems to prevent that from happening.

**Lechtman:** I do think, in fact, that tremendous progress has been made. It's just that it's very slow. When you're in it day-to-day, you don't notice the advances so much. But I think that the advances are measurable, and the successes sometimes have been brilliant.



Photo: Christina Lehsten/Jargum





# Changing the Way Professionals Work

*Collaboration  
in the  
Preservation  
of Ethnographic  
and  
Archaeological  
Objects*

*By Nancy Odegaard*

A team including a toxicologist, conservator, conservation scientist, and members of the Hopi tribe discuss how to interpret X-ray fluorescence spectroscopy data from Hopi objects. Analysis revealed the presence of heavy metals (i.e., arsenic, mercury, and lead) in pigments, and possible pesticide residues—both potential health hazards. *Photo: Melissa Huber, Arizona State Museum, University of Arizona.*

AS CONSERVATORS OF ETHNOGRAPHIC AND ARCHAEOLOGICAL objects move toward greater cultural sensitivity to the objects in their care, the fact that they are charged with the task of protecting and preserving the cultural heritage of others becomes increasingly apparent.

Professional conservators focus on preservation. Sometimes their assessments of objects and collections lead solely to treatment. But at other times, their investigations and the subsequent knowledge produced can also influence the overall narrative of a research project. Conservators who work with objects from archaeological sites and indigenous cultures may represent just one specialty among many on a project. In these instances, the challenge for the conservator extends beyond preservation of the physical form of the objects to include interdisciplinary dialogues with other specialists, and the contribution of relevant information to a larger body of human knowledge.

More and more, there are examples of collaboration among conservators and curators, archaeologists, cultural representatives, conservation scientists, and others that illustrate how conservators of any specialty can contribute to cultural discussions through their focus on analysis and deterioration. Because conservators have a unique ability to see and understand the material aspects of objects, to relate material structure to technology, and to stabilize and protect objects from deterioration, they can contribute directly to scholarly inquiry—provided, of course, that they are part of the discussion.

*Near right:* A conservator from the Arizona State Museum and a representative from the Gila River Indian Community discuss strategies for removal of adhesive from archaeological ceramic vessels, and for the objects' ongoing care and storage. *Photo:* Janelle Weakly, Arizona State Museum, University of Arizona.

*Far right:* A storage solution for pottery subject to repatriation under the Native American Graves Protection and Repatriation Act. The pottery's failed adhesives were removed using solvent vapor, the sherds placed in an archival box, and access to the stored object restricted. *Photo:* Julie Unruh, Arizona State Museum, University of Arizona.



## Technical Studies

Over the last 50 years, scientific and technical studies have become an important part of the conservation field. Conservation science investigates the variations of material and technology over time through the use of analytical techniques and through the application of data to models that explain how raw materials are transformed into new materials (as when clay constituents transform into a ceramic) and how they decompose. This specialized knowledge complements and supports studies of deterioration and the development of stabilization strategies.

Traditionally, studies in conservation start with artifact structure. (In fact, sometimes it is assumed that this is all that remains, or all that needs to be studied.) After a review of materials composition and construction techniques, comparative methods are used to assess the artifact's response to the environment or its state of deterioration, which is then examined and reported. Finally, treatment techniques are evaluated, and new treatments are devised to stabilize the symptoms of deterioration visible on the object. The overall approach is built on tangible material structure.

Studies in technical art history have been used in conservation for identifying raw materials, evaluating structure and properties of creative technologies, and explaining the mechanisms of deterioration. Technical art history can also provide a range of data useful to research in such areas as provenance or dating, technological style studies, authentication, and the testing of theories about the artist's aesthetics. As the scientific methods of studying, measuring, and characterizing material culture become more sophisticated, a wider range of research questions may be investigated.

Archaeological science has successfully introduced a wide range of analytical techniques to the study of archaeology. However, incorporating the results obtained from these techniques into

broader studies remains a challenge. In addition, issues of deterioration and stabilization are seldom discussed in anthropological material culture studies, and thus, references to alterations due to research, interpretation, or curation are rare.

Many ethnographic conservators share with researchers, scholars, and curators of anthropology an interest in contextual issues and broader cultural information. Yet ethnographic objects are most often evaluated in reference to Western art rather than in reference to the indigenous traditions from which they originate. Even though ethnographic conservators refer to information collected by anthropologists, they usually rely on a treatment approach derived from fine arts conservation. Few fine arts conservators are prepared or sensitized for work that takes into consideration anthropology's contextual issues. Material culture studies offer a contrast to the studies of connoisseurship and aesthetics used by art historians and fine arts conservators.

## Material Culture Studies

Material Culture Studies is the exploration of the relationship between artifacts and social issues. Drawing from anthropology, archaeology, design, history, geography, and museology, these studies provide a flexible framework for research and discussion of a wide range of information regarding cultural belief, behavior, history, and survival. It is not assumed that a collection or the cultures are fixed. As information is interpreted, reconstructed, reinforced, and qualified through several stages of research, perceptions from all periods of a collection's history are valued.

The integration of material culture studies with conservation studies offers significant benefits. First, aspects of material culture studies can assist conservation as it looks for ways to improve the methodology for considering intangible information. Second,



A conservator utilizing techniques from both conservation and conservation science to enhance her study of accretions and the deterioration of surfaces on ceramic vessels. Photo: Melissa Huber, Arizona State Museum, University of Arizona.

conservation observations may illuminate many issues in the study of a culture that have previously gone unnoticed. Common to both disciplines is a need to understand the physical properties of objects.

Through this integrated approach, ethnographic conservators participate in research that evaluates the importance of an object based on what can be learned from its context, the ideas behind it, and the forces that created it. Today it is understood by many ethnographic conservators that without the inclusion of context, the use of ethnographic objects in museums and their alteration (change through reassembly, consolidation treatment, replacement parts, pesticides, or exhibit mounts) can actually contribute to physical deterioration, to the loss of vital cultural information, and to the distortion of intangible integrity. For example, musical instruments constitute an object class for which certain types of changes, or the lack of special care techniques, will distort or damage the intangible sound quality.

In recent years, some conservators of indigenous or ethnographic objects have been challenged to consider the various cultural factors that may contribute to the deterioration of material culture or that may prescribe which cultural conditions should be preserved. Until recently, the topics of repatriation and ownership, for example, were areas that few conservators considered part of their field. Thus, using contextual analysis or an externalist view focused outside the material object itself to determine the significance of intangible attributes is taking conservators well beyond traditional conservation practices. To incorporate external viewpoints, collaboration with indigenous peoples is necessary.

It is now more common for major anthropology museums to collect, exhibit, and preserve collections through collaboration. At the Arizona State Museum in Tucson, for instance, conservators have been meeting with tribal representatives for several years to determine the appropriate procedures for conservation, storage, and

care of the nearly 20,000 Southwest ceramic vessels in the collection. This collaboration has affected the design of storage facilities, and the materials used in storage, treatment, and handling procedures. For example, funerary objects will be separated from other pottery. Plastics will not be used for storage containers or supports for these items; stabilization treatments will not be initiated; and these objects will not be exhibited. Instead, boxes will hold untreated vessels with weakened joins. These items will receive minimal handling, and cultural consultations will be arranged to address management questions.

### **New Partnerships, New Responsibilities**

Most often, the analysis and the interpretation of ethnographic and archaeological material culture have been the domain of ethnographic or archaeological curators. Within the conservation field, the potential benefits of preserving material culture while respecting cultural integrity are gaining recognition as an important issue. What, then, is the role of conservators in understanding the behavior, beliefs, wisdom, and concepts of beauty in traditional cultures?

For conservators working with ethnographic objects, issues of ethics and cultural significance need to be viewed in the context of the larger controversies of repatriation and cultural diversity affecting indigenous communities and their cultural material. Increasingly, indigenous peoples request that they be involved in the study and interpretations of their culture and history, that their access to collections in museums be improved, and that repatriation of artifacts and human remains be implemented without unnecessary delays. Input from indigenous peoples can be part of a conservator's contextual research—research that includes the intent of the originator artist or artisan, the object's conceptual integrity, and the object's other nonphysical attributes. However, an inquiry into this



The Smithsonian Institution's National Museum of the American Indian (NMAI) in Washington, D.C. *Photo: Courtesy National Museum of the American Indian.*

A view of the Tohono O'odham community section in the *Our Peoples: Giving Voice to Our Histories* exhibition. As part of its mission to recognize and affirm the Native communities of the Americas, NMAI exhibitions and programs are presented from a Native perspective, which the museum achieves through consultation and collaboration with tribal communities. *Photo: Katherine Fogden (Mohawk), courtesy National Museum of the American Indian.*



kind of contextual information is not part of the conservator's standard examination or documentation. Although rare, some institutions have adopted specific provisions to address contextual research—a fact that suggests that including these aspects of context is slowly becoming a more mainstream professional obligation.

The role of conservation in the relationship between museums and indigenous peoples is also changing. Indigenous peoples tend to be minorities in their countries and do not necessarily follow the dominant culture's ideology of artifact collection, study, and display. New partnerships and responsibilities are needed to bring these two constituencies together. Conservators at the University of British Columbia in Vancouver are among those who have established partnerships incorporating community values into the exhibition process and programming, as well as through the lending of items for traditional cultural uses.

As museums of anthropology throughout the United States have developed or remodeled their exhibition halls to effect cultural reconciliation, cultural issues have also affected traditional behind-the-scene activities, including conservation. Some of these activities—such as feeding or blessing objects with smoke, disassembly, or the addition of new material—contradict the basic tenets of conservation, and there is a need for guidelines for the study, treatment, or nontreatment of these collections. In preparing for the opening of the National Museum of the American Indian in Washington, D.C., conservators made advances in this area through the use of indigenous curators throughout the processes of object selection, interpretation, and preservation. Conservators included traditional indigenous methods and materials in the conservation treatments and invited indigenous experts to perform some of the treatments.

In several parts of the world, indigenous peoples have increased public awareness on issues of heritage, social problems, and legal rights—in spite of their long history of extermination, assimilation, division, persecution, relocation, and redefinition, resulting from contact with industrialized nations. Research and analysis of the specific impacts of contact on indigenous material culture have identified the imbalance in knowledge regarding indigenous art and culture.

Conservation can play an important role in the interdisciplinary study of tangible heritage. While the field will continue to research the physical aspects of objects it should also collaborate with others who can contribute a diverse range of intangible information regarding these objects. Understanding the social issues of traditional technologies is as important as preserving an object's physical attributes.

*Nancy Odegaard is the head of Preservation at the Arizona State Museum, University of Arizona, in Tucson.*

# Recent Initiatives in Technical Art History

By Brian Considine



GCI senior scientist Dusan Stulik using a handheld XRF device to analyze the elemental composition of a photograph. Originally developed for the Mars Pathfinder project, the portable XRF is an example of the technological improvements advancing the analytical capabilities of conservation. *Photo: Dennis Keeley.*

WHILE THE TECHNICAL STUDY OF ARTWORKS in an interdisciplinary context (referred to somewhat controversially as *technical art history*) has been going on for centuries, the 20th century witnessed considerable efforts—led by scientists and by scholars (like Edward Forbes at Harvard)—to encourage such studies. Today technical investigations of works of art bring together art historians, archaeologists, conservation scientists, conservators, anthropologists, and scholars from other disciplines to endeavor to understand the materials and techniques used in the production of artworks and artifacts. The purpose is to develop a fuller appreciation of the context and meaning of these works.

The extent of interdisciplinary activity in the technical exploration of works of art is reflected in the ever-increasing number of meetings and exhibitions in which art historians, conservators, conservation scientists, and other experts jointly participate. Every year there are conferences such as the upcoming October 2005 “Revival and Invention: Sculpture and Its Material Histories,” being organized by the Henry Moore Institute in England and the Université Libre de Bruxelles in Belgium (this gathering will explore the “complex reference system that has evolved around sculpture’s materials and techniques and what they tell us about the changing status of techniques and practices”). Increasingly, museums are including sections on process and technical study in their exhibitions. In addition, there are exhibitions that focus primarily on technical study. For instance, the J. Paul Getty Museum will mount an exhibit in November 2005 exploring the collaboration between art historians and conservators in the technical study and authentication of a French Renaissance cabinet. This process involved dendrochronology, radiocarbon dating, and X-ray fluorescence spectroscopy (XRF), in addition to archival research on print sources and provenance and period treatises on techniques.

## Advances in Technology

Conservation owes a great deal to the improvements in technology that have made instruments smaller, more convenient, and less expensive. There have been substantial advances in instrumentation in recent years, like the handheld XRF that was developed for the Mars Pathfinder project. Many of these refinements were achieved through the miniaturization of electronics and the rapid growth of the computational power of personal computers.

Refinements have also made it possible to get more out of established analytical techniques—refinements that increasingly require minimal or no sampling. For example, at the Cornell High Energy Synchrotron Source (a high intensity, high energy X-ray source), scientists working with conservators have developed a confocal XRF to obtain compositional depth profiles of historic paints. With this technique, the fluorescence signals from different paint



*Left:* A 17th-century cabinet-on-stand from the collection of the J. Paul Getty Museum. *Photo:* The J. Paul Getty Museum.

*Below:* Associate conservator Arlen Heginbotham of the Getty Museum applies fluorescent antibody stains to a cross section sample of paint from the cabinet. To precisely identify the materials and techniques used to create the cabinet's original surface, Heginbotham collaborated with staff from the USC Department of Biological Sciences. *Photo:* Brian Considine.



*Left:* *Bathsheba Bathing* from *The Hours of Louis XII*, a 16th-century illuminated manuscript by Jean Bourdichon. *Photo:* The J. Paul Getty Museum.

*Below:* GCI senior scientist Karen Trentelman examining an object using a Raman microscope. This technique was used to analyze the pigment palettes and painting methods on three leaves from *The Hours of Louis XII*. *Photo:* Dennis Keeley.



layers can be detected separately; the effective resolution of the instrument can be as little as five to ten microns. This is part of nanotechnology—doing chemistry and physics on an ultrascale, with small samples.

The application of Raman spectroscopy to the study of art is another relatively new development that allows for the nondestructive identification of pigments and the examination, on a microscopic scale, of corrosion products. Nancy Turner of the Getty Museum and Karen Trentelman of the GCI Museum Research Laboratory have been investigating the pigment palettes and painting techniques of manuscript illuminators. Using XRF, Raman spectroscopy, and infrared reflectography (IRR) on three leaves from the devotional book *The Hours of Louis XII*, one recent project identified pigments and characterized the manuscript painting techniques of Jean Bourdichon, a French illuminator working in Tours in around 1500.

New technology is also being turned to the investigation of photographs. The GCI is working with the Image Permanence Institute in Rochester, New York, and the Centre de Recherche sur la Conservation des Documents Graphiques in Paris to use quantitative XRF and Fourier transform infrared spectroscopy (FTIR) to advance the identification of photographs and photographic processes. The aim of the project is to identify the analytical signatures of different photographic processes so that conservators will be able to identify some processes that currently cannot be identified with optical microscopes.

New methods are enabling scientists to answer questions that have long eluded solution. For example, at the Rathgen-Forschungslabor Staatlichen Museen zu Berlin, Christian Goedicke is using optically stimulated luminescence to date unfired materials such as mortars. The luminescence in the quartz of the mortar is zeroed out during the transportation of gravel from the pit to the construction site—a fact that makes dating by dosimetry possible. The technique—used recently to date the Ingelheim residence of Charlemagne to the year 800—can also be applied to some stuccos and plasters.

New insights into artists' materials and techniques frequently come from comparisons between analytical results and period treatises on recipes or techniques and reconstructions. In October 2004, the international Art Technological Source Research study group—whose main objective is to professionalize research into art technological sources—met at the Instituut Collectie Nederland (ICN) in Amsterdam to discuss the role of source research and the use of reconstructions in art technological research. With an interest in the materials, tools, machines, sites, and techniques used in making objects, the group focuses on research with sources that include the object itself, information given directly or indirectly by the artist or artisan, and other primary, documentary information.

An example of combining technical analysis with research on primary sources is work Arlen Heginbotham of the Getty Museum has done with Michael Quick of the University of Southern California's Department of Biological Sciences to identify binding media in paint layers from a 17th-century cabinet-on-stand. Dr. Quick introduced Heginbotham to immunofluorescence microscopy (identification of proteins through antibodies), which, along with scanning electron microscopy (SEM) and other techniques, allowed for the precise identification of the materials and techniques used to create the original surface. Study of dozens of European manuscripts confirmed that the analytical findings were in accord with late 17th-century practice.

## Research Resources

There is a distinguished tradition of periodicals in a variety of languages devoted to technical art history. These include *Zeitschrift für Kunsttechnologie und Konservierung*, *The Journal of Cultural Heritage*, and *Techné*. An impressive new addition is *Art Matters, Netherlands Technical Studies in Art*, dedicated to publishing interdisciplinary studies “whereby conservators, conservation scientists, and art historians cooperate to create a deeper understanding of the making of works of art.” An editorial in volume 1 stated, “*Art Matters* wants to stimulate interdisciplinary cooperation and the development of new methodologies within the field of technical studies in art.” *Technologische Studien*—published by the Kunsthistorisches Museum in Vienna, with articles on a wide variety of artworks—is another recent and significant addition to the bibliography of technical studies of art.

Monographic studies are also making important contributions to the literature. Forthcoming titles include Jane Basset's *Adriaen de Vries: A Technical Study*, and *Coatings on Photographs*—a publication effort of the Photographic Materials Group of the American Institute for Conservation of Historic and Artistic Works (AIC)—which chronicles the historic uses of coatings on photographs, from early processes, like daguerreotypes and albumen prints, through modern processes, like Polaroid.

In a relatively short period of time, the Internet has made available significant resources for the interdisciplinary study of artworks. Conservation OnLine ([palimpsest.stanford.edu](http://palimpsest.stanford.edu)), initiated in 1993 as a project of the Preservation Department of Stanford University Libraries, covers a broad spectrum of conservation topics and contains numerous links to conservation resources at other sites. In June 2002, the GCI's launch of AATA Online ([www.aata.getty.edu](http://www.aata.getty.edu)) turned what had been a book publication into a free and searchable database, which today contains more than 100,000 abstracts of international conservation literature. There are also Web sites focused on specific topics. The International Network for the Conservation of



The title page from *Des Principes de l'architecture, de la sculpture, de la peinture, et des autres arts qui en dépendent. Avec un dictionnaire des termes propres à chacun de ces arts*, by André Félibien, published in 1697. By comparing current analytical results with period treatises such as this late 17th-century work, conservators can acquire new insights into artists' materials and techniques. Photo: Courtesy Special Collections, Research Library at the Getty Research Institute.

Contemporary Art (INCCA)—a group of international modern art museums and related institutions formally established in 2000—is focused on building a Web site ([www.incca.org](http://www.incca.org)) with underlying databases designed to facilitate the exchange of professional knowledge and information. INCCA partners also engage in efforts to gather information directly from artists.

In the United States, similar efforts are under way at the Center for the Technical Study of Modern Art at Harvard, under the leadership of Carol Mancusi-Ungaro. Her goal is to assemble an archive of documents, including interviews with and records of artists, conservators, and suppliers, as well as technical literature. She is working at the Whitney Museum with conservator Pia Gottschaller, who is building on her research on Max Beckmann's painting techniques and materials to determine if the examination tools typically employed on old masters' paintings are useful to the study of modern art.

## The Role of Grant Makers

In the last four years, the Andrew W. Mellon Foundation, through the dedicated efforts of its program officer, Angelica Zander Rudenstine, has made major investments to strengthen science in conservation and thereby strengthen the collaboration among conservation scientists, conservators, and curators. The Mellon Foundation has, for example, endowed conservation scientist positions at the Metropolitan Museum of Art in New York, the Art Institute of Chicago, and the Los Angeles County Museum of Art. It has also funded

postdoctoral fellowships, equipment, and collaborative research projects. Additionally, the foundation has established three incremental professorships specifically for scientists at the three major conservation training programs in the United States: Buffalo State College, in Buffalo, New York; the Institute of Fine Arts at New York University; and the University of Delaware, in Newark, Delaware. These positions will strengthen the curricula at these institutions, where there is already a firm commitment to technical study. At Delaware, for instance, the second-semester technical study project—designed to provide familiarity and experience with benchtop, instrumental, and analytical methods—is matched with parallel studies in the humanities, emphasizing an interdisciplinary approach.

Another initiative to foster interdisciplinary study is the Kress Paired Fellowships for Research in Conservation and the History of Art and Archaeology at the Center for Advanced Study in the Visual Arts at the National Gallery of Art in Washington, D.C. With funding from the Samuel H. Kress and the Getty foundations, an art historian and a conservator receive support for two months of field research and two months of collaboration in residence. Currently, Ann Boulton, a conservator from the Baltimore Museum of Art, is working with art historian Oliver Shell to examine Henri Matisse's casting practices to clarify the significance of his technical choices and to integrate this information into the larger context of the intellectual, economic, and social conditions in which Matisse worked.

The Getty Foundation made another contribution to the field by requiring that collections cataloguing projects receiving Getty grants include technical study. The forthcoming catalogue of French art at the Huntington Library, Art Collections, and Botanical Gardens, for example, has assembled a team of specialist art historians and conservators for a broad interdisciplinary study of the objects in the collection. And the Getty Foundation's museum conservation treatment grants specifically emphasize projects designed to stimulate interdisciplinary art-historical and scientific research.

Advances in analytical capabilities make possible exciting new avenues for understanding works of art, artifacts, and, most important, the cultures that produced them. Through collaborative projects with colleagues in the humanities and the sciences, conservators are developing new interpretations and meanings for artworks and cultural artifacts. The increasing sophistication of technical studies is making a difference in our understanding, appreciation, and conservation of objects, collections, and the built heritage. Our challenge is to strengthen our interdisciplinary approach so that we can work in true collaboration—rather than publishing separate and independent researches between the covers of the same book.

*Brian Considine is conservator of decorative arts and sculpture at the J. Paul Getty Museum.*



## Iraq Training Initiative

Last fall, the Iraq Cultural Heritage Conservation Initiative of the Getty Conservation Institute and the World Monuments Fund (WMF) completed its first training course in the compilation of site data and the inventory and rapid assessment of archaeological and historic sites.

The course, attended by 16 employees of the State Board of Antiquities and Heritage (SBAH) of Iraq, was held in Amman, Jordan, November 19–December 19, 2004. Fieldwork was conducted at the Amman Citadel, the Umm er-Rasas World Heritage Site, and at other historic and archaeological sites in the Amman area, thanks to the generous assistance of the Department of Antiquities of Jordan. In the face of the continued looting of Iraqi archaeological sites, the training focused on techniques, methodologies, and tools for accurately locating sites and recording their condition, and on developing a national computer-based inventory of sites.

The course, which was conducted in modules, trained participants in their areas of expertise, and in developing a team approach. It also encouraged the integration of site recording, documentation, and assessment. At the end of the course, participants began verifying their work with information in the SBAH archive, and they planned future work in the inventory and assessment of site conditions. This work will form the prototype for the SBAH national site inventory database.

In conjunction with further development of the national database and of a site inventory methodology, the GCI and WMF

Training in archeological site typology and feature description led by Dr. Zeidan Kafafi of Yarmouk University at the Temple of Hercules at the Amman Citadel, Jordan. Photo: Mario Santana Quintero.



will organize courses aimed at providing SBAH staff with tools to respond to the challenging task of protecting and managing tens of thousands of sites and historic monuments in Iraq.

The course was supported by a UNESCO grant and donation of technical equipment, including computerized survey equipment, Global Positioning System (GPS) units, and laser distance meters. In addition to teaching staff, the GCI and WMF contributed digital cameras and other technical equipment and software. Further participation and support were provided by English Heritage, the U.S. National Park Service, and numerous Jordanian and international experts, some of Iraqi origin.

The GCI-WMF Iraq Cultural Heritage Conservation Initiative aims to address the catastrophic damage sustained by Iraq's cultural heritage during and in the aftermath of the 2003 war.

## CIN Partnership Renewed

In September 2004, at a board meeting held in Gatineau, Quebec, the members of the Conservation Information Network (CIN) renewed their partnership, which was originally established in 1985.

The network—which facilitates the retrieval and exchange of information concerning the conservation and restoration of cultural property—includes six organizations: the GCI, the Canadian Conservation Institute, the Canadian Heritage Information Network, ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property), the International Council on Monuments and Sites, and the Smithsonian Center for Materials Research and Education.

For nearly 20 years, CIN has provided the conservation community with invaluable access to research resources through its Bibliographic Database of the Conservation Information Network (BCIN). The BCIN database contains over two hundred thousand bibliographic citations from *Art and Archaeology Technical Abstracts* (prior to 1998), technical reports, conference proceedings, journal articles, books, and audio-visual and unpublished materials.

The BCIN database, a free online service, can be accessed at [www.bcin.ca](http://www.bcin.ca).

## GCI Appointed to U.S. UNESCO Commission

The GCI has been appointed by the U.S. secretary of state to serve on the U.S. National Commission for UNESCO. Timothy Whalen, director of the GCI, will serve as the Institute's representative.

The National Commission will function as a Federal Advisory Committee, providing assistance to the U.S. government on matters relating to UNESCO. It will also function as a liaison with organizations, institutions, and individuals in the United States interested in the work of UNESCO.

The commission is composed of representatives from nongovernmental organizations; outstanding persons selected by the secretary of state, including individuals holding federal office; representatives from the educational, scientific, and cultural interests of state and local governments; and persons at large. It will conduct most of its work through committees, formulated along UNESCO's operating structure: education, culture, communications, and science. The GCI is a member of the Culture Committee.

Formed in 1945, UNESCO promotes international cooperation among its member states and associate members. The commissions form a vital link between civil society and the organization; provide valuable insight concerning the organization's program; and help implement many initiatives, including training programs, studies, public awareness campaigns, and media outreach.

## Harley J. McKee Award

Last November, Jeanne Marie Teutonico, associate director for programs at the GCI, received the 2004 Harley J. McKee Award from the Association for Preservation Technology International (APT). The award, the highest honor bestowed by APT, recognizes outstanding contributions to the field of preservation technology. The award is named for Harley James McKee, FAIA, a preservationist, architect, author, and professor whose 30-year teaching career benefited generations of students at five universities.

In presenting Teutonico with this award, APT cited her numerous contributions to the field of architectural preservation through her professional collaborations, strategic research, and scholarly dissemination.

The Association for Preservation Technology International is a cross-disciplinary organization dedicated to promoting the best technology for conserving historic structures and their settings.

## The Getty Foundation

To mark the milestone of 20 years of Getty philanthropy, the Getty Grant Program has changed its name to the Getty Foundation. The change reflects the expanded scope of the Getty's grant making over the past two decades, as well as its continuing commitment to philanthropy.

Since 1984, the Foundation has awarded approximately \$220 million to over 3,600 projects in more than 175 countries, to increase the understanding and preservation of the visual arts. Support for conservation projects represents more than one-third of this total.

Conservation grants are international, and they support projects related to both works of art and architecture. They include the survey and treatment of works of art in museum collections, with particular emphasis on projects that include interdisciplinary research. Grants also fund the conservation of historic buildings—particularly the crucial project planning stages. Additional support is provided for training and educational projects designed for both professional conservators and the wider public. Periodically, special initiatives are developed, such as the recent Campus Heritage Grants in the United States.

For more information about the Foundation's activities, please visit the Getty's Web site at [www.getty.edu](http://www.getty.edu).

## New GCI Postdoctoral Fellowship

The GCI is pleased to announce a new two-year postdoctoral fellowship in conservation science. The fellowship, which will support a specific project of the Institute, provides an annual stipend of \$26,400, round-trip airfare to Los Angeles, housing in the Getty scholar complex, and health benefits. One fellow will be selected for each two-year period. The application deadline for the 2005–2007 fellowship is May 15, 2005.

The 2005–2007 postdoctoral fellow will work in the analytical research section of the GCI's Science department, focusing on the application of mass spectrometry to the characterization of materials from modern paintings—chiefly polymeric binding media and synthetic organic pigments. In addition, the fellow will investigate the nature and composition of stains and discolorations on cotton canvases, a primary concern in the conservation of Color-field paintings.

Experience with a double focusing, magnetic sector mass spectrometer is valuable, as is practical knowledge and experience in liquid chromatography/mass spectrometry.

The fellow is expected to be in residence at the GCI for the entire two-year period. Applications will be accepted by mail only. To apply, please submit a letter of interest, with a statement of qualifications and curriculum vitae to:

Postdoctoral Fellowship in  
Conservation Science  
The Getty Conservation Institute  
1200 Getty Center Drive, Suite 700  
Los Angeles, CA 90049-1684

For further information, please contact the Getty Conservation Institute at [gciweb@getty.edu](mailto:gciweb@getty.edu) (inquiries only).

## Call for Proposals for Modern Paints Symposium

Proposals are now being accepted for “Modern Paints Uncovered,” a symposium on modern paint media to be held May 16–19, 2006, in London. Coorganized by the Getty Conservation Institute, the National Gallery of Art in Washington, D.C., and Tate in London, this symposium will draw together the varied strands of research currently being conducted by conservation scientists and conservators on modern paint materials.

Applicants may submit proposals for either a 20-minute oral presentation or a poster presentation addressing the conservation concerns and challenges of modern paint media. Topics might include the char-

acterization, manufacture, stability, and innovative use of modern paints; analytical techniques for identifying their components; novel and practical methods for conserving modern painted surfaces; and the evaluation of the methods and techniques used for treating and cleaning them.

Proposal abstracts should be double-spaced, English-language, MS Word documents of 250 words or less and formatted in 12-point Times New Roman font with 1-inch (2.5 cm) margins. All submissions should include presentation/poster title, author name(s), professional affiliation, mailing address, e-mail address, telephone, fax, and a short, one-paragraph biography. Abstracts should be sent via e-mail to [MPU@tate.org.uk](mailto:MPU@tate.org.uk). The deadline for submission is September 7, 2005.

Applicants will be notified of acceptance by November 15, 2005. The technical committee reserves the right to make the final determination of whether the proposal is an oral presentation or poster. Successful proposals will include one complimentary registration. For further information, please visit the Getty Web site at [www.getty.edu/conservation/science/modpaints/mpu.html](http://www.getty.edu/conservation/science/modpaints/mpu.html).

## ICCM Conference

The International Committee for the Conservation of Mosaics (ICCM) will hold its ninth triennial conference November 29–December 3, 2005, in Hammamet, Tunisia. The conference—entitled “Lessons Learned: Reflecting on the Theory and Practice of Mosaic Conservation”—is being coorganized by the Getty Conservation Institute and the Institut National du Patrimoine of Tunisia.

Aimed at professionals in the conservation of ancient mosaics, as well as at art historians and archaeologists of the Roman world, the conference will have a particular focus on conservation issues in the Arab world, a region rich in Roman mosaics.

The conference will encompass all

*Right: The Roman basilica at the site of Leptis Magna in Libya. Photo: Martha Demas.*

*Below: Detail from a mosaic at the Villa Silene in Libya. Photo: Martha Demas.*



aspects of mosaic conservation—training; in situ conservation; interventions such as sheltering, treatments, reburial, and lifting and relaying; documentation; presentation; maintenance; and site management. The four-day program will include over 50 papers and posters that reflect on theory, practice, and decision-making processes, and how these have evolved over the last 30 years. Case studies—which examine rationale, discuss the methodology or evaluation results of past projects, or illustrate how future evaluation is incorporated into project planning—will also be presented.

The official conference languages are French and English. An Arabic translation of the abstracts will be made available by ICCROM. Tours of Tunisian mosaic sites will be included in the conference program. A postconference tour will be offered to sites and museums with mosaics in and around Tripoli, Libya. The complete conference announcement is available on the Getty Web site at [www.getty.edu/conservation](http://www.getty.edu/conservation).

Formed in 1977 under the auspices of ICCROM, the ICCM is the only international organization devoted to mosaic conservation. Its triennial conference provides the principal forum for professionals in this field of conservation, and the published proceedings are an essential source of information about mosaic conservation.

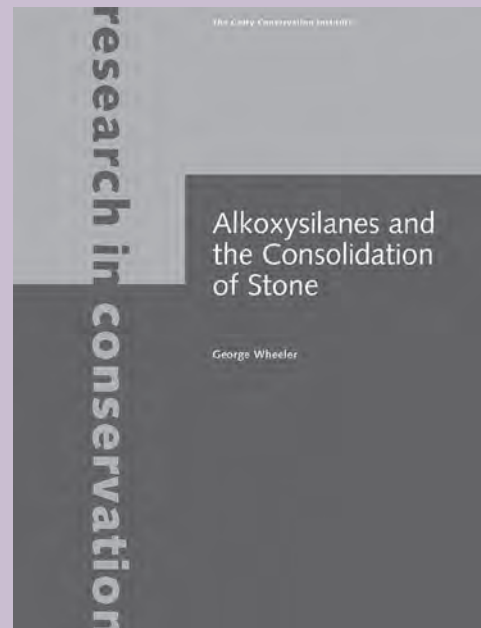
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## Alkoxysilanes and the Consolidation of Stone

By George Wheeler



Stone is one of the oldest building materials, and its conservation ranks as one of the most challenging in the field. The use of alkoxysilanes in stone conservation can be traced back to 1861, when A. W. von Hoffman suggested them for the deteriorating limestone on the Houses of Parliament in London. Alkoxysilane-based formulations have since become the material of choice for the consolidation of stone outdoors.

This volume, the first to comprehensively cover alkoxysilanes in stone consolidation, synthesizes the subject's vast and extensive literature, which ranges from production of alkoxysilanes in the 19th century to the extensive contributions from sol-gel science in the 1980s and 1990s. Included are a historical overview, an annotated bibliography, and discussions of the

following topics: the chemistry and physics of alkoxysilanes and their gels; the influence of stone type; commercial and noncommercial formulations; practice; lab and field evaluation of service life; and recent developments.

Designed for conservators, scientists, and preservation architects in the field of stone conservation, this book will also serve as an indispensable introduction to the subject for students of art conservation and historic preservation.

George Wheeler is director of Conservation Research in the Historic Preservation Department at Columbia University and a Research Scientist at the Metropolitan Museum of Art, New York.

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## Heritage Values in Site Management: Four Case Studies

By Marta de la Torre, Margaret G. H. MacLean,  
Randall Mason, and David Myers  
Edited by Marta de la Torre



The analysis of the four historic sites featured in this publication—Grosse Île and the Irish Memorial National Historic Site in Canada, Chaco Culture National Historical Park in the United States, Port Arthur Historic Site in Australia, and Hadrian's Wall World Heritage Site in the United Kingdom—provides valuable insight into the creation and management of heritage values.

Each case study articulates how values are identified and assessed by the governing bodies; where (and with whom) the values reside; how the values are implemented into management policies and objectives; and the impact that these decisions have on the sites themselves.

This book will be a vital tool for institutions and individuals engaged in the study or practice of site management, conservation planning, and/or historic preservation. Also included is a CD-ROM that contains supplemental management and planning documents created and used by the site-management authorities.

Marta de la Torre is the director of the Museum Studies Graduate Certificate Program at Florida International University in Miami. Randall Mason is associate professor of architecture, Graduate Program in Historic Preservation, at the University of Pennsylvania, Philadelphia. Margaret G. H. MacLean is a cultural heritage analyst with the United States Department of State. David Myers is a research associate at the GCI.

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## Virginia Horton

Senior Project Coordinator, Field Projects



Photo: Dennis Keeley

Born and raised in Oregon, Virginia spent her first years in Portland before she and her parents moved to Eugene. Her father was a civil engineer and her mother, who is from Peru, taught Spanish part-time. During Virginia's childhood, her mother read to her in French, as well as raised her speaking both English and Spanish. This education fostered her lifelong interest in foreign languages—as well as a great appreciation for other cultures—and spurred her to major in Romance languages at the University of Oregon. Her other interests as a child included piano, flute, and, most especially, ballet, which she continued to study at a conservatory after college. Ballet is, to this day, a passion for her and her favorite performing art.

Virginia was certain that she wanted to use her language skills in whatever she did, and for two years after graduation she worked as a freelance translator. In 1996,

she moved to Seattle and joined Merrill Lynch as a bilingual benefits client advisor, assisting Spanish-speaking participants with their health and retirement plans. After two years there, she went to work for another financial firm in Seattle as a mutual fund project manager, producing and coordinating a variety of mutual fund reports, prospectuses, and SEC filings. In this job, she not only gained extensive experience in project coordination but also met her future husband, Derek Toledo.

In May 2001, Virginia moved to Los Angeles. As part of her job search, she attended the *Los Angeles Times* job fair, where the Getty had a booth. There she learned about a senior project coordinator position in Field Projects at the GCI. "That's the job I want," she told herself. In August of that year, Virginia was hired. Since then, some of the projects that she has particularly enjoyed being part of were the May 2002 symposium in Spain on the conserva-

tion of wooden polychrome retablos and the Organic Materials in Wall Paintings project. She currently works on the Maya Initiative, the proceedings book of the retablo symposium, and workshops being planned for the World Heritage cities meeting in Peru this year. She thoroughly appreciates being in a workplace where different languages are spoken and being able to utilize her language skills. She feels fortunate to have met many wonderful and interesting people while at the GCI.

In her free time, Virginia enjoys traveling with her husband, reading, gardening, and calligraphy.

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