

# CONSERVATION PERSPECTIVES

THE GCI NEWSLETTER

FALL 2020

BUILT HERITAGE CONSERVATION  
EDUCATION AND TRAINING



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# A Note from the Director



Photo: Anna Flavin, GCI

It is indisputable that education and training form the foundation of a profession. But as uncontroversial as that notion is, there is often less consensus within any given profession about what constitutes the best or most essential elements of that education. And in this historic moment of a worldwide pandemic, how—and in what ways—can education and training proceed and be effective?

This edition of *Conservation Perspectives* examines how conservation education and training in built heritage have developed since the mid-twentieth century. Without question there has been exponential growth, providing opportunities for learning that did not exist for earlier generations. But with changing circumstances—including the pandemic and its aftereffects, as well as the reduced availability of resources—new issues and questions arise regarding what the field needs to do to advance in this area. We hope that we can provide some insights into where we need to go by looking back at where we've been.

In our feature article, Jacqui Goddard, an architect who also teaches heritage conservation at the University of Sydney, charts the development of education in architectural conservation, which began in earnest in the latter half of the twentieth century. She notes that despite the rise of accreditation schemes, the divide between individual professions and disciplines and conservation practice has yet to be fully bridged.

In another article, my Getty Conservation Institute colleague Jeff Cody describes the GCI's activities in built heritage conservation training and education from its earliest days to the present. Similarly, Valerie Magar, Joseph King, and Rohit Jigyasu chronicle training and capacity building in built heritage conservation at ICCROM since its founding as the Rome Centre; they then offer a perspective on ICCROM's training efforts going forward. Paulo B. Lourenço, a structural engineer and professor of civil engineering at the University of Minho in Portugal, describes the essential role that structural engineering has in the conservation of built heritage and argues for more dedicated programs for structural engineers in this field. (He is leading such a multi-institutional program at the University of Minho.) Finally, in our roundtable discussion, Tony Barton (United Kingdom), Jigna Desai (India), and Frank Matero (United States) consider the necessary elements for improving education and training related to the conservation of built heritage, including the challenges and opportunities created by new technologies, as well as the continuing need for further development of standards in the education of professionals.

This remains a difficult and trying time for the world. That said, we must nevertheless cast our gaze toward the horizon and continue to explore ways that can ensure that conservation professionals, including those engaged in the conservation of built heritage, have the necessary skills to preserve our cultural heritage into the future—whatever that future may be.

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

Timothy P. Whalen

*John E. and Louise Bryson Director*

# Contents

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## BUILT HERITAGE CONSERVATION EDUCATION AND TRAINING

### 4 FEATURE ARTICLE

EDUCATION IN ARCHITECTURAL CONSERVATION  
Its Origins and Development

*By Jacqui Goddard*

### 11

BUILDING CAPACITY

The GCI's Efforts in Built Heritage Conservation

*By Jeff Cody*

### 15

TRAINING AND CAPACITY BUILDING IN BUILT  
HERITAGE AT ICCROM

A Historical and Future Perspective

*By Valerie Magar, Joseph King, and Rohit Jigyasu*

### 19

EDUCATION AND PRESERVATION ENGINEERING  
Keeping Our Heritage Structures Safe

*By Paulo B. Lourenço*

### 22

THEORY, PRACTICE, AND STANDARDS

A Conversation about Built Heritage Conservation  
Education and Training

### 28 RESOURCES

A list of resources related to built heritage conservation  
education and training

### 29 GCI NEWS

Projects, events, and publications

## THE GCI NEWSLETTER VOLUME 35 • NUMBER 2 • FALL 2020



### ON THE COVER

Participants in a 2014 MOSAIKON training course conduct a condition survey of the Achilles Mosaic at the Paphos Archaeological Park, Cyprus. Photo: Scott S. Warren, for the GCI.

# EDUCATION IN ARCHITECTURAL CONSERVATION

## ITS ORIGINS AND DEVELOPMENT

BY JACQUI GODDARD

**Education for architectural conservation has developed internationally in similar patterns. This is particularly true in anglophone nations, the focus of this article, where a common language and shared histories facilitated dialogue among advocates of architectural conservation education. Beginning around 1950, the creation of an appropriate model for hitherto unchartered specialist courses in architectural conservation became a subject of collaboration and debate within a widening circle.**

Although formal education in architectural conservation began after World War II, it had been an interest of volunteer groups and historical societies since the nineteenth century, when debates sparked by controversies connected with “restoration” of the minsters and other medieval buildings polarized opinion, prompting a discourse on conservation philosophy and technique. The debates centered on whether to “restore” or conserve as found. The restoration, or “scrape” approach—epitomized by the work of Eugène Emmanuel Viollet-le-Duc—referred to the principle of “unity of style,” achieved by removing changes to reveal the original design. The conservation, or “anti-scrape” approach, advocated by John Ruskin and William Morris in England, was to repair only and let the place tell its own history. Both arguments relied on close inspection and knowledge of traditional detailing and materials—and both encouraged education.

Following an idea by Viollet-le-Duc, the *École de Chaillot* in Paris developed a program in maintenance and restoration work in 1887. This course—which became a means for the French department of historic monuments to train architects and technicians for repair of historic monuments—continues to this day.

In England, the anti-scrape approach led to the formation of

the Society for the Protection of Ancient Buildings (SPAB) in 1877, which encouraged repair in the “conservative manner.” The society introduced training days in 1913 and longer training for architects in 1937 with the Lethaby Scholarship. The scholarship was modeled on the *Compagnons du tour de France*, with architectural students traveling the country, staying and working for six months with the architect-members of the society. The SPAB expanded the scholarship to include other professions, such as engineering, and in 1987 it introduced the William Morris Craft Fellowship program for craftspeople.

Because work on buildings involves physical interventions, the line between education in the sense of theory and understanding, and training in practical skills, is often blurred. The intention here is to describe the development of education in the knowledge of skills and approaches to conservation and preservation; training to implement work is merely touched upon.

### PROFESSIONALIZATION OF ARCHITECTURAL PRACTICE

The beginning of the restoration/conservation debate coincided with the drive to professionalize architecture practice and create standardized education to ensure professional standards. The



**Participants in the 1966 course on architectural conservation** at what was then known as the Rome Centre (today ICCROM). The Rome Centre was one of the first major institutions to develop and offer courses on architectural conservation. Photo: © ICCROM.

United States adopted licensing for architects in 1897, beginning with Illinois, and the National Council of Architectural Registration Boards was established in 1919. In Britain, the first Architects Registration Act was introduced in 1931 as a result of work by the Architects Registration Bill Committee, which began deliberations in 1889. What constituted an appropriate architectural education was—and remains—fiercely debated, but by the end of World War II the precepts of the Modern Movement were ascendant in architectural education.

A casualty of this ascendancy was the removal of traditional construction and the study of historical detail from the curriculum. On the other hand, the modernist principle of social responsibility encouraged interest in the care of buildings and places, which stimulated the growth of architectural conservation and, in turn, education in conservation as part of an architectural education. These changes—and the physically destructive urban renewal following the war—resulted in efforts to teach “appropriate” methods, with the application of conservation as an alternative to replacement of the valued and familiar.

Those who developed and promoted architectural conservation courses were generally, but not exclusively, architects

educated during the transition between traditional and modern educational methods, including James Marston Fitch (1909–2000), William Arthur Eden (1906–1975), Charles Emil Peterson (1906–2004), Guglielmo De Angelis d’Ossat (1907–1992), Piero Gazzola (1908–1979), William Singleton (1916–1960), Stephen W. Jacobs (1919–1978), Sir Bernard Feilden (1919–2008), Raymond Lemaire (1921–1997), Barclay Gibbs Jones (1925–1997), Sir Donald Insall (1926–), and Cevat Erder (1931–). They got to know each other through conferences and professional networks, such as the International Council on Monuments and Sites (ICOMOS) and the Council of Europe. Early courses in architectural conservation reflected the influence of the education these architects received, coupled with the interaction among the educators involved.

Eden and Singleton in the United Kingdom and Peterson in the United States were educated in the beaux arts tradition and advocated for survey and drawing, with the architect as team leader. Insall and Feilden in the United Kingdom favored the modernist paradigm that science can solve technical issues and that architecture has a role in solving social problems. Insall had added to his education by undertaking the SPAB Lethaby Scholarship

## Significant Meetings & Documents Related to Architectural Conservation 1931–2012

YEAR	REPORT / EVENT	LOCATION	HOST / INSTIGATOR
1931	La Conservation des monuments d'art et d'histoire Conference	Athens, Greece	International Museums Office (IMO)
1949	Meeting of Experts on Sites and Monuments of Art and History	UNESCO Headquarters – Paris, France	UNESCO, chaired by Paulo de Berredo Carneiro
1957	Congress of Architects and Specialists of Historic Buildings – Theme “Education and Interdisciplinary Co-operation”	Palais de Chaillot – Paris, France	International Committee for Monuments and organized by the Company of Head Architects of Historic Monuments of France
1963	Historic Preservation Today Conference	Williamsburg, Virginia, USA	National Trust for Historic Preservation
1964	Principles and Guidelines for Historic Preservation in the United States Report		National Trust for Historic Preservation
1964	Second Congress of Architects and Specialists of Historic Buildings – Theme “Problems of Restoration of Historic Monuments in Modern Life”	Venice, Italy	International Committee for Monuments
1965	Inaugural Meeting of ICOMOS	Warsaw and Kraków, Poland	International Council on Monuments and Sites (ICOMOS)
1967	Historic Preservation Tomorrow Conference	Williamsburg, Virginia, USA	National Trust for Historic Preservation
1968	Whitehill Report on Professional and Public Education for Historic Preservation		National Trust for Historic Preservation
1968	Meeting of International Experts on the Training of Architects, Restorers, and Technicians for the Conservation of Sites and Monuments	Pistoia, Italy	UNESCO
1971	American Institute of Architects Committee on Historic Resources Survey		AIA Historic Resources Committee
1972	North American International Regional Conference	Williamsburg, Virginia, USA	National Trust for Historic Preservation
1974	Training of Architects in Conservation Report		Council on Training in Architectural Conservation (COTAC) and Royal Institute of British Architects (RIBA)
1974	Historic Buildings Action to Maintain the Expertise for Their Care and Repair		Donald Insall for the Council of Europe
1975	European Architectural Heritage Year		Council of Europe
1975	Declaration of Amsterdam and European Charter of the Architectural Heritage		Council of Europe
1978	Historic Preservation and Higher Education: A Survey of Professional Opinion about the Education of Historic Preservationists – The Sprague Report		Paul Sprague for the National Trust for Historic Preservation
1978	Guide to Degree Programs in Historic Preservation		Education Services Division of the National Trust for Historic Preservation
1978	Symposium on the Implications of the Doctrine of Integrated Conservation for the Specialised Training of Architects, Town Planners, Civil Engineers and Landscape Designers	Ravello, Italy	Council of Europe
1980	Council of Europe Recommendation R(80) 16: Specialised Training of Architects, Town Planners, Civil Engineers, and Landscape Designers		Council of Europe
1993	ICOMOS Guidelines for Education and Training in the Conservation of Monuments, Ensembles, and Sites		ICOMOS
1995	Training Strategy in the Conservation of Cultural Heritage Sites		ICCROM
2003	Workshop on Education in Conservation in Europe: State of the Art and Perspectives	Leuven, Belgium	European Association for Architectural Education and European Network of Heads of Schools of Architecture
2005	Historic Preservation in Professional Architecture Education: An International Dialogue	Bath, UK	Jointly organized by RIBA (UK) and the AIA's Historic Resources Committee (USA)
2007	Teaching Conservation/Restoration of the Architectural Heritage: Goals, Contents, and Methods	Genoa, Italy	European Association for Architectural Education and European Network of Heads of Schools of Architecture
2009	Conservation Transformation	Dublin, Ireland	European Association for Architectural Education and European Network of Heads of Schools of Architecture
2012	Preservation Education: Sharing Best Practices and Finding Common Ground Conference	Providence, Rhode Island, USA	Roger Williams University

MEETINGS/CONFERENCES
  REPORTS OR OTHER DOCUMENTS

in 1950 and brought with him a practical hands-on approach to building sites. Fitch in the United States, influenced by his unfinished architectural education and his career as a journalist and activist, lobbied for the inclusion of other professions, as well as community advocates and tradespeople—before the principle of integrated conservation had achieved international consensus. Each contributed to the spread of architectural conservation education as a field of inquiry and practice.

Travel and conferences enabled not only connections in anglophone countries but also exposure to the strong European architect/engineer polytechnic approach of figures like De Angelis d'Ossat and Gazzola in Italy, and to art and architectural historians such as Lemaire in Belgium. They also brought the enthusiasm and optimism of international cooperation generated by post-World War II reconstruction, along with a belief that collaboration ensured peace.

### POSTWAR DEVELOPMENTS 1945–60

Interest in the interface between the conservation of artifacts and that of buildings had prompted the 1931 Athens conference, *La Conservation des monuments d'art et d'histoire*, organized by the League of Nations' International Museums Office. This interest increased in the postwar era, stimulated by the reaction to places and objects damaged during World War II. A period of prosperity and growth succeeded postwar austerity, and by the mid-1950s the rate of change in the built environment was rapid in many parts of the world. The number of organizations advocating for conservation expanded, reflecting a growing concern over what was being lost.

The first formal university course was rooted in a beaux arts architectural curriculum and in the repair of medieval buildings. It was antimodernist and did not espouse the anti-scrape philosophy advocated by the SPAB. Established in 1950, it was a Certificate in Preservation and Restoration of Historic Buildings at the Bartlett School of Architecture, University College London. The course was “intended for qualified architects who wish to acquire specialized knowledge of the repair, preservation, and maintenance of historical buildings in the British Isles.”<sup>1</sup>

In the United States, the first specific university-based course on preservation was part of an undergraduate architectural history program in the University of Virginia architecture department in 1959. Developed by Frederick Doveton Nichols (1911–1995), the course—designed for architectural historians, not architects—

concentrated on preservation of the “pure form,” as demonstrated by Nichols's success in having the 1895 Stanford White version of the Jefferson Rotunda (built after an 1895 fire) removed and replaced in 1976 by Jefferson's original design.

In 1957, twenty-six years after the Athens Congress, the First International Congress of Architects and Specialists of Historic Buildings was held in Paris. The theme was education and training, and, not surprisingly given the location, it focused primarily on the French system of educating architects to work on important buildings. It was attended, however, by representatives from twenty-eight countries.

### EXPANSION OF ARCHITECTURAL CONSERVATION EDUCATION 1960–80

The first course closely related to what we understand today as an education in conservation or preservation awarded the diploma in Conservation of Historical Monuments at the Institute of Archaeology, London, established in 1960 by William Arthur Eden. Despite being housed in the Institute of Archaeology, a professional qualification in architecture was a prerequisite. Like the Bartlett course and others that followed, it was designed to provide specialist education to architects on the technical repair of historic buildings. Both courses were a reaction to perceived deficiencies in the education of architects and did not address matters such as design, which were considered part of architectural education.

The Second International Congress of Architects and Specialists of Historic Buildings was held in Venice in 1964. This meeting gave rise to the Venice Charter and the formation of ICOMOS (the International Council on Monuments and Sites). Eden presented information about the Institute of Archaeology

course, and others addressed education. It was also a subset of the discussions about philosophy, promulgation of published material, creating networks, and garnering support for what was then known as the Rome Centre (which became ICCROM in 1978).

The Rome Centre initially focused on collecting and disseminating scientific and technical information about conservation. However, a “worldwide survey” carried out by staff from 1959 indicated that “training of specialists in all types of restoration work”<sup>2</sup> was urgently needed. In 1962 the Centre began teaching in collaboration with the University of Rome, but by 1966 it had taken sole responsibility for the courses. A science- and museum-based institution, therefore, took on an architecturally



**Professor James Marston Fitch (right) and instructor Theo Prudon (second from left) examining a joint thesis project** by students in Columbia University's historic preservation program, 1974. Photo: Michael A. Tomlan.

based course, with a strong emphasis on material science and the technology of construction and repair.

In addition to attending conferences, pioneering educators visited each other and exchanged information. Visits and fact-finding missions, such as a world tour that Fitch and Peterson undertook in 1963, established common ground among educators as they tried to determine the appropriate way to teach architectural conservation.

The established courses influenced and resembled each other. The interaction among their developers facilitated the dissemination of the different approaches that each brought to the table. They responded not only to international trends but also to local history, construction, technology, and threats. The University of Manchester MA in Conservation, begun in 1967, focused on the British vernacular with a strong emphasis on materiality. Erder's concentration on Turkish architecture in the MA in Conservation at Ankara METU in 1965 and Peterson's development of the Technology of Early American Buildings program in Columbia University's MS in Historic Preservation from 1968 were other examples of local focus. In the 1963–64 academic year, Cornell University broadened the field with the introduction of programs in preservation planning; that same year there was a strong planning emphasis in the course established at the Edinburgh College of Art.

The frequency of conferences, meetings, and reports about architectural conservation education in the 1960s and 1970s was indicative of international interest in conservation. These interactions promoted the inclusion of many disciplines within the conservation process, although the base assumption was that architecture still predominated. Meetings included a 1968 UNESCO-supported gathering of experts in Pistoia, Italy. Reports included the *Whitehill Report* into education, also in 1968, of the National Trust for Historic Preservation (NTHP), and Donald Insall's *Historic Buildings: Action to Maintain the Expertise for Their Care and Repair* in 1974. The 1978 *Sprague Report into Historic Preservation and Higher Education*, commissioned by the NTHP, gave rise to the National Council for Preservation Education. The scarcity of architects equipped to work on historic buildings and the need for more education were recurring themes. Each discussion, however, largely repeated the same questions, and no substantive conclusions were reached other than that something should be done. Not defined was what a postgraduate course was supposed to teach, who it was designed for, when it should be given, and what it should entail. That creativity and preservation were potentially at odds was also a recurring theme. The architect's role as a creative influence on the future of historic buildings, while receiving occasional mention, was usually only discussed in relation to the potential conflict between conservation and "progress."

Despite the participation of the American Institute of Architects, the Royal Institute of British Architects (RIBA), and the International Union of Architects (UIA) in the examination of the education of architects in conservation, these discussions were by no means mainstream within the architecture field. Feilden strongly influenced the establishment of a specialist course in

York in 1971, and the European Architectural Heritage Year in 1975 encouraged him to promote further action on courses with a strong link to the education of UK architects. This was facilitated by his position on the RIBA board and as chair of the Council on Training in Architectural Conservation (COTAC), as well as his association with Insall, an active member of the UIA.

In 1971 COTAC and RIBA established a study group on the conservation education of architects. The COTAC/RIBA Study Group's stated aim was to diffuse "conservation skills among generalists, not to train 'specialists.'"<sup>3</sup> The ensuing report resulted in an invitation to architecture schools to establish courses. This culminated in the establishment of courses at the Architectural Association in London, Leicester Polytechnic, and Liverpool Polytechnic.

Only two international training centers in architectural conservation were recorded by the Council of Europe steering committee for a 1978 symposium—ICCRUM and what became the Lemaire Centre.<sup>4</sup> In 1976 Raymond Lemaire founded the Centre for the Conservation of Historic Towns and Buildings as part of the College of Europe in Bruges, and by 1981–82 the Centre had moved to the University of Leuven, attached to the Department of Architecture; it was renamed the Raymond Lemaire Centre after his death in 1997. Lemaire, a strong advocate of a scientific approach, stated that "there is a need to stress and stress again that conservation is not just a question of taste and personal likes and dislikes."<sup>5</sup> This emphasis on scientific analysis is also evident at ICCROM, Columbia University, and Ankara METU, among others.

## POST-1980 AND THE HERITAGE PROFESSIONAL

In the 1970s and 1980s, publication of conservation theory and philosophy expanded. Charters and conventions increasingly defined the historic environment in more inclusive terms and pointed to intangible and spiritual dimensions, as well as the physical. By 1980 the Council of Europe was promoting "integrated conservation" and the conservation of recent, as well as ancient, buildings and places. These concepts gained international acceptance over time and were endorsed in 1993 in the ICOMOS *Guidelines for Education and Training in the Conservation of Monuments, Ensembles, and Sites*. Education now focused on interdisciplinary collaboration and finding common ground. Accompanying the expansion of ideas about heritage has been the international proliferation of courses from a variety of perspectives and disciplines. These had varying degrees of concentration on technical issues, but the design aspects of architectural conservation received little attention.

Integrated conservation also encouraged development of a conservation or heritage generalist to manage conservation processes. This prompted an increase in courses focused on heritage management, such as those at the Wildlife Institute (India) and Chulalongkorn University (Thailand); heritage tourism, with courses at the University of Salzburg (Austria) and the University of Mauritius; and cultural heritage studies at Deakin University (Australia) and the University of the Western Cape (South Africa), among many others.



## Courses & Degree Programs 1950–1980

YEAR	LOCATION	COURSES & DEGREE PROGRAMS
1950	Bartlett School of Architecture, University College London, London, UK	Certificate in Preservation and Restoration of Historic Buildings
1957	Faculty of Architecture, Scuola di Perfezionamento per lo Studio e il Restauro dei Monumenti, University of Rome, Italy	Diploma in Preservation and Restoration of Monuments
1959	International Centre for the Study of the Preservation and Restoration of Cultural Property, Rome, Italy	The Rome Centre opened. It became known as the International Centre for Conservation, or ICCROM, in 1978.
1959	Department of Architecture, University of Virginia, Charlottesville, Virginia, USA	Preservation course as part of undergraduate curriculum in architectural history (degree course 1960)
1960	Institute of Archaeology, London, UK	Diploma in Conservation of Historical Monuments
1960	Université Laval, Québec City, Québec, Canada	Specialization in built heritage and historic preservation in Master of Architecture program
1962	International Centre for the Study of the Preservation and Restoration of Cultural Property, and University of Rome, Rome, Italy	Two course streams were offered – one year for administrators and historians or two years for a degree as an architect-restorer
1963	Cornell University, Ithaca, New York, USA	History of Architecture program seminar in preservation
1964	Department of Architecture, University of Virginia, Charlottesville, Virginia, USA	Masters of Architectural History
1964	School of Architecture and Planning, Columbia University, New York, New York, USA	Two-semester course in preservation
1965	Department for the Restoration and Preservation of Historic Monuments, Middle East Technical University (METU), Ankara, Turkey	Masters in Restoration
1966	International Centre for the Study of the Preservation and Restoration of Cultural Property, Rome, Italy	Rome Centre takes over running of conservation courses from the University of Rome
1967	Department of Architecture, Manchester University, Manchester, UK	MA in Conservation
1967	School of Architecture and Planning, Columbia University, New York, New York, USA	MS in Historic Preservation
1968	Edinburgh College of Art, Edinburgh, UK	MSc in Conservation
1970	School of Architecture, Manchester University, Manchester, UK	MA in Conservation, Vernacular, and Historical Studies
1970	School of Architecture, University of Florida, Gainesville, Florida, USA	Masters in Historic Preservation
1971	Cornell University, Ithaca, New York, USA	Preservation Law
1972	York University, York, UK	MA in Conservation
1973	Columbia University, New York, New York, USA	MS in Historic Preservation
1975	Architectural Association (AA), London, UK	Graduate Diploma in Conservation
1975	Department of Architecture, Leicester Polytechnic, Leicester, UK	MA in Conservation
1975	Department of Architecture, Liverpool Polytechnic, Liverpool, UK	Diploma in Architectural Conservation
1975	Cornell University, Ithaca, New York, USA	MA in Preservation Planning
1975	Goucher College, Towson, Maryland, USA	BA in History with concentration in historic preservation
1976	Centre for the Conservation of Historic Towns and Buildings, College of Europe, Bruges, Belgium	Various courses offered. The Centre moved to Leuven in 1981/82 and became known as the Raymond Lemaire Centre in 1997.
1976	Boston University, Boston, Massachusetts, USA	MA in Historic Preservation
1976	Ball State University, Muncie, Indiana, USA	Masters in Urban and Regional Planning
1976	Colorado State University, Fort Collins, Colorado, USA	MA in History with concentration in historic preservation
1980	University of New South Wales, Sydney, Australia	Master of the Built Environment (Building Conservation)
1980	University of Sydney, Sydney, Australia	Master of Heritage Conservation

DEGREE PROGRAMS
  COURSES/EVENTS

Delegates to many meetings on conservation education developed a long list of aspirations, including the creation of textbooks, improved legislation, and the formalization of networks. But two questions that Eden raised at the 1964 Venice Congress are still unanswered (although they have been asked repeatedly). When in an architect's training should specialization on historical monuments be introduced? And should there be a separate professional organization for "Surveyors of Historical Monuments?"<sup>6</sup> In 1974 the COTAC/RIBA Study Group raised further questions about the form of training and experience required for architectural conservation, the nature of an appropriate qualification, and a suitable title for someone qualified in architectural conservation. These questions remain under discussion, as highlighted by recent accreditation debates.

It could be argued that Eden's professional organization question has been answered with the number of associations that have appeared since 1964, but use of the term "professional" is still a sticking point. How to define a "conservation," "preservation," or "heritage" professional—and whether that person should have some form of separate qualification or accreditation—have been debated since the first courses appeared. What would, or should, accreditation look like? Who would control and determine who was accredited? Should it be an addition to a professional qualification, or a separate qualification entirely?

Throughout the history of educational programs, advocates have largely preached to the converted, and the education of the architect in conservation has not significantly improved. The establishment of conservation networks, with varying foci, has exacerbated the divide between individual professions and disciplines and conservation practice. Irish architect and educator Loughlin Kealy has argued that "conservationists must not just think in terms of the future of education and training in respect to conservation/restoration. It is essential that the question be asked what conservation/restoration can contribute to the ability of architecture to address the future."<sup>7</sup>

In architectural education, the divide between architecture and conservation was evident in the debates that occurred even with the first courses for architects. The resultant separation of conservation from standard architectural education and practice was exacerbated by the evolution of courses that acknowledged the many disciplines involved with conservation as well as the breadth of that involvement. Separate education grew from initial forays into providing information about working with historic monuments, to certificates and diplomas, then to degree courses with ever-widening parameters of what is considered worthy of protection.

Courses, by nature, are only introductory. They cannot answer every need of conservation, from repair of specific details to interpretation strategies, policy formation, and museum conservation. Nor can they tackle complex questions, such as design within historical constraints, except at a most basic level. Architectural education, on the other hand, faces an ever-increasing range of subjects to be covered, further reducing focus on traditional materials and construction. This means that many architecture graduates lack the basic knowledge required for specialist instruction.

The education of the architectural conservation team may have a common objective, but for the team to function, each member has a separate role in achieving that objective. This acknowledgment is beginning to appear in international policy documents, such as the 2017 *Delhi Declaration*, which states that "specialized education is necessary for each heritage discipline and should not be reduced to a generalist approach."<sup>8</sup> For the architect, there are attempts to reconnect conservation with architectural education through initiatives such as dual degrees, but it is too early to say if these will succeed.

The rise of accreditation schemes suggests that two types of professional are being developed. However, whether a generalist historic environment professional will overtake the professional (such as an architect or engineer) with a conservation specialization or accreditation, remains to be seen. While accreditation schemes help a client determine if a person or firm has the appropriate knowledge, skills, and philosophy to undertake a project, they exacerbate the creation of "silos" and further separate conservation from the creative act of design.

Architects concerned with built environment conservation must engage with architectural education. Understanding the past is vital in addressing the future of our historic environment. If, as argued by architect and educator Ernesto Rogers, "conserving and constructing are moments of a single act of conscience,"<sup>9</sup> then it must be part of the architectural agenda. Conservation courses need participants who already have an understanding of place, and architecture students need to understand the historic context within which they work.

*Jacqui Goddard, an architect, teaches in the Master of Heritage Conservation program at the University of Sydney and was a senior lecturer in architecture, conservation, and traditional construction at the Robert Gordon University in Aberdeen, Scotland.*

1. "University of London, "Bartlett School Of Architecture, Session 1951-52 Courses of Study," in *University College Calendar Session MCMLI-MCMLII* (London: University College, 1951), 222-23.
2. Jukka Jokilehto, *ICCROM and the Conservation of Cultural Heritage: A History of the Organization's First 50 Years, 1959-2009* (Rome: ICCROM, 2011), 28.
3. RIBA, "Record of the Discussion of the Interim Report of the COTAC/RIBA Study Group by the Honorary Officers of the Board 15 May 1974," 1.
4. Council of Europe Working Party, "Steering Committee for Regional Planning and Architectural Heritage Report for Symposium, 15 March 1978," uncatalogued papers at the University of Edinburgh, Scottish Centre for Conservation: CDAT/ Coll (78)1 (Strasbourg 15 March 1978): 28.
5. Derek Linstrum, "An Interview with Raymond Lemaire," *Monumentum* 26, no. 2 (1983): 97.
6. William Arthur Eden, "The Training of Architects for the Care of Historical Monuments," paper presented at the Second International Congress of Architects and Specialists of Historic Buildings, Venice, 1964.
7. Loughlin Kealy, "Teaching/Thinking/Learning/Doing: Conservation and Creativity in Architectural Education," *EAAE Transactions on Architectural Education* 38 (2008): 41.
8. ICOMOS, *Delhi Declaration on Heritage and Democracy* (Paris: ICOMOS, 2017), point 2.
9. Ernesto Rogers, quoted by Manuel J. Martin-Hernández, "Architecture from Architecture: Encounters between Conservation and Restoration," *Future Anterior: Journal of Historic Preservation, History, Theory, and Criticism* 4, no. 2 (Winter 2007): 65.

# BUILDING CAPACITY

## The GCI's Efforts in Built Heritage Conservation



BY JEFF CODY

SINCE ITS INCEPTION, THE GETTY CONSERVATION INSTITUTE HAS ADVANCED CONSERVATION through building greater capacity for a broad cohort of global professionals seeking to conserve built heritage effectively and sustainably. These efforts, which include both classroom education and field-based training, have been geared not only to conservators and conservation technicians, but also to architects, archaeologists, engineers, urban planners, and other professionals related to the conservation field. Training has included experiential activities, often catalyzed through GCI field projects conducted with an array of institutional partners. Other learning modes include formal educational activities, such as stand-alone courses and, where appropriate, collaborations with universities and international conservation organizations.

This commitment to conservation education and training—baked into Getty's DNA—was reinforced in the GCI's current strategic plan,

which calls for “expanding and strengthening the GCI's impact in education and training.” The focus here is on the Institute's Buildings and Sites department's education and training work related to built heritage. Other GCI departments—Science and Collections—and staff engaged in the Information Center, publications, and dissemination also contribute to the GCI's education efforts.

### EVOLVING EFFORTS

The GCI's engagement with conservation training began with its first field project, the Tomb of Nefertari in Egypt, when the conservation of this historic site was undertaken in 1986 in partnership with Egyptian authorities. Training as a component of projects has continued as the Institute has worked strategically to assist professional conservation communities on projects related to archaeological site management, earthen architectural conservation, and urban conservation.

**GCI consultant Mario Santana Quintero (center) of Carleton University instructs Moroccan project partners** in surveying room interiors in the museum area of the Kasbah of Taourirt in Ouarzazate, Morocco. Work at the site was carried out in collaboration with Morocco's Centre de Conservation et de Réhabilitation du Patrimoine Architectural des Zones Atlasiques et Subatlasiques and was part of the Institute's Earthen Architecture Initiative. Photo: Scott S. Warren, for the GCI.

In 1990 and 1993 the GCI created and delivered courses on the conservation and management of archaeological sites at Paphos, Cyprus. These courses not only established a precedent for later training; they also followed the precedent of the Conservation in Field Archaeology courses the GCI had created in 1987, delivered in Israel and four US cities. Roughly thirty years later, the Institute's expertise in archaeological site management and conservation, and its commitment to site-based training, continue in our multiyear projects.

One such project is at the World Heritage Site of Bagan in Myanmar, where the GCI has partnered with the Department of Archaeology and National Museum to address five conservation challenges at this vast, significant cultural landscape: site management; repair and seismic retrofitting of monuments; conserving decorated elements of the site; recording, documentation, and information management; and the formulation of a capacity development strategy for local professionals. The temple of Myin-Pya-Gu will be the model site for training and research activities.

GCI work and our training programs in earthen architectural conservation began in the middle of the 1980s, when the Institute, in partnership with the Museum of New Mexico State Monuments, conducted a long-term research project on adobe consolidation at historic Fort Selden. This fruitful effort was followed by organizing, in conjunction with the National Park Service, the Adobe 90 conference for the study and conservation of earthen architecture. This important international conference coincided with other international training initiatives and with the formation of several committees devoted to earthen architectural conservation. In November 1997, following their collaboration on PAT96 (the first Pan-American Course on the Conservation and Management of Earthen Architectural and Archaeological Heritage), the GCI, CRATerre-EAG (the International Centre for Earth Construction—School of Architecture of Grenoble) and ICCROM created a cooperative framework—Project Terra—to promote the study and conservation of earthen architecture heritage.

This project evolved into the GCI's Earthen Architecture Initiative, which has disseminated results of earthen conservation research not only through publications, but also through the training of partners and other stakeholders at the Kasbah of Taourirt (Ouarzazate, Morocco, 2011–16) and at the church of Santiago Apóstol in the village of Kuñotambo (Cusco, Peru, 2017–19). Recently, the GCI developed a monthlong International Course on the Conservation of Earthen Architecture, organized in partnership with Abu Dhabi's Department of Culture and Tourism and delivered at Al Ain, where, in 2018, midcareer professionals from a range of disciplines and

geographic areas were trained to balance “a theoretical foundation in earthen heritage conservation and management with emphasis on practical methods and hands-on experience.” This ongoing biennial training opportunity was necessarily postponed in 2020 because of the COVID-19 pandemic, but the GCI's commitment to capacity building in earthen heritage remains an integral part of the Institute's professional work. Similarly, the conservation and retrofitting work at the church in Kuñotambo provided a venue for training more than three hundred local architects, engineers, and conservators in conservation and retrofitting techniques for historic earthen buildings, and for disseminating our research findings.

Regarding historic cities, our first concerted training began in 2003 with a decade-long collaboration with the Organization of World Heritage Cities (OWHC), one of whose objectives was to develop a one-day workshop for mayors and related decision makers of World Heritage Cities about their roles and responsibilities with respect to conservation. The workshop became a popular component of the biennial OWHC Congress, convened in different World Heritage Cities, as the workshop was modified based on participants' evaluations. In 2012 the GCI also began delivering a series of urban conservation workshops in Southeast Asia, building on an assessment of conservation training needs in the region. From 2012 to 2015, the Institute partnered with Think City, a Malaysian organization committed to effective urban regeneration, to deliver three workshops in the World Heritage-inscribed city of Penang, primarily for Malaysian midcareer professionals. These site-based training efforts became the basis for a more regional training effort, “Old Cities, New Challenges,” directed to midcareer professionals from the ten-country ASEAN regional network.



**Participants in the 2018 workshop, “Old Cities, New Challenges,”** directed to midcareer professionals from the ten-country ASEAN regional network. The training program, held in Penang, Malaysia, was co-organized with Think City, a Malaysian organization committed to effective urban regeneration. Photo: Jeff Cody, GCI.

## OTHER ACTIVITY-BASED TRAINING

These three domains of conservation were not the only ones where the GCI laid a foundation for future training. In the late 1990s, two other kinds of activity-based training followed—the conservation of historic wall paintings and the in situ conservation of ancient mosaics in the Mediterranean region. More recently, the GCI's Conservation of Modern Architecture Initiative has generated a suite of long courses and shorter workshops that further illustrate how the Institute seeks to advance conservation practice through selecting projects and underserved areas of specialization.

The GCI's engagement with both formal education and on-site training in wall paintings conservation began in 1985 when the Courtauld Institute of Art (at the University of London) and the GCI collaborated on a three-year diploma course in wall paintings conservation, the first formal UK training program in the subject.



**An exercise during the 2018 International Course on the Conservation of Earthen Architecture**, held in Al Ain, Abu Dhabi, UAE. The GCI organized the course in partnership with Abu Dhabi's Department of Culture and Tourism. Photo: GCI.

This world-class course continues to train professionals, with impact well beyond the United Kingdom, and Getty has continued to support the Courtauld, most recently with an endowment grant of \$5 million to ensure the long-term future of the wall paintings conservation graduate program. The GCI also engages widely in field projects related to wall paintings conservation—from the conservation of historic murals in Los Angeles to historic sites in China, Egypt, Italy, and Peru. In each case, by engaging in multiyear field campaigns involving project partners, GCI staff specializing in wall paintings conservation worked alongside local staff, sharing international practice with local knowledge. For example, during the project at Cave 85 of the Mogao Grottoes in Dunhuang, China, the GCI was able to train—from the late 1990s to 2010—a large cohort of dedicated professional staff, who continue to apply lessons learned from this collaboration. Related capacity building in wall paintings conservation in China was achieved through an MA degree program in Lanzhou, linked to the Courtauld Institute of Art. Similarly, at sites in the Valley of the Kings and the Valley of the Queens in Egypt, GCI conservators undertook on-site training with the Ministry of Antiquities team. At Kuñotambo, local artisans and staff from the Ministry of Culture exchanged knowledge on traditional techniques and current international practice with GCI staff to advance the conservation of the wall paintings, typically associated with Peru's earthen heritage.

The GCI's extensive work in the Mediterranean region on the conservation of in situ archaeological mosaics is another example of how the Institute has focused on building capacity—from conservation technicians to archaeological site managers and museum professionals. As noted with respect to Paphos, the conservation and management of archaeological sites has been a major domain of the Institute's work since its inception. In addition to the site-based courses at Paphos

in 1990 and 1993, the GCI convened a 1995 seminal conference on the conservation of archaeological sites in the Mediterranean (co-organized with the Getty Museum) and a subsequent workshop on management planning for archaeological sites in Corinth, Greece, in 2000, both of which resulted in important publications. Building on this work and the recommendations emerging from it, the GCI partnered with the Institut National du Patrimoine (INP) in Tunisia to engage in capacity-building efforts focused initially on conservation technicians and subsequently on archaeological site managers. Several Tunisian archaeological sites served as training venues, where technicians learned to document, conserve, and protect in situ archaeological mosaics, and how to sustain maintenance efforts. Lessons imparted were followed by extensive supervised practical work in a series of roughly monthlong modules stretched over two years and reinforced by trilingual didactic and reference materials and assigned work between modules. These courses for conservation technicians were complemented by a series of four intensive two-week workshops (delivered at several sites) for Tunisian archaeologists and architects, employed as site managers by the INP.

In 2008 these broad-based training efforts became one of the building blocks of MOSAIKON, a collaborative regional initiative of the GCI, the Getty Foundation, ICCROM, and the International Committee for the Conservation of Mosaics (ICCM) to improve the conservation and management of archaeological mosaics in the southern and eastern Mediterranean areas. Over ten years, the initiative focused on training multiple profiles, the development of replicable models of best practices, the creation of a vibrant professional network, and the dissemination and exchange of information on the conservation and management of archaeological mosaics, both in situ and in museums and storage. Entering its final phase, MOSAIKON has trained over two hundred people—conservation technicians

and archaeological site managers—from seventeen countries who represent a new generation of heritage practitioners. The initiative also created extensive didactic materials for conservation technicians in English, French, and Arabic, which are freely available online.

In addition to these site-based, capacity-building efforts in specific regions, the GCI demonstrated its commitment to global conservation education through two training collaborations with ICCROM. The first of these were three courses at ICCROM devoted to Architectural Records, Inventories, and Information Systems for Conservation (ARIS)—delivered in 2005, 2007, and 2009. These courses built on ICCROM’s initial 2003 documentation course and on the GCI’s RecorDIM Initiative, which, beginning in 2003, sought to “identify the critical gaps between those who provide the recording and documentation tools utilized in conservation and the conservation professionals who use them—and to work to bridge those gaps.”

The second ICCROM training collaboration was the International Course on Stone Conservation, delivered four times between 2009 and 2015, the first in Venice and the last three in Rome (where the Non-Catholic Cemetery was a partner and a focus for fieldwork). These three-month-long courses rejuvenated an earlier series of stone conservation courses ICCROM delivered in Venice in collaboration with UNESCO for participants from around the world. Their long duration allowed for in-depth learning outcomes related to the mineralogical and physical characteristics of stone, its mechanisms of decay, and the best methods for analytical investigation, maintenance, and preventive conservation. As with many other training projects, a series of didactic materials and resources were made available not only to participants, but also via digital means to a worldwide audience.

The GCI’s Conserving Modern Architecture Initiative has engaged in two kinds of training courses—one introductory and the other on conservation management planning; a third, longer course is being developed that will provide participants with a more

comprehensive series of learning outcomes related to conserving modern heritage. The four-day introductory course, organized with the US National Center for Preservation Technology and Training, was delivered in Los Angeles in 2018 and 2019; a third iteration was planned for 2020 but has been postponed because of COVID-19. The course uses lectures, laboratory sessions, and field visits to iconic modern sites to discuss the challenges of preserving modern heritage within the framework of historic preservation practice and philosophy. The second course, related to conservation management plans, was organized in partnership with the Getty Foundation’s “Keeping it Modern” (KIM) project, which, between 2014 and 2020, awarded grants to sixty-four projects of outstanding architectural significance. One of KIM’s objectives is to create a new global network of professionals dedicated to modern heritage; a portion of the grants is devoted to preparing conservation management plans, training for which is provided in the form of a weeklong workshop in London, delivered by the GCI and the Twentieth Century Society.

## THE ROAD AHEAD

This summary of much of the GCI’s capacity building related to built heritage demonstrates the degree to which hands-on training at actual historic sites has been integral to the Institute’s work. Our training efforts in built heritage also underscore the importance of more formal training, either through stand-alone courses and workshops (usually in partnership with heritage agencies), or sometimes with educational institutions. Often place-based training and formal modes of learning are complementary. Training has also been an important way to disseminate other aspects of our work, such as findings from research or new tools and techniques—and to embed methodologies and processes for sustainable conservation outcomes.

Given the unknown implications of the COVID-19 crisis, it is difficult to predict how future capacity-building work will occur.

Nevertheless, the GCI remains focused on underserved geographic regions and areas of conservation practice in need of greater education and training. Furthermore, because future capacity building will undoubtedly include remote learning via digital technologies, the Institute is exploring how best to use virtual-based learning methods to reach larger audiences and complement or increase the impact of more traditional educational methods. Clearly, it is essential to consider what can be delivered online against the ongoing need for practical, on-the-ground training, and the Institute will seek to achieve that crucial balance. Regardless of the modes utilized to increase the knowledge and skills of conservation practitioners, the GCI’s commitment to providing high-quality training for our largely professional audience remains essential to our mission.

*Jeff Cody is a senior project specialist with the GCI’s Buildings and Sites department.*



**Chandler McCoy (far right) of the GCI meets with some participants during a three-day meeting, “Le Corbusier’s Three Museums: A Workshop on Their Care and Conservation,” held in India in 2018. The workshop offered participants the opportunity to enhance their understanding of the three museums designed by Le Corbusier based on his prototype for a Museum of Unlimited Growth. Photo: Nitin Patel, courtesy of the Ahmedabad Municipal Corporation.**

# TRAINING AND CAPACITY BUILDING IN BUILT HERITAGE AT ICCROM

## A Historical and Future Perspective



BY VALERIE MAGAR, JOSEPH KING, AND ROHIT JIGYASU

FROM THE CREATION IN 1956 OF ICCROM, the International Centre for the Study of the Preservation and Restoration of Cultural Property, there was an interest in architectural conservation training. At the time, there were very few formal programs on conservation in universities around the world. Discussions held at the Rome Centre (as ICCROM was known when formally established in 1959)<sup>1</sup> therefore centered on the need for training specialists in conservation, including theoretical knowledge, practical work, and communication.

### EARLY TRAINING IN ROME

Shortly after the establishment of ICCROM, the opportunity arose for it to join efforts with the Sapienza University of Rome, as it had introduced the idea of a specialization course for architectural conservation, with the first students enrolled in 1960–61. Over the next five years, this annual course incrementally accepted a larger number of foreign students.<sup>2</sup> The program took more than thirty weeks, and the lectures were delivered mainly in Italian. Lecturers included Harold J. Plenderleith (director general of the Rome Centre), Guglielmo De Angelis d'Ossat (dean of the Faculty of Architecture), Selim Augusti (director of the Laboratory of Capodimonte,

Naples), M. Leoni (Istituto Sperimentale dei Metalli Leggeri), and Paolo Mora (Istituto Centrale del Restauro). Later, they were also delivered by Paul Philippot, Walter Frodl, Raymond Lemaire, Carlo Ceschi, Paolo Portoghesi, and Giuseppe Zander.

In 1965 the Rome Centre took over the course, now coordinated by Italo Angle. This enabled a shift to a fully international audience, with twenty-three participants from eighteen countries in 1966. An important element in succeeding years was the integration of field projects, during which course participants were directly involved in the analysis of historic buildings. Those field projects took place in Rome and other Italian cities (including Capua, Naples, Tivoli, and Ferrara), but also in neighboring countries (Austria, Spain, and the former Yugoslavia). In 1973 Jukka Jokilehto became the course coordinator.

In the mid-1970s, the course curriculum was revised, for which Bernard M. Feilden was engaged as a consultant. This led to a division, with the architectural conservation course (A) in Italian (still hosted by the Centre) and a new international architectural conservation course (B) organized by the Centre (in English). The course with the University of Rome was expanded to a two-year program, leading to a master's degree. This model was adopted by numerous universities and countries in developing their own master's degree programs in architectural conservation.

## SHIFT TO MIDCAREER TRAINING

As more training programs were established in other parts of the world, ICCROM's strategy shifted from full training in architectural conservation to a program aimed at midcareer professionals who already had some experience in architectural conservation but wished to update their knowledge and benefit from an overall view of the requirements of the profession.

The international Architectural Conservation Course (ARC) ultimately sought to provide sufficient variety for all participants, no matter their background (architects, archaeologists, conservators, engineers, urban planners, chemists), and to build bridges between different professionals. During and after the course, participants would acquire the knowledge and tools to speak to each other and develop a mutual understanding of architectural conservation. The program included the theory and history of conservation; history of architecture and urban planning; methods of analysis of architecture and historic centers; history of building technology; knowledge of materials; causes of social, economic, and physical transformation of buildings and historic centers; architectural conservation and restoration methods; technical documentation; and organization of fieldwork. It also brought the richness of an international perspective, integral to all ICCROM courses. In 1989 ICCROM signed a special agreement with the Institute of Advanced Architectural Studies at the University of York in the United Kingdom for the exchange of expertise, and this led to a recognition that the training received at the Rome Centre met the eligibility criteria for application to York's master's degree program.

In addition to the ARC course, ICCROM produced a series of practical outputs for both course participants and the larger conservation community. Among these were numerous low-cost

publications,<sup>3</sup> edited by ICCROM and widely distributed among its member states. Some were translated into languages other than English and French, the two official languages of the organization. Significant titles included Giorgio Torraca's reference book *Porous Building Materials: Materials Science for Architectural Conservation* (1981) and Jeanne Marie Teutonico's *A Laboratory Manual for Architectural Conservators* (1988), to name only two. In the 1980s ICCROM also began a collaboration with Butterworth to produce a series on conservation. In addition, ICCROM launched a research project on the use of lime-based mortars, which enhanced understanding of the use of different grouts and mortars for conservation purposes.

The final ARC course was delivered in 1998, after which there was a pause to reflect on future programming.

## ITUC PROGRAM AND WORKSHOPS (1995–2005)

While the last sessions of ARC were taking place, ICCROM prepared a new initiative to respond to broader challenges and demands in built heritage conservation—the Integrated Territorial and Urban Conservation program (ITUC). Developed from 1995 onwards, ITUC aimed to integrate urban conservation with the greater framework of urban and territorial planning, focusing on landscapes or larger territories, and recognizing the dynamic relationship between people and heritage. Content generated by the program led to the mainstreaming of urban issues, and the lessons learned from ITUC played an important role in the development of the UNESCO Recommendation on the Historic Urban Landscape, adopted in 2014.

The program was linked with a number of regional initiatives. For example, in Latin America, the Institute for Integrated Urban and Territorial Conservation (CECI) at the Federal University of Pernambuco in Recife, Brazil, developed distance learning courses in partnership with ICCROM aimed at Portuguese- and Spanish-speaking countries. Activities were also carried out in Northeastern Europe, leading to the Riga Charter on Authenticity and Historical Reconstruction in Relationship to Cultural Heritage (2000).



**1979 Architectural Conservation Course participants visit the Roman Forum**, with lectures by Jukka Jokilehto and Patrick Faulkner. Photo: A. Alva Balderrama, © ICCROM.



## BUILT HERITAGE CONSERVATION COURSES (2007–16)

As a result of the evaluation of the ARC course, ICCROM developed a new course on built heritage conservation (CBH), which combined theoretical and practical capacity building aimed at conservation professionals from a wide range of disciplines.

This eight-week course was conceived as a midcareer training opportunity and covered a range of topics including the history of conservation, perceptions of heritage, approaches to management, and issues related to more technical aspects of conservation, including documentation, diagnosis, and materials conservation, as well as visitor management and interpretation. At the end of each course, an additional module was inserted, dedicated to specific topics: cultural landscapes, archaeological sites, urban conservation, sustainable development, nature-culture interlinkages, and heritage impact assessments. The aim of this overarching course was to connect aspects of built heritage conservation to a broader perspective, linking tangible and intangible aspects of heritage.

The targeted midcareer professionals were expected to use this time off from their daily work to reflect on current issues and to gain new perspectives from international experiences.

In 2016 the CBH course was paused for a new review of its contents and to evaluate the six courses and their impact, as well as to reflect on the future alternatives for training and capacity building in built heritage conservation.

## OTHER BUILT HERITAGE-RELATED COURSES

Early on, additional courses linked with built heritage were also developed by ICCROM—particularly the mural paintings conservation course (from the 1960s to 1991), the course on scientific principles of conservation (1974–91), and the stone conservation course (1976–2003), of which a revised course was reestablished in collaboration with the Getty Conservation Institute (GCI) in 2009–15 and, more recently, with Mexico's Instituto Nacional de Antropología e Historia (since 2017).

Additional courses were established in close collaboration with other heritage institutions, many of which continue today, including those on wood conservation (in Norway, Japan, and Russia), archaeological conservation (in Japan), and mosaics conservation (in collaboration with the Getty Foundation, the GCI, and the International Committee for the Conservation of Mosaics [ICCM] as part of the MOSAIKON initiative).

Several time-specific projects involved earthen architecture conservation, notably the GAIA Project (1989–97) in collaboration with CRATerre-EAG and the Terra project (1998–2002), which added the GCI to the partnership. An important program was the Pan-American course on the conservation and management of earthen architectural and archaeological heritage. Another significant initiative was the international course on conservation of modern architecture, with a pilot course held in 1999, and subsequent courses in Finland (2002–6). An additional series of courses—the Architectural Records, Inventories, and Information Systems for Conservation (ARIS)—was also developed in collaboration with the GCI between 2003 and 2009.



**Built heritage conservation course participants in 2007** presenting the results of a group work exercise at ICCROM. Photo: Valerie Magar, © ICCROM.

## MANAGEMENT-RELATED COURSES

While the importance of heritage management and the relevance of communities were, over time, emphasized in its courses, ICCROM also developed specific programs to advance these concepts. One such program was Living Heritage, developed between 2003 and 2010, to promote the idea of continuity within communities as an essential component in conservation. Heritage was defined from the lens of its living dimensions, with a focus on people, both past and present, and their cultural products and practices. This led to the development of people-centered approaches (PCA) to conservation, which considered the collective well-being of people and heritage. PCA courses were taught in 2015 and 2016.

Other courses followed, focusing on the relation between people, heritage, and their larger environment. The People-Nature-Culture (PNC) courses were initiated in 2018 and are ongoing. Other courses and activities were dedicated to disaster risk management, with the development of numerous important collaborations—including one with Ritsumeikan University in Kyoto, Japan, and SEAMEO SPAFA (the Southeast Asian Regional Centre for Archaeology and Fine Arts)—and the publication of several guidelines and recommendations.

All these concepts evolved into the World Heritage Leadership program, a partnership of ICCROM, IUCN (International Union for Conservation of Nature), and the Norwegian Ministry of Climate and Environment, in collaboration with the World Heritage Centre and ICOMOS, the International Council on Monuments and Sites. This program aims to improve conservation and management practices for culture and nature through the work of the World Heritage Convention, as a part of the contribution of World Heritage Sites to sustainable development. It integrates the approaches developed in recent ICCROM courses, streamlining the terminology to make concepts more accessible in different languages and providing an interactive knowledge platform for different users.

In addition to capacity building at the international level, ICCROM has focused on the regional level. In particular, the AFRICA 2009 program provided capacity building for heritage professionals in sub-Saharan Africa (1998–2009), and the ATHAR program for heritage professionals in the Arab States, begun in 2004, led to the creation of an ICCROM regional office in Sharjah, United Arab Emirates. Other regional courses have taken place in Latin America and Asia.



**Built heritage conservation course participants in 2007** during a site visit and exercise at Herculaneum. Photo: Valerie Magar, © ICCROM.

## PLANNING FOR THE FUTURE

Over the years, ICCROM has moved from a sole focus on individual courses to a more programmatic approach to capacity building for heritage conservation. The audience for capacity building for heritage conservation and management activities is wide, diverse, and growing. Creating and strengthening capacities of institutions and networks that link the heritage sector to wider communities are as much a priority as the training of individual practitioners. The result will be stronger organizational frameworks and interfaces between heritage and the wider environment, enabling individuals, including those outside heritage-related professions, to take more effective actions. This has been demonstrated in programs such as AFRICA 2009 and the current World Heritage Leadership program.

Nevertheless, ICCROM has continued to also put a strong focus on its core activity, which is the training of heritage professionals. ICCROM reviews its activities periodically while keeping course programs sufficiently flexible to allow for more immediate review and adaptation to different contexts. The most recent review of the CBH courses, undertaken in 2019, confirmed the important role they have played in the professional community. There are expectations from heritage professionals and institutions worldwide for such capacity-building activities to continue, as they fill an important need in the field and are specially targeted for midcareer professionals, providing space for learning, discussion, and reflection.

The assessment indicated the need to maintain an overarching course, still centered on built heritage management and conservation. Going forward, however, the course will strengthen the links of immovable heritage to objects and intangible heritage, as well as with natural heritage, to provide a holistic understanding of significance that can guide decision-making for conservation and management.

Moreover, the course will further promote conservation and management practices that respond effectively to the current global challenges that affect built heritage, such as disasters, pandemics,

climate change, and pressures from urbanization and tourism. While these practices should be based on a holistic assessment of current conditions, there is also a need to develop future scenarios, taking into account catastrophic (fast) as well as cumulative (slow) events, and to formulate proactive solutions that reduce the vulnerability of built heritage to various natural and human-induced threats.

This agenda calls for a built heritage course that addresses several key questions. How do we connect these global concerns to the specific challenges and opportunities—along with the practical requirements for conservation and management—of built heritage at site level? How do we effectively respond to the need for protecting values while ensuring continuity and change at living heritage sites? This necessitates the integration of heritage into sustainable development, contrary to the general perception of conservation as anti-development. This also requires the development of practical tools and guidelines for periodic maintenance and the monitoring of the impact of changing environmental conditions on built heritage—leading to rethinking materials and techniques for built heritage conservation from the perspective of social, economic, and environmental sustainability. With regard to urban heritage that is undergoing rapid physical, social, and economic transformation, there is also a significant need to develop innovative planning strategies for mainstreaming heritage within urban development processes, rather than simply attempting to isolate and protect a heritage site as a historic center.

This revised course will be developed using a programmatic approach, keeping in mind other ICCROM activities that support and enrich each other. It will provide a holistic approach, balancing technical and practical knowledge for conservation with planning and management. Keeping in mind rapid changes in society, increased risks, and reduced availability of resources, there will be a strengthened focus on climate change, sustainability, and resilience.

In the meantime, contingent on needs and the availability of resources, ICCROM will also continue its focus on particular materials, including stone and wood, and on particular themes such as urban and modern heritage.

ICCROM will continue to take advantage of its strengths as an intergovernmental organization to bring together heritage professionals from around the world as equal contributors to their learning experience. Its experience in designing and implementing a wide range of courses over the past sixty years in all areas of the world has led to the compilation of a unique body of knowledge that can be offered to all participants. With a combination of continuity and evolution, training in built heritage conservation at ICCROM will seek to sustain a safe place to gain and exchange knowledge, foster communication and debate, and encourage understanding of our world's diverse heritage and of the many approaches for securing its long-term conservation.

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1. The name ICCROM was accepted by the General Assembly in 1979.
2. The courses were open to foreigners from the beginning, with eight international students in 1962, nine in 1963, five out of ten in 1964, and eight out of twelve in 1965.
3. These are all available in digital format on ICCROM's website.

# EDUCATION AND PRESERVATION ENGINEERING

## Keeping Our Heritage Structures Safe

BY PAULO B. LOURENÇO

EUROPE HAS LONG BEEN INFLUENTIAL in the preservation of cultural heritage buildings, from the Renaissance, to the Scientific Revolution, to the first restoration theories. The twentieth century saw the internationalization of cultural heritage conservation with the establishment of organizations such as ICOMOS (the International Council on Monuments and Sites), the development of charters to guide practice, and the growing recognition that conserving built heritage is an important economic issue—for instance, in Europe tourism accounts for 10 percent of the GDP and 12 percent of employment. Preserving this heritage requires dedicated and trained professionals, including not only architects and conservators, but also structural engineers.

### WHAT IS A STRUCTURAL ENGINEER?

According to a past definition in the official journal of the UK-based Institution of Structural Engineers, “Structural engineering is the science and art of designing and making, with economy and elegance, buildings, bridges, frameworks, and other similar structures so that they can safely resist the forces to which they are subjected.” This definition concludes with the idea of safety, which is ultimately the most important objective. Mistakes in engineering that cost a single life are no longer acceptable, even if, in the past, such mistakes were fundamental in the development of empirical knowledge. The idea of structures being safe if they can resist forces to which they may be subjected is simple—but understanding how that safety can be achieved is complex. The resistance of materials varies and is not precisely known. Predicting the stresses to which a structure may be subjected at any future time is not easy, particularly those caused by earthquakes and other natural hazards.

Engineers address risk evaluation for the built environment by assessing the level of hazard, the building vulnerability, and the level of exposure. A hazard is a natural or human-caused event that can impact people, buildings, infrastructure, agriculture, environmental assets, and communities, such as an earthquake or a flood. Building vulnerability measures the impact a hazard has on the built environment, given the magnitude of a certain hazard scenario, such as the 475-year return period earthquake or the 100-year flood. Finally,



exposure refers to the elements at risk from a hazard event, such as the number of people affected or the change in the economic value of a building. Within this holistic approach, building vulnerability is the most important factor, not only because of the physical consequences of a disaster, but because it is where engineering can intervene, reducing vulnerability and consequently the extent of life loss, physical damage, and economic loss.

In earlier times—before there were distinctions between the professions of architecture and engineering—the empirical knowledge of building crafts, taught by masters to apprentices, provided the tradition and theory upon which structural design was based. Medieval masons in their apprenticeship were introduced to the geometrical techniques required to lay out plans and prepare the templates and models from which stonework would be cut. The transformation of massive stonework into the delicate tracery characteristic of Gothic architecture is clear evidence of the powerful logic of the trial and error methods employed by the medieval builders—a triumph of skill over probability. It seems evident that these builders did not employ any form of modern structural analysis. Medieval masons apparently discovered the margins of safety through observation and experience.

In the transition from medieval masons to modern times, it is interesting to recall Andrea Palladio, who began his career as an



**An SAHC student integration project team conducting a survey and inspection at the Roman Temple of Évora, Portugal**, dating from the first century CE. The temple is located in the Historic Centre of Évora—a UNESCO World Heritage Site. Photo: Daniel Oliveira, University of Minho.

apprentice to a sculptor and later worked as a mason, before becoming one of the most influential Western architects in history. In the Renaissance, theoretical explanations began to be developed and valued. Today, preservation engineering must balance the realities of construction with the discipline of structural engineering. The former is largely empirical, based on experience gained in building and the skills of the building crafts. The latter, usually expressed in mathematical terms, is founded on theoretical knowledge, experience, and the profession's responsibility for public safety. Today's building codes and regulations are based on scientific analysis. Demonstrating how historic buildings can perform to necessary standards is important to confirm their viability and use, either as living or as dead monuments, and this is what structural engineering provides.

## TRAINING IN HERITAGE STRUCTURAL ANALYSIS

Recent decades have witnessed great strides in experimental and numerical engineering methods. In the context of structural engineering, the ICOMOS Charter–ISCARSAH (International Scientific Committee on the Analysis and Restoration of Structures of Architectural Heritage) Principles and *Recommendations for the Analysis, Conservation, and Structural Restoration of Architectural Heritage* (both from 2003) provide the modern technical and scientific context, stating clearly that not only are the appearance and materials of historic structures to be preserved, but their resisting mechanisms also are to be investigated, understood, and preserved. This difficult task requires an approach and skills different from those employed in designing new construction—a task for which engineers and architects are insufficiently trained or not trained at all. Many advanced education programs in the preservation of built heritage exist around the world, but until recently none was specifi-

cally focused on training engineers and technical architects in the structural analysis of heritage structures. Structural engineering specializing in historic building conservation emerged as a specific area of practice in the second half of the twentieth century. Initially it sought to combine empirical work with practical knowledge based on assessments of a building's past performance.

The international Masters Course in Structural Analysis of Monuments and Historical Constructions, or SAHC ([msc-sahc.org](http://msc-sahc.org)) started in 2007 and is coordinated by the University of Minho, Portugal. Since its inception, it has educated more than four hundred students from seventy-one countries, with the greatest numbers coming from Italy, Greece, the United States, Spain, Canada, and India. Students are expected to have a BS with four years of training or a BS and MS with five years; most already have an MS, and a few have a PhD. About 50 percent of the students are civil engineers, 25 percent building or architectural engineers, and 25 percent architects with a solid background in structures.

The impressive motivation of the students and the mix of age, cultural background, education, geographic location, and experience are important aspects of the program.

SAHC ran for ten years as an Erasmus Mundus Masters Course, cofunded by the Erasmus+ program of the European Union, which provides European students with the opportunity to experience student life in one of the thirty-three program countries. SAHC is now running as a self-sustainable masters course, without financial support from the European Union.

The University of Minho's partners in SAHC are the Czech Technical University in Prague, the Polytechnic University of Catalonia (UPC) in Barcelona, the University of Padua, and the Institute of Theoretical and Applied Mechanics of the Academy of Sciences of the Czech Republic. This collaboration reflects the need for greater training of engineers in confronting structural challenges posed by historic buildings. Lecturers come from all partner institutions. Students have coursework for seven months in Guimarães, Portugal, a UNESCO World Heritage Site with more than a thousand years of history. Many students then move to a second location in Europe (Barcelona, Padua, or Prague) to spend four months developing their theses. The program utilizes advanced software and experimental tools to prepare future professionals with the ability to process information from different scientific areas, to communicate orally and in writing, to manage stress and anxiety, and to work in groups, among other relevant skills. SAHC students spend eight hours a day at the university's facilities, with classes in the morning and individual and group work in the afternoon.

The focus of this one-year training, taught in English, is the application of scientific principles in analysis, innovation, and practice, in the preservation of monuments and historical structures, combining recent advances in research and development with activities oriented

to professional practice. SAHC integrates the diversity of expertise at leading European universities in the field, offering education oriented to a multidisciplinary understanding of structural preservation through the involvement of experts from complementary fields. Students learn top-level structural analysis in a research-oriented environment that also includes close cooperation with industry and a focus on problem-solving, making this program unique.

SAHC provides a cross-disciplinary education comprising engineering-oriented issues (structural analysis techniques, seismic behavior and structural dynamics, repairing and strengthening techniques, inspection and diagnosis, survey and monitoring, and materials science) with more general methodological and philosophical concepts, such as the history of construction and preservation. The balance between theory and practice is made—in addition to a long-running integrated project in each unit—by linking the conceptual framework in parallel with professional applications. These connections include joint scrutiny of case studies in which the lecturers have participated, visits to case studies during execution works, visits to case studies for survey and mapping, and hands-on laboratory and computer assignments.

In addition to six regular courses, the program includes a group integrated project and an individual dissertation that can be research or profession oriented. Many international engineering programs include such a senior project or “capstone” project in their curriculum, with characteristics such as: being based on real-world projects, usually design oriented; a mentor assigned to the project, requiring the students to interact with other experts as necessary; the opportunity for students to work across disciplines; students as interns on campus; and students working as a team, not individually (so no student handles the entire project). This integrated project lasts seven months and is primarily an assessment project with conservation, repair, and strengthening included. Each group has about five students, and different materials and typologies are considered, so the students integrate knowledge from the program and, at the same time, learn and share expertise with each other. Students and lecturers meet for presentations and discussions three times throughout the project, before a final presentation is made.

## THE NEED FOR PRESERVATION ENGINEERS

Conservation of historical structures with an engineering focus is indeed necessary. Our built heritage is at risk, and this crisis requires professionals who have the ability to protect our shared

heritage from various threats, including natural decay, human interventions, climatic changes, and natural hazards. Specialized expertise is necessary to advance protection of built cultural heritage—formerly a niche area, now increasing in importance.

We need professionals able to understand structural systems in different cultural contexts, and we must encourage them to develop their expertise with a valuable international perspective. These highly trained professionals have their own intrinsic market value, with knowledge often not possessed by regularly trained engineers and architects. This knowledge includes techniques of seismic retrofitting that can be extended into any existing building, not just historic fabric; forensic engineering skills such as inspection, diagnosis, and arrest of deterioration and damage in various forms of historic construction; in-depth knowledge of survey techniques; and good writing and communication skills.

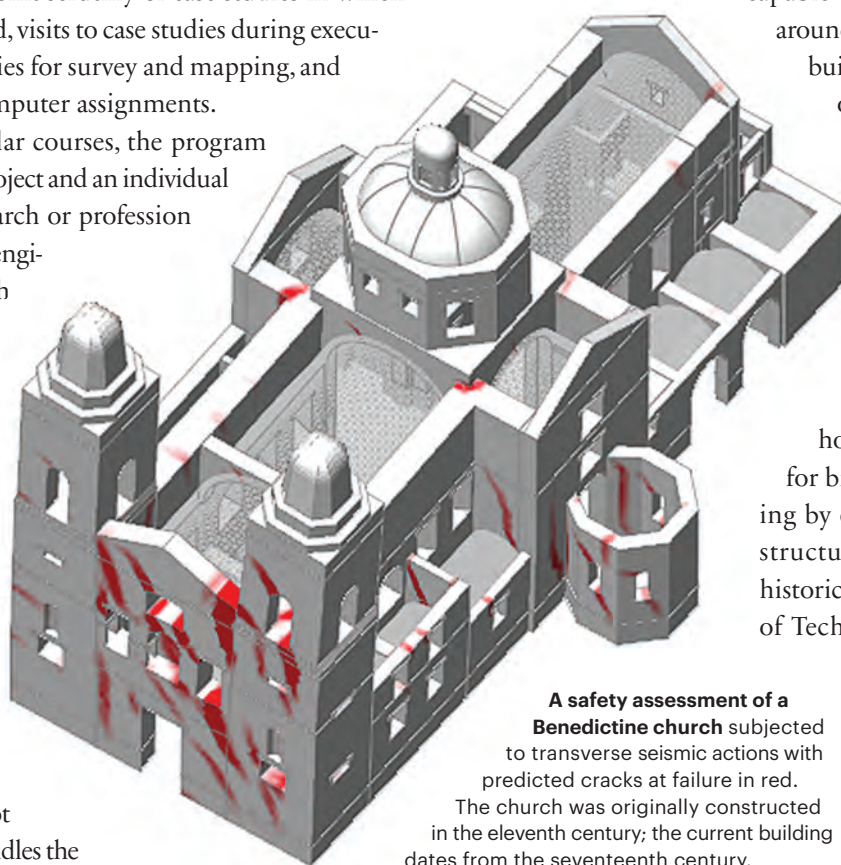
We also need an international network of leaders in the field, capable of disseminating best practices

around the world, helping to keep our built heritage safe. It has been demonstrated that theory and practice can progress together, offering a testing ground for the latest research and ensuring that the field provides the feedback necessary to define research directions.

The success and popularity of the University of Minho program is indicative of a need for broader and deeper understanding by engineers of how best to solve structural problems associated with historic buildings. The Indian Institute of Technology Madras in Chennai is another university seeking to meet this need, within the Asian context, as is the Pontifical Catholic University of Peru in Lima, for Latin America, to name just two. Leading academics in the field are established around

the world, including North America. Our hope is that in the near future universities in regions beyond Europe will respond to this need and, in so doing, provide practitioners worldwide with the necessary understanding of the physical nature and behavior of historic structures, so that greater numbers of significant buildings are conserved—and fewer lives are lost.

*Paulo B. Lourenço is a structural engineer and professor of civil engineering at the University of Minho in Portugal.*



**A safety assessment of a Benedictine church** subjected to transverse seismic actions with predicted cracks at failure in red. The church was originally constructed in the eleventh century; the current building dates from the seventeenth century.  
Credit: Rafael Ramirez, University of Minho.

# THEORY, PRACTICE, AND STANDARDS

## A Conversation about Built Heritage Conservation Education and Training

**TONY BARTON**, chair of Donald Insall Associates in the United Kingdom—one of Europe’s principal specialist architectural practices—has extensive experience in the conservation and reuse of historic buildings. As a visiting lecturer, he has taught at the University of Birmingham and the University of Salford.

**JIGNA DESAI** is an associate professor at CEPT University in India, where she is the chair for the master’s program in Conservation and Regeneration in the Faculty of Architecture. She also serves as executive director of the Center for Heritage Conservation.

**FRANK MATERO** is a professor of architecture and chair of the Graduate Program in Historic Preservation at the Weitzman School of Design at the University of Pennsylvania in Philadelphia. He is founder and editor in chief of *Change Over Time*, the international journal on conservation and the built environment published by the University of Pennsylvania Press.

They spoke with GCI senior project specialist **JEFF CODY** and **JEFFREY LEVIN**, editor of *Conservation Perspectives*, *The GCI Newsletter*.

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**JEFFREY LEVIN** What does each of you consider the major challenge for improving education and training related to the conservation of built heritage?

**TONY BARTON** In the United Kingdom, and Europe too, architects get a fantastic education. But while some of these young students are amazing, they are taught next to nothing about historic buildings. Because our architectural firm specializes in historic buildings, we have to mentor and train them, and check everything they do. The key challenge is to turn them into conservation architects. It’s a whole different skill. We had been dealing with this over the years in an informal way, but now we’ve set up our own conservation training course, because we really don’t get students who come prepared from the schools of architecture.

**FRANK MATERO** After thirty-five years of teaching, I’ve come to believe that all heritage conservation/preservation is both a cultural and a professional practice. The professional challenges exist at both entry and midcareer levels, and they relate fundamentally to a lack of professional standards—whether that means official job titles, governmental position descriptions, or professional certification. That’s particularly true in the United States. I know a bit about the English situation and the efforts by RIBA [the Royal Institute of British Architects] to define the qualifications for architects to work on listed buildings. I don’t know the situation in India. While I think we’ve made tremendous strides in academically training young professionals in defining what the issues are and in teaching the requisite knowledge and skills, practice has been less rigorous in the inclusion of that expertise. In the United States, preservation is not exclusively architect driven—it involves a variety of disciplinary knowledge in the humanities and sciences. We haven’t done well in defining what a heritage specialist is and how that translates into professional requirements. If that doesn’t happen, the necessary expertise required for a successful project cannot be guaranteed. The issue is not, “Do we know enough?” but rather, “Do we have enough say in the professional decision-making?” We don’t—and it’s largely because of a lack of standards and, by extension, formal qualifications such as certification. Of course, this also includes professional responsibility and liability.

**JIGNA DESAI** India has a history of a little more than a century of preservation, through the Archaeological Survey of India [ASI]. For a long time, conservation was considered the domain of archaeologists. Engineers and architects were involved in conservation through ASI. Heritage conservation as a specialization was accepted only very recently in India. The Indian National Trust for Art and Cultural Heritage, the first department for educating and training conservation architects, and other institutes for arts conservation and museology were all established in the mid-1980s. Some of the first engagements of architects in built heritage conservation date to that time. Regulations and professional ethics for conservators are still evolving. And while opportunities are increas-



We need to understand what's special about a building. What makes it tick? What does it mean to the neighbors? You read the building, you get its history, and you see where it sits in the historical context.

TONY BARTON

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ing, the systems within which they can operate and the qualifications required to practice are still in a fluid state. In this context, the challenge is on both the demand and the supply sides. Unless midcareer professionals specifically require a certificate to be employed for particular assignments, they are hesitant to invest in education and training. Having said this, in the last couple of years we have seen a shift in the way government funding is being made available to conservation—there is more of it. There is also a recognition in the policy landscape of heritage as a commodity for tourism—as well as heritage, in some cases, as a cultural resource in a developmental process. This will place a great demand on building capacities for conservation expertise. And here the challenge will be for institutions and organizations to be better prepared.

**BARTON** I was interested in what Frank said about standards. Conservation accreditation is a big thing in the United Kingdom. RIBA, which is our national architecture body, has brought in a conservation accreditation register. In addition, there is the AABC—Architects Accredited in Building Conservation—and for both you have to prove your skills by submitting case studies in which you did the work. Those case studies go to peer review, and then you're either accredited or not. I think you need about five years of conservation experience to be able to be accredited. So there's been a game change in conservation architects in the UK. Some of the heritage authorities and those funding them demand an accredited conservation architect.

**MATERO** That's precisely the formula needed. The client has to demand the expertise, and the academy or training entity has to provide the knowledge/skill base to satisfy the third leg, which is government-required credentials such as certification. If you don't have all three, it's a power struggle. Fifty years ago, at least in the United States, architects and historical archaeologists led the call to know more about archaic and obsolete buildings to preserve them. This interest has matured beyond the "site" and recognizes the social and even political implications of the physical work. It reminds me of the emergence of environmental science from traditional

biology and ecology as a new field due to expanded concerns for advocacy and management. What's happened in our field is that it has broadened to include a wide range of "core competencies" while also requiring specialization. Different countries have different trajectories for preparing people for professional conservation/preservation, and for me England was one of the first to offer such midcareer specialization—at York and other schools. So it's surprising to me that there isn't a proliferation of worthwhile specialization degrees after obtaining the first professional degree.

**BARTON** From my point of view as chair of an active frontline practice, I'm not as interested in the education of younger colleagues as much as in their training that follows from the academic achievement. What I want from the architects on the design team is to be able to read the building, to understand the issues, to know what needs to be done, to talk to everybody and bring them on board, and to make design decisions that repair the building properly. Hands-on stuff. I'm not in the academic world, and what I want to see is results.

**DESAI** On the question of education versus training, at CEPT University we've just started witnessing midcareer shifts to conservation. There have been a couple of enrollments in the master's program and a few in the doctoral program. It is rare for individuals to drop their practice for a few years and take up advanced education. We also find that there is not a great demand for midcareer short-term training programs. Most of our programs are taken by students who are doing a course anyway. For instance, young students who are otherwise taking a course in, say, heritage management but want to understand more about lime might take a workshop we're doing.

**BARTON** In the UK, there are some short-term training programs we send architects to. The SPAB—Society for the Protection of Ancient Buildings—does a weeklong intensive conservation course, and their short-term training programs are great. It doesn't cost a lot of money—about \$1,000 for a week—and we're



In the process of understanding the diverse specifics of each place, international organizations play a crucial role of facilitating knowledge exchange and contextualization. Having said that, to make this effective, international organizations must tie up with local organizations...

JIGNA DESAI

prepared to give someone their wages and the week to go. They get a crash course in what's coming their way as a conservation architect. We like those short courses, but it's rare that any of our group go on a sabbatical to get a PhD.

**JEFF CODY** Returning to the question of certification—Frank, you mentioned the shift in environmental sciences. I wonder if the widespread LEED certification process provides a possible precedent for conservation in terms of certifying architects?

**MATERO** It could. By the way, anyone can be LEED certified—it doesn't have to be someone with architectural credentials. But, again, having certification is only effective as long as that certification is respected and required for projects that would benefit. I've always taught in schools of architecture, first at Columbia and now at Penn, and I work among faculty and students who are studying planning, landscape architecture, art, and architecture. Design theory and studio learning are the dominant pedagogies. Preservation/conservation is in that mix as an allied program, but by its very nature it exists as a cross-disciplinary field encompassing preservation planning, public history, and technical building conservation. Professional disciplines such as architecture equate to departments, and their curriculum is required to comply with professionally regulated standards. In most professions, anyone graduating with an academic degree proves competency through certification and/or licensing. For a long time, preservation was considered a specialization within more traditional existing disciplines, eventually leading to its own specialized training, given the explosion of information needed to conserve and manage built heritage. Recently I've been working with the National Park Service to develop a technical preservation training program for existing employees involved at all levels of cultural heritage, and what I've recognized—and this equates to what I see across the disciplines at my school—is that you can't collaborate if you don't share a common language and understanding of heritage values and methodologies. Without that it's chaos, and ultimately the site suffers. Education is fundamental, but the professional world has to carry it forward. One of the

best things we ever did at Penn was to enable architects, landscape architects, and planners getting their first professional degree to also enroll in a certificate or a dual degree in historic preservation. That's one way that practice changes. It's important now to put designers and planners out into the world who understand built heritage needs and can work with specialists. But clearly there are different paths, as we are discussing.

**CODY** Recently, many have noticed a widely expanding notion of what constitutes "heritage," making it even more challenging to achieve some of the objectives we're discussing. The broadening of the definition of heritage has implications not just for urban planning and landscape architecture but also for tourism management, anthropology, and other disciplines that presume to be engaged in what's commonly called "heritage management." That term has multiple connotations, don't you think?

**BARTON** We may have something here dividing us by a common language. What is heritage management in the United States?

**CODY** It depends. There are probably about a hundred US programs with diplomas or certificates that give some sort of qualification that is not universally recognized. Someone involved in tourism can assert they understand something about heritage, and they might market themselves as being a heritage manager or a heritage specialist. This is a global trend. In Southeast Asia, where I've worked more extensively than in the United States, there's a proliferation of tourism management programs.

**DESAI** In India there are over four hundred programs in architecture, but fewer than ten programs offering a master's in conservation. And there is only one degree program in heritage management, and a dozen undergraduate and postgraduate programs in archaeology. A handful of institutions offer degrees in museology and arts conservation, with few opportunities for doctoral studies in the area. These programs provide a "space" where the learners gain a holistic understanding of the domain, along with the meth-



ods needed to practice the expertise. They also push boundaries of knowledge. Fewer programs lead to a situation where there are few full-time conservation practices in the country. Educators, trainers, researchers, and reflective practitioners are few. There are numerous online short certificate courses—some offered by organizations, some by institutions. Very few are aimed at professionals with a view toward continuous education. Individuals who take these courses could be coming from any background, and because of the lack of regulations in the field they end up as “heritage practitioners.” Heritage conservation being a multidisciplinary field, this exposure that individuals get to it is extremely important for the practice. I think there is value in having, say, anthropologists do a short course to know more about heritage, but they are primarily involved on sites as anthropologists. Economists may do a short certificate course, but their primary role is that of economist. If there aren’t enough institutions offering programs that address important conservation issues, the practice of conservation in the country—which is likely to increase—will suffer.

**BARTON** Does the Indian government manage standards for conservation professionals?

**DESAI** We recently had guidelines from the National Monuments Authority that outline standards for practice, but, unfortunately, we don’t have any implementation measures and monitoring processes in place. Appointments in the public sector are getting formalized, but the regulation is quite loose regarding who can privately practice conservation.

**MATERO** It’s not an accident that the word “heritage” has arisen as the common way to talk about this collective inheritance. But “heritage” is a constructed thing. Its values are derived from those in a position to attach significance to a place or a thing. Years ago, the GCI pioneered this with its values-based projects that looked at conservation and management plans, in part as a way of leveling the playing field so that one set of values or interest group didn’t dictate the entirety of what that heritage meant. I work predominantly in the Southwest on Native American ancestral archaeological sites, where the theories and methods of conservation were largely dictated by archaeologists early on. I’m always amazed how these structures aren’t seen or managed as standing architecture or cultural landscapes. And when you get into stakeholder concerns, issues of what is to be preserved and how cannot be answered by one discipline or stakeholder group alone. The whole idea of management was to get more people at the table to talk about the many values of heritage and then to make informed decisions about what to do and how to do it by those with professional expertise. Now, at this point, anyone without previous training can write a conservation management plan because there aren’t identified standards for qualifications to do that. A clear set of knowledge and skills should be required to work on heritage sites, no matter how you define them. So it comes back to education—but the problem is that we don’t have

enough practical experience formally included in academic training, such as a field project year, because of a lack of fiscal support.

**LEVIN** How do we strike a balance between the theoretical underpinnings of the practice with the practical hands-on training that deals with materiality?

**BARTON** A conservation management plan is something we at Insall do for every job we have, and this is exactly what we train our staff to do. We need to understand what’s special about a building. What makes it tick? What does it mean to the neighbors? You read the building, you get its history, and you see where it sits in the historical context. You go into the building and take a look at the way it’s been messed around. And then you start to understand its significance. We’re about changing buildings, but we’re creative conservationists. We’ll change buildings while maintaining their significance and adding another layer of significance in a beautiful and relevant way. We have listed buildings in the UK, and a conservation management plan approach demonstrates to the authorities that what’s being proposed follows the grain of the building. We have to take that academic side—which is great fun, by the way, and we all enjoy it—but you can’t ask somebody fresh with a PhD to come up with a proper conservation management plan. Conservation management plans have to guide change, and it’s a leap from the academic conservation management plan to actually coming up with creative proposals to maintain a building’s significance. That’s at the heart of our conservation training program.

**LEVIN** Jigna, how do you handle that balance between the theoretical and the practical?

**DESAI** Well, this is where the lack of regulations actually helps. We use it to our advantage. In India, designated heritage sites are often contested in terms of ownership or in terms of the value they have, which religion or community they belong to, and what their history is. Fortunately, or unfortunately, we often find no records, or the records are contested. Sometimes the contesting parties both have records they have had made. And some sites may be abandoned. Because of the lack of regulations, if a site is abandoned and nobody is using it, we’re actually able to occupy it with the consent of neighbors, or of the one person who claims ownership or custodianship of it. We occupy it for a year or so for educational purposes and study processes of conservation through the site. Through our Center for Heritage Conservation, we’re planning to formalize this process and turn it into a conservation site school. We’re able not only to look into the technological aspects of materials and structure, but also to do stakeholder meetings to understand how value is constructed around that contested site. For example, there’s one abandoned site that was supposed to belong to a particular religious community, and the religious head gave us the permission to occupy it. The discussions on the site included the traditional philosophy of conservation, and how it

did—or did not—reconcile with the accepted World Heritage approach. Along with this, through our theory courses, we constantly bring in theory and best practices from around the world.

**MATERO** Tony and Jigna, what you're both talking about is the difference between critical thinking and technical skills. Why is conservation critical thinking? Because it involves reflection, judgment, and action. Without action, it's all for naught. But this isn't fully appreciated by our allies in the other fields who don't engage in heritage issues. I train my dog; I don't train my students. I educate them as conservation specialists. And that's because critical thinking is involved. In the eighteenth century, most universities taught academic, not professional, subjects. Benjamin Franklin, who founded the University of Pennsylvania, believed in the unification of theory and practice, leading to the first "modern" university of academic and professional disciplines together. This is also fundamental to conservation, but both the public and other professionals don't appreciate that fact. They see it as either a technical problem or a social problem. But it's both.

**CODY** All of you seem very committed to the issue of understanding the building. The current COVID crisis has only increased the proliferation of Zoom and other digital technologies that take us away from a hands-on familiarity with the resource. How do we handle this challenge of needing students to understand the place, while we are increasingly moving toward remote learning and digital technologies?

**BARTON** Back in the beginning of June, I came out of lockdown in my kitchen and went on a scaffold with a builder, where we talked about pointing and brickwork. I got back into Chester Cathedral, and it was an absolute joy. We had a fantastic conversation about how the building had managed. I do think it's a matter of scale with this Zoom technology. We can do it with up to six people—maybe twelve is okay—but beyond that, you're being "talked at." But it's going to be great for our internal training program. We don't all have to go to London. We can do it like we're doing this today. We have invited someone who lives in Manchester, which is on local lockdown, to see something of interest in Chester. We can get a tablet, walk around, and show him. This is just an extra tool for us in terms of background training. It's the academic side we're going to get from Zoom sessions. For the practical side, you'll still need to get on the scaffold, talk with an older architect conservator or consultant who knows what happened in this building, and go read the building. You can't read a building if you're not in it.

**MATERO** Technology will serve us as needed. It's already happening in building diagnostics. We use drones to do roof and facade surveys, and all kinds of telemetry to report back data in terms of monitoring, especially with a changing climate. But technology is not going to take the place of in situ building evaluations. I do worry about this in conservation education, because

I don't believe you can develop critical skills and knowledge in understanding the built environment if you don't go to the site. But remote methods can be incredibly valuable, especially now during the pandemic, for the students abroad or trapped in their apartments. I hope we'll all be back together soon enough, but it's going to be a hybrid experience going forward, for sure.

**DESAI** I was personally extremely gutted when I realized that this entire semester would be online. We did major restructuring in the hope that by January next year maybe we could visit the site. We decided to offer subjects that could be viewed online through videos and lectures and hoped that the site visits and laboratory experiments could be done later. There is also the value of a campus where the politicized conversations of heritage and conservation take place. For students, campuses are safe spaces, where fearless discussions and debates can occur. It is in this space that young individuals living in the historic city can hold such constations. And that is the vacuum that online learning can't fill. Having said that, there are a couple of important positives of online teaching. It makes teaching and learning more affordable and accessible to more individuals. International collaborations that bring global perspectives can be accessed. Instructional webinars have dropped the cost of doing that. The travel cost goes down and so does the environmental footprint for introducing such educational initiatives.

**CODY** Talking about international linkages, how can international organizations like the GCI, ICOMOS, and ICCROM assist with education in terms of both critical thinking and technical conservation, perhaps providing a broader perspective on the issues we've been addressing here?

**MATERO** This is an important question that I'm seeing played out now in terms of the dilemma we face this fall. How are we going to teach, and will the delivery method be up to the task not only of educating the students, but also of inspiring them? Online education doesn't replace the inspiration that comes from personal contact and a historic site. I hope everyone in heritage practice, as well as in heritage education, realizes that whatever methods and means we embrace going forward, we must have a say in what those goals should be. But we haven't had the conversation about whether it's actually going to be successful in ways we should be measuring. We've got to be clear about whether going remote or going hybrid will really deliver the goods. One thing I'm now convinced of is that most international conferences can be remote—and if properly planned and organized, we can have far greater communication assuming we're not trying to replicate in-person meetings exactly. But it's greener and more accessible, and it levels the playing field in terms of participation costs. Students can now attend at a fraction of the cost.

**BARTON** If I could get some of our younger architects to speak to some of Jigna's students in India—and, Frank, your students



**We have an obligation to continue to question and to advocate not just for heritage but for heritage education and professional expertise—because without either, there’s no heritage worth saving.**

FRANK MATERO

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in the States—and share experiences, that would be great. We’ve just made the world really small. Remember pen pals when we were kids? Well, I’m guessing you at Getty could organize this. You could connect young professionals—not in midcareer, but post-graduate—just learning their conservation craft, with archaeologists, architects, and historians. A few years ago we did a joint conference with architects and conservationists in Cologne, Utrecht, and Ghent, and it was a fantastic interaction, learning from each other and sharing experiences of what we were doing at sites. It was a lovely moment in our careers. But we had to take the Eurostar train, or fly to Cologne for two or three days. Now, using this technology that wasn’t there five years ago, the learning environment is smaller, and you could get far more from it. It’s that pen pal thing—and it could really work for my colleagues. What do you do with lime in Delhi? What’s the stone in Arizona? How do you deal with making historic buildings sustainable? Just sharing those experiences in small groups would be great.

**LEVIN** In talking about technology, we started by discussing how we can use it to compensate for what we’re missing. But, Tony, your point is that we can use this technology to create new opportunities and connections.

**CODY** A major benefit of this kind of technology, of course, is that you can reach many more people and perhaps inspire people by using digital technologies. At the same time, the technology can’t substitute for that actual place-based understanding that can only come from firsthand experience.

**MATERO** At every IT seminar on remote education I’ve taken over the last three months, the IT specialists begin by saying, “Do not treat the online experience as a replacement for the classroom.” Once you recognize that, you’re free to rethink it in a way that meets your objectives. If you bring people together in a small enough group, you can have a conversation that can move the needle an inch or so—which is what the GCI used to do in convening experts meetings on any number of topics.

There’s no reason that can’t be done using remote technology, but the key is keeping it small. And then, when it’s appropriate, you meet in person.

**DESAI** I want to add that the reason why ties with international organizations are so important to us is that there are certain conservation concepts that came out of past struggles in different countries that we in India are dealing with just now. We have our own challenges, but there are certain concepts that we get introduced to—for example, the concept of cultural rights and sustainability—that are articulated better in other contexts. Of course, these concepts need to be understood in the situated knowledge of the site that one deals with, and then it takes its own direction. I think the Nara Document on Authenticity is a great example of global knowledge exchange. In the process of understanding the diverse specifics of each place, international organizations play a crucial role of facilitating knowledge exchange and contextualization. Having said that, to make this effective, international organizations must tie up with local organizations that are embedded in the place.

**MATERO** Heritage is a global phenomenon and concern, but it’s understood and practiced through its diversity of expression. That’s the point. Now, with the many threats to this diversity as seen in attacks on people and places around the world, the moment is right to reaffirm the value of heritage precisely in its diversity of human expression—and, at the same time, question the narratives that we’ve inherited about that heritage. We have an obligation to continue to question and to advocate not just for heritage but for heritage education and professional expertise—because without either, there’s no heritage worth saving.

# RESOURCES BUILT HERITAGE CONSERVATION EDUCATION & TRAINING

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*Preservation Education: Sharing Best Practices and Finding Common Ground*, edited by Barry L. Stiefel and Jeremy C. Wells (2014), Lebanon, New Hampshire: University Press of New England.



**Elena Macchioni (fourth from the right) of the GCI leading a training workshop** as part of the Institute's Bagan Conservation Project. Photo: Tim Webster, for the GCI.

“Teaching Archaeological Heritage Management: Towards a Change in Paradigms” by Annemarie Willems, Suzie Thomas, Alicia Castillo Mena, Viktorija Čeginskas, et al., in *Conservation and Management of Archaeological Sites* 20, nos. 5–6 (2018), 297–318; DOI: 10.1080/13505033.2018.1559423. <https://doi.org/10.1080/13505033.2018.1559423>

*Teaching Conservation/Restoration of the Architectural Heritage: Goals, Contents and Methods* by Stefano F. Musso and Luisa DeMarco, in *EAAE Transactions on Architectural Education* 38 (2008).

*The Teaching of Architectural Conservation in Europe* by Carolina Di Biase and Francesca Albani (2019), Santarcangelo di Romagna, Italy: Maggioli Editore.

*Technician Training for the Maintenance of In Situ Mosaics* by Livia Alberti, Elsa Bourguignon, and Thomas Roby (2013), Los Angeles: Getty Conservation Institute (also available in French and Arabic). [http://hdl.handle.net/10020/gci\\_pubs/tech\\_training\\_english](http://hdl.handle.net/10020/gci_pubs/tech_training_english)

## ORGANIZATIONS & OTHER ONLINE RESOURCES

Council on Training in Architectural Conservation (COTAC) <https://www.cotac.global/>

Getty Conservation Institute's Teaching and Learning Resources [https://www.getty.edu/conservation/publications\\_resources/teaching/](https://www.getty.edu/conservation/publications_resources/teaching/)

ICOMOS Guidelines for Education and Training in the Conservation of Monuments, Ensembles and Sites (1993) <https://www.icomos.org/en/charters-and-texts/179-articles-en-francais/ressources/charters-and-standards/187-guidelines-for-education-and-training-in-the-conservation-of-monuments-ensembles-and-sites>

National Council for Preservation Education (USA), *Preservation Education & Research* journal (2008–present) [ncpe.us/publications/](http://ncpe.us/publications/)

UNESCO Bangkok's Competency Framework for Cultural Heritage Management 2020 <https://bangkok.unesco.org/content/competence-framework-cultural-heritage-management>

For more information on issues related to built heritage conservation education and training, search AATA Online at [ata.getty.edu](http://ata.getty.edu)

# GCI News

## Project Updates

### SHELTER DESIGN AT NEA PAPHOS

The GCI's partnership with the Department of Antiquities (DoA) of Cyprus reached a milestone in July with the announcement that six architectural firms have been short-listed for a competition to design protective shelters for the site of Nea Paphos—one of the most significant mosaic sites in the eastern Mediterranean.

Design of a prototype shelter to protect mosaics at Nea Paphos is one component of the DoA-GCI project to create a conservation and management plan for this World Heritage Site. Currently, only two shelters protect the site's many outstanding mosaics. The larger shelter, built in the 1970s and upgraded since then, covers the most complete group of mosaic pavements in what is known as the House of Dionysos. The mosaics, which date to the second century CE, depict scenes of Dionysos and of other myths, as well as exquisite geometric patterns. A second shelter covers just two of the mosaics from the so-called House of Aion, which contain extraordinary scenes of mythological personages in a late antique style, when Paphos was beginning to embrace Christianity in the fourth century.

Many other mosaics at the site, currently either exposed or temporarily reburied for protection, are in need of long-term sheltering. To this end the GCI, in concert with the DoA, has engaged in an architectural design process,



**Shelter built in the 1970s to protect the mosaic pavements in the House of Dionysos** at Paphos Archaeological Park, Paphos, Cyprus. Photo: Martha Demas, GCI.

which began in April 2019 with an experts' workshop in Paphos to develop criteria for protective shelters at the site. This was followed by a call for "Expressions of Interest," answered by thirty-six architectural firms. A selection process involving outside experts in addition to the GCI and DoA culminated in a short list of six firms to undertake a conceptual design for shelter prototypes over parts of the Villa of Theseus and House of Orpheus, which hold some of the site's most important figural mosaics and a bath complex containing mosaics and fragile hypocaust remains. Beyond their primary protective function, the shelters will also be a means of presenting and interpreting the mosaics and their architectural context for the visiting public.

A final design will be selected in 2021.

### FINAL WORK AT HERCULANEUM

The GCI's multiyear project in the House of the Bicentenary at the site of Herculaneum is nearing completion.

During the summer of 2020, fieldwork was undertaken on the documentation and conservation of the floor mosaic in the tablinum of the house, following the conservation of the wall paintings in this room, which was finished in March 2020. The conservation treatment of the floor mosaic completes the conservation of the entire room as an integral component of the collaborative project with the Archaeological Park of Herculaneum and the Herculaneum Conservation Project. The pavement features a central opus sectile panel constructed with different types of marbles, flanked by black

and white opus tessellatum geometric mosaics. Documentation included creating a photographic base for the graphic recording of previous interventions and conditions. Treatment trials were also conducted to help determine the most appropriate and effective materials to clean, consolidate, and stabilize the mosaic. In addition, laboratory analyses were conducted to identify the materials used for previous treatments, and to evaluate the conservation materials, including those tested on-site and used in the treatment phase of the work.

Because of travel restrictions necessitated by the COVID-19 pandemic, the floor mosaic work was carried out by long-term GCI consultant conservator Livia Alberti of Consorzio Arké and an assistant, under the supervision of GCI project conservators Thomas Roby and Leslie Rainer, who serves as the project's manager. Following the conservation of the mosaic pavement, the team will carry out one year of environmental monitoring and implement final climate improvement strategies to ensure the long-term preservation of this exquisitely decorated room.

### GUIDELINES FOR GROTTO SITES IN GANSU PROVINCE

When Buddhism began taking root along the Silk Road in China in the fourth century, it flourished at the Mogao Grottoes near the military outpost of Dunhuang in far-western Gansu Province. In ensuing centuries, scores of grotto sites were constructed. Mogao is preeminent in the scale and superb artistry of its decorated



**Visitors at the House of Dionysos at Paphos Archaeological Park**, Paphos, Cyprus. Photo: Scott S. Warren, for the GCI.



**Conservation of the floor mosaic in the tablinum in Herculaneum's House of the Bicentenary,** site of a multiyear GCI project that included conservation of the wall paintings in the room. Photo: Livia Alberti, for the GCI.

grottoes, but over two hundred grotto sites survive throughout Gansu, all under management of the Dunhuang Academy (DA). Mogao is a World Heritage Site, and Maijishan and Binglingsi have been nominated to the list as part of the "Silk Roads: The Routes Network of Chang'an-Tianshan Corridor" nomination, put forth by China, Kyrgyzstan, and Kazakhstan. While the majority of sites in Gansu are of provincial- or county-level significance, together, they contribute to a more nuanced and holistic understanding of the history of Buddhism along the Silk Road in Gansu.

The Gansu grotto sites are located in diverse climatic zones—from extreme desert to well-watered and forested regions. The lesser-known sites are in remote areas, and many have suffered the depredations of time, weather, and neglect from abandonment and the want of resources and expertise.

Recognizing a need, the GCI and the DA are developing a set of practical guidelines for the conservation and management of Gansu grotto sites. These guidelines are derived from the China Principles (*Principles for the Conservation of Heritage Sites in China*, 2000, revised 2015), an outgrowth of the long partnership between the GCI and China's national authority. But whereas the China Principles are applicable to all categories of cultural heritage, the Grotto Guidelines are intended to provide guidance to site managers and conservation staff for a specific heritage type. As a leading center of excellence in conservation, the DA is in a posi-

tion to raise the standards of management and conservation in the province.

This work is nearing completion and will be submitted for review to the Gansu Provincial Bureau of Cultural Heritage and the National Administration of Cultural Heritage. The intent is to formally present the guidelines to a national and international audience at the Third Silk Road Conference, now rescheduled as a result of the pandemic for September 2021 in Dunhuang.



**Bingling Temple Grottoes in Gansu Province, China.** Photo: ©Bingling Temple Grottoes Research Institute.

## ARCHES IMPLEMENTATIONS

The GCI's Arches open source software platform for cultural heritage data management is now being deployed by many organizations around the world, including the three described below.

Jersey Heritage in the English Channel recently launched its first national historic environment record using Arches as an essential tool for researching heritage on the island and managing its future. The online Historic Environment Record (HER) Jersey showcases the island's rich diversity of heritage sites, ranging from historic buildings, landscapes, and battlefields, to historical maps, local folklore, and archaeological sites and finds. The Jersey Heritage website ([her.jerseyheritage.org](http://her.jerseyheritage.org)) also includes short video guides via Vimeo.

The Maldives Heritage Survey—based at the Oxford Centre for Islamic Studies and funded by Arcadia—has implemented Arches to systematically inventory and document endangered cultural heritage in the Maldives, a vital place of exchange in the premodern economic and religious networks spanning the Indian Ocean world and beyond. The heritage documented includes mosques, cemeteries, remains of Buddhist temple complexes, and other historical structures and physical objects that may be vulnerable to natural and human threats. To date, the project has recorded heritage on 152 islands and five atolls.

Texas A&M University is also developing several projects utilizing the Arches platform. One project is creating a Database of Vernacular

Architecture of the Atlantic world, a large component of which will focus on historic dwellings and work spaces of enslaved Africans throughout the Western Hemisphere. This building type is at risk from various forces such as development pressures, neglect, and short- and long-term environmental change. The project plans to develop new Arches analytical tools to help scholars deepen our understanding of the roles that built spaces played in early modern African Diaspora lifeways, and enable the scholarly community to devise more wide-reaching comparative analyses.

To learn about other implementations of the Arches platform, visit the “Implementations of Arches” section of the project’s website—[archesproject.org](http://archesproject.org).

## MOSAIKON TRAINING MATERIALS NOW AVAILABLE

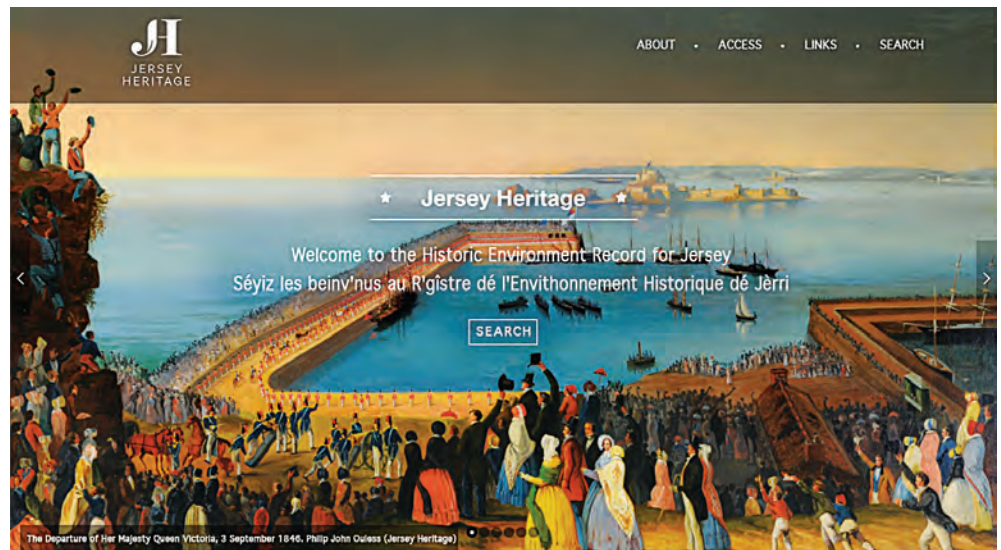
The GCI is making additional training materials developed as part of the collaborative MOSAIKON Initiative available online.

Since MOSAIKON began in 2008, several courses to train technician-level practitioners in mosaics treatment and maintenance have been carried out at sites in North Africa and the Middle East by the GCI, in cooperation with national authorities in the region and, of late, with ICCROM. The twenty-two-week courses divided into four modules (conducted over a two-year period) have trained more than thirty government employees from eight countries, strengthening their institutional capacity to conserve their mosaic heritage.

While the courses emphasize practical training, a key component is classroom training with theoretical lessons, introducing different aspects of mosaic conservation, from documentation to reburial, which are then carried out under supervision on-site. For the theoretical lessons, illustrated presentations have been prepared to accompany the training handbook and supporting reference materials (already made available to the field at [getty.edu/conservation/publications\\_resources/pdf\\_publications/tech\\_training.html](http://getty.edu/conservation/publications_resources/pdf_publications/tech_training.html)).

The lessons originally focused on conservation of in situ mosaics, but the courses evolved to include detached and relaid mosaics, mosaics in storage, and the conservation of architectural remains and decorative surfaces, such as walls and wall plasters, which often surround in situ mosaic.

The twenty-four illustrated lessons prepared over the years by the instruction team of GCI consultant conservators, educators, and GCI staff are now available as a resource for conservation



The home page for Jersey Heritage, which is using the GCI’s Arches open source software platform as a tool for researching heritage on the island and managing its future.

professionals who are training conservation practitioners in the care of mosaics at sites and in storage, as well as other architectural remains. Together with the training handbook, these didactic materials, produced by the MOSAIKON Initiative, are being made freely available to the conservation field to support future training in mosaics conservation. The lessons are provided in both French and English ([getty.edu/conservation/publications\\_resources/teaching/mosaics\\_conservation.html](http://getty.edu/conservation/publications_resources/teaching/mosaics_conservation.html)). An Arabic translation is expected to be available sometime in 2021.

## Recent Events

### GCI VIRTUAL WORKSHOPS AT AIC

Because of the coronavirus pandemic, the 2020 conference of the American Institute for Conservation (AIC) transitioned from a physical event to an extended virtual experience. This shift affected all aspects of the conference, including two workshops organized by the GCI: “XRF Boot Camp Lite” and “Facilitating Decision-Making through Analysis of Temperature and Relative Humidity Data.” Since the workshops were originally planned as in-person half-day sessions, the instructors had to determine how to utilize the online platform to engage workshop participants.

X-ray fluorescence (XRF) is a common analytical technique in the cultural heritage field, owing to the availability of relatively inexpensive and easy-to-use portable instruments. The AIC XRF workshop—organized and taught by

Aniko Bezur (Yale Institute for the Preservation of Cultural Heritage), Lynn Lee (GCI), Maggi Loubser (University of Pretoria), and Karen Trentelman (GCI)—was intended as an introduction to major themes from the multi-day workshop, “XRF Boot Camp for Conservators,” and to the use of the newly available, free, self-guided GCI publication, *Handheld XRF in Cultural Heritage: A Practical Workbook for Conservators* (available in the Publications section of [getty.edu/conservation](http://getty.edu/conservation)). The workshop’s shift to an online platform sharpened its focus on the XRF workbook, including demonstrations of exercises, discussion of the application of XRF to heritage objects, and general guidance about spectral interpretation and potential pitfalls. Participants were able to download all the XRF spectra in the workbook, along with open access software, to facilitate engagement with the material.

The second GCI/AIC workshop focused on analysis of temperature and relative humidity data, the collection of which is fundamental to heritage management. The GCI’s Managing Collection Environments Initiative has developed and researched online environmental analysis tools that support decision-making, and practitioners have identified the benefit of employing complementary techniques to improve the understanding of data and communication with stakeholders. The workshop’s change to a virtual format allowed for an extended schedule that, following guidance by instructors Vincent Laudato Beltran and Annelies Cosaert (both of the GCI), provided participants with ample time to explore a range of analysis tools. The workshop culminated with a discussion by Jeremy Linden (Linden

Preservation Services) of case studies demonstrating how the collecting and analysis of environmental data addressed specific challenges in the collection and building environment.

While many of the practical and tangible aspects of in-person workshops were unavoidably lost, the change to an online venue allowed more participants to be reached. The workshops are recorded and the fees more affordable, allowing for wider participation among students, international colleagues, and private conservators. In fact, both workshops were offered a second time, with registration opened beyond conference attendees and an emphasis on encouraging participation by emerging conservation professionals. As part of its mission to support the conservation field, the GCI will continue to develop educational opportunities that utilize a combination of in-person and virtual experiences, leveraging the advantages of each to provide overall learning experiences widely accessible to all within the conservation community.

## Upcoming Events

### TERRA CONFERENCE MOVED TO 2022

In light of the uncertainty surrounding the COVID-19 pandemic and the subsequent logistical challenges, economic repercussions, and current travel restrictions we face globally, the Terra 2021 13th World Congress on the Study and Conservation of Earthen Architectural Heritage has been postponed to June 2022 and has been renamed Terra 2022. The new dates will be June 7–10, 2022, and the location will still be Santa Fe, New Mexico.

The abstract submission, review, and selection process has been completed at this time, and the Call for Abstracts will not be reopened. The program for Terra 2022 will be composed of the abstracts already received and reviewed. In the months to come, we will announce virtual opportunities for engagement leading up to Terra 2022, which will be the fiftieth anniversary of earthen architecture professionals convening to advance the field.

We will continue to monitor the COVID-19 situation closely and follow guidelines issued by the US Centers for Disease Control and the World Health Organization. Updates on Terra 2022 and an updated registration and scholarship application schedule will be posted to the Terra 2022 website: [terra2022.org](http://terra2022.org).



Xinying Hao



Gayathri Hegde

## THE GCI 2019–20 GRADUATE INTERNS

In September 2019 the Getty Conservation Institute—as it has in previous years—welcomed a new group of graduate interns who spent twelve months with us as members of various project teams. While the purpose of the internship program is, in part, to further the education of these young professionals, in truth they give as much to the Institute and its work as we give to them. The contribution they make is significant.

In the wake of the onset of the COVID-19 pandemic, GCI staff were forced to continue their work from home, and for our interns the final portion of their internship year was physically away from the office. Nevertheless, they continued to participate in GCI projects, virtually working alongside their GCI colleagues.

Since we could not acknowledge them in person in their final internship months, we acknowledge them here through their statements below and express our appreciation for their work. We wish them well in the pursuit of their professional aspirations.

### XINYING HAO

I worked with the lacquer research team of GCI scientist Michael Schilling, focusing on the analysis of lacquer, surface contaminants, and aging products removal research. Through aging monitoring of simulated lacquer with different formulas, the team sought to understand the changes that occur at different aging stages of the physical and chemical properties of the lacquer, including chemical composition, pH, conductivity, color, gloss, and microcracks. With this knowledge, we studied the mechanism of removing surface contaminants and aging products by different cleaning systems. The sophisticated experimental design and operation exercises,

the spirit of teamwork, and the work analyzing and explaining experimental phenomena will be of great help to my future analysis and conservation research on cultural relics.

### GAYATHRI HEGDE

As an intern with the Buildings and Sites department of GCI, I worked on the Seismic Retrofitting Project (a part of the Institute's Earthen Architecture Initiative), as well as several other projects. At the GCI, I was exposed to both on-site and off-site learning opportunities. The off-site learning through conversations with my supervisors and other colleagues, attending department meetings and expert talks, and interacting with other GCI interns all contributed to a very enriching experience. This combined with the site visits to Kuñotambo (Peru) and London to understand the site interventions and scope of work by working with multidisciplinary teams—along with collaborative meetings with experts and stakeholders—contributed to a well-rounded experience during my internship, exposing me to the many and varied levels of project work at the Getty. I will cherish the connections I made during my time at the Institute and count on what I learned from my experience to guide me in my next endeavors.

### SOPHIE KIRKPATRICK

During my internship, I worked with Stéphanie Auffret on different aspects of the Cleaning of Wooden Gilded Surfaces project. I helped develop reference materials, including three volumes for the GCI Guidelines series, focused on: (1) materials and techniques used for the manufacture and restoration of wooden gilded surfaces, (2) documentation





Sophie Kirkpatrick

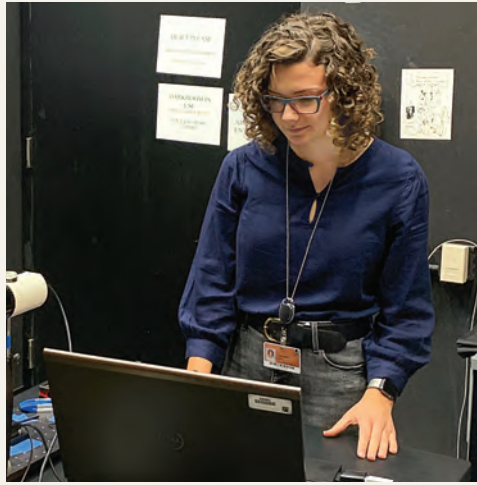
and assessment of wooden gilded surfaces, and (3) cleaning test protocols for these surfaces. These materials will be supplemented by a bibliography of references about materials and techniques used for the manufacture, restoration, and cleaning of wooden gilded surfaces. Along with this work, I participated in the cleaning research by documenting aged gilded surfaces and in creating mock-ups to be used in the development of cleaning tests. Working at the GCI was a wonderful experience, and I will never find the words to adequately express my gratitude to all the people who welcomed me so warmly.

### JANINE KOEPPEN

As the graduate intern in the Modern and Contemporary Art Research Initiative, I had the opportunity to contribute to a number of fascinating projects involving the preservation of plastics, including studying objects from the Wende Museum in Culver City, California, and Die Neue Sammlung, the Design Museum in Munich. I encountered a very pleasant work environment that was not only centered on work but also included fun group events, such as the GCI's famous annual chili cook-off. I always felt like a valued member of my team and that I could make an



Janine Koeppe



Olivia Kuzio

important contribution to the projects. Looking back at my time at the Institute, I feel fortunate to have had the opportunity to meet and work with such wonderful and talented people.

### OLIVIA KUZIO

I arrived at the GCI having recently begun studying scientific imaging, enamored of this noninvasive but powerful means of examining works of art. Imaging of this kind requires patient dedication and meticulous attention to detail to achieve results both analytically meaningful and visually stunning. Working with and learning from the team in the GCI's Technical Studies Research lab has been invaluable to my growth as a scientist. Their passion for their work shines through in their mentorship and has shown me that the same principles—diligence and precision yielding valuable, beautiful results—are true of the entire suite of analyses they expertly employ. I leave with experience using a variety of techniques to study works of art, with a new understanding of the ways these tools inform and complement each other, and with a deeper appreciation for the parallel beauties of the art we study, the science we study it with, and the human connections we foster through this enchanting work.

### LUCIANA MURCIA

Being a paintings conservator and working in the GCI Science department was a great opportunity for my career. The Animation Cels Conservation Project allowed me to apply my experience while learning about conservation of plastics and expanding my research skills. Within the project I participated in the development of paint reattachment methods by testing different relative humidity values using environmental chambers. I also had the chance to work on a publication putting together an atlas of damages. Working



Luciana Murcia

with such a wonderful team on a publication was a great challenge—one that gave me invaluable experience for the future, and I am really grateful for that. My close contact with other GCI projects made working at the Institute a constant learning opportunity, and the colleagues and friends I acquired while there were among the most enriching things about the experience!

### MARIE PYPE

During this internship, I worked on the conservation project for the World Heritage archaeological site of Nea Paphos in Cyprus. The guidance of an incredible GCI project team enabled me to develop my professional abilities and to improve my skills in—and knowledge of—issues such as site stabilization, visitor management, bibliographic research, and graphic illustration. Working for an institution as resourceful, stimulating, and vibrant as the GCI, and with an engaging group of interns and staff, has broadened my perspective on conservation and the arts. Besides the professional growth, the experience of working in the field in Cyprus and in general doing an internship abroad, especially during this rather unusual year, has also made me grow as an individual.



Marie Pype



Wendy Rose



Valerio Sabbatini

## Print & Online Publications

### ***The Conservation of Medieval Polychrome Wood Sculpture: History, Theory, Practice***

Michele D. Marincola and Lucretia Kargère

Medieval polychrome wood sculptures are highly complex objects, bearers of histories that begin with their original carving and adornment and continue through long centuries of repainting, deterioration, restoration, and conservation. Abundantly illustrated, this book is the first in English to offer a comprehensive overview of the conservation of medieval painted wood sculptures for conservators, curators, and others charged with their care. Beginning with an illuminating discussion of the history, techniques, and meanings of these works, it continues with their examination and documentation, including chapters on the identification of both the wooden support and the polychromy itself—the paint layers, metal leaf, and other materials used for these sculptures. The volume also covers the many aspects of treatment: the process of determining the best approach; consolidation and adhesion of paint, ground, and support; overpaint removal and surface cleaning; and compensation. Complementing the text are four case studies on artworks in the collection of The Cloisters in New York, a comprehensive bibliography, and a checklist to aid in documentation.

*The above book is available for purchase at [shop.getty.edu](http://shop.getty.edu)*

#### ONLINE

### ***Acoustic Emission Monitoring for Cultural Heritage***

Michał Łukomski, Łukasz Bratasz, Eric Hagan, Marcin Strojcki, and Vincent Laudato Beltran

These technical guidelines are designed for conservation scientists and conservators seeking to deploy acoustic emission (AE) monitoring as a means of tracing physical change in cultural heritage objects. Aiming to provide comprehensive information about AE hardware and sensors,

the field of conservation, and I will treasure the network of experts I met during this year.

#### CAITLIN SPANGLER-BICKELL

This internship was one of my most enriching professional experiences. As part of the GCI's Managing Collection Environments Initiative, I worked with my supervisor, Joel Taylor, on an exploratory project on decision-making processes surrounding museum loans. We conducted formal and informal interviews with professionals from the fields of conservation, registration, exhibitions, collections management, curation, insurance, and art law at institutions of varying types and sizes in Australia, Europe, and North and South America. This project yielded fascinating insights into the motivations and pressures driving various practitioners, and how a deeper interdisciplinary understanding of those factors might contribute to smoother loans. I am exceedingly grateful to have listened to and learned from these practitioners and for the myriad other lessons I learned from the examples set by my Getty supervisors and colleagues as we navigated the uncharted waters together this past year.



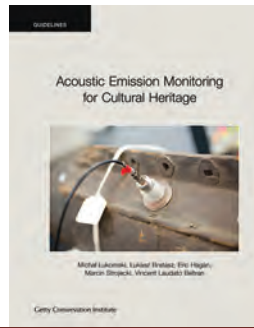
Caitlin Spangler-Bickell

#### WENDY ROSE

From the start, the GCI teams for the Bagan Conservation project and the Tomb of Nefertari project warmly welcomed me. I developed the Bagan project's background research and helped to establish the goals and activities of the Decorated Elements Conservation component. I applied and expanded my photogrammetry expertise by performing an initial condition assessment of the Tomb of Nefertari, capturing the wall paintings in a 3D condition survey. I also enjoyed the opportunities I had to provide fieldwork training and to learn from our partners in Myanmar and Egypt. While the nature of my internship changed when we transitioned to working from home, I still felt like a valued part of the GCI community. I developed great relationships with my colleagues and was supported as I progressed in my career as a wall paintings conservator.

#### VALERIO SABBATINI

Being Italian, I didn't have a clear idea of the importance of the GCI until I started working on the Bagan Conservation Project. That project was a prestigious opportunity for me to expand and apply my knowledge in historical construction techniques and on-site testing. In Bagan, I participated in the field experimental and documentation campaigns, learned from and supported the Myanmar Department of Archaeology, and attended international meetings where different countries presented their conservation projects. Now I know that the GCI is a unique place where architects, engineers, conservators, and art historians discuss and share their knowledge for the benefit of endangered archaeological sites. This unique experience has broadened my perspective in



measurement protocols, and methods of data analysis, this publication also examines the advantages and limitations of the technique for detecting, recording, and interpreting damage.

AE is a highly sensitive technique capable of monitoring the ongoing damage process in materials and objects; it has considerable potential to support the assessment of existing climate control strategies and the development of alternative approaches. In November 2017 scientists and conservators experienced with AE convened at the Getty Conservation Institute to discuss the current state of the technique. During this meeting, the idea of creating technical guidelines on the applicability of AE in the cultural heritage field was born.

Beginning with an introduction to the AE monitoring technique that highlights its nondestructive potential, the guidelines elaborate the different types of systems and sensors, attenuation of AE signals, positioning and mounting of sensors, data analysis and interpretation, and how to link AE with damage. Also considered are more advanced strategies for noise reduction, AE source location, and frequency analysis. The conclusion then touches on the use of AE as an early warning system, particularly when objects are subject to changing environmental conditions.

#### ONLINE

#### **Conservation Principles for Concrete of Cultural Significance**

Susan Macdonald and Ana Paula Arato Gonçalves

Over the last two hundred years, concrete has been used to produce a remarkably rich and diverse legacy of buildings and structures that are increasingly recognized for their cultural significance. With this growing recognition comes the need for protection and conservation. However, concrete conservation is still a relatively new field with limited availability of guiding resources.

*Conservation Principles for Concrete of Cultural Significance* provides a framework for architects, engineers, conservators, contractors, and stewards to make sound, informed decisions for conserving culturally significant concrete buildings and structures by referencing both concrete repair standards and international conservation principles. The principles outlined in this document are meant to provide a logical approach to concrete conservation, leading practitioners through the typical conservation methodology, from investigation, to the development of conservation strategies, to implementation and maintenance. Its underlying premise is that concrete, in all its forms, may be of cultural significance and deserves a careful, knowledge-based approach to its care to sustain it for future generations. The text has been extensively reviewed by experts in concrete conservation, and their contributions were valuable in shaping the final document and reaffirming its need.

The publication is an outcome of the GCI's Concrete Conservation project, which aims to improve the conservation of twentieth-century concrete heritage by tackling some of the challenges facing this emerging field with the development of scientific research, model field projects, training, and publications. This project is part of the Conserving Modern Architecture Initiative.

*Online publications are available free at [getty.edu/conservation](http://getty.edu/conservation).*

## CONSERVATION PERSPECTIVES THE GCI NEWSLETTER

VOLUME 35 • NUMBER 2 • FALL 2020

#### The J. Paul Getty Trust

James Cuno, *President and Chief Executive Officer*

#### The Getty Conservation Institute

Timothy P. Whalen, *John E. and Louise Bryson Director*

Jeanne Marie Teutonico, *Associate Director, Strategy and Special Initiatives*

Kathleen Gaines, *Associate Director, Administration*

Tom Learner, *Head of Science, Interim Head of Collections*

Susan Macdonald, *Head of Buildings and Sites*

#### Conservation Perspectives, The GCI Newsletter

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Graphic Visions, *Lithography*

*Conservation Perspectives, The GCI Newsletter* is distributed free of charge twice a year to professionals in conservation and related fields and to members of the public concerned about conservation. Back issues of the newsletter, as well as additional information regarding the activities of the GCI, can be found in the Conservation section of the Getty's website, [getty.edu/conservation](http://getty.edu/conservation).

The Getty Conservation Institute (GCI) works internationally to advance conservation practice in the visual arts—broadly interpreted to include objects, collections, architecture, and sites. The Institute serves the conservation community through scientific research, education and training, field projects, and the dissemination of information. In all its endeavors, the GCI creates and delivers knowledge that contributes to the conservation of the world's cultural heritage.

The GCI is a program of the J. Paul Getty Trust, a cultural and philanthropic institution dedicated to the presentation, conservation, and interpretation of the world's artistic legacy.



AMERICAN FORESTS

A donation to the American Forest ReLeaf program has been made on behalf of the GCI for its use of paper from well-managed forests.

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# CONSERVATION PERSPECTIVES

THE GCI NEWSLETTER



At Myin-Pya-Gu temple in Bagan, Myanmar, GCI consultants from the Indian Institute of Technology Madras carry out nondestructive tests to understand the structural behavior of the temple's construction and provide instruction on the process to engineers from the Department of Archaeology and National Museum of Bagan and Yangon Technological University. Photo: Elena Macchioni, GCI.



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