CONSERVATION PERSPECTIVES

THE GCI NEWSLETTER

SPRING 2019

ROCK ART CONSERVATION

The Getty Conservation Institute

A Note from the Director

Photo: Anna Flavin, GCI

The human desire to capture and explain the world by creating what we today would call "art" predates human settlements and anything we might define as civilization. Tens of thousands of years ago, humans began painting and engraving on rock, an activity that did not end in some distant epoch but continued among peoples over the course of time. Nor has this most ancient of creative acts been restricted to a singular region or terrain. Rock art can be found in Australia, Africa, Europe, Asia, and the Americas, in caves, deserts, rock shelters, and cliffs, among other locales. But its ubiquity is no protection. Exposed to the natural elements and, unfortunately, the predations of people, its lengthy existence until now is no guarantee of future survival.

That said, there is renewed international interest in collaboration to protect this vulnerable heritage and to learn from preservation initiatives that work. This edition of *Conservation Perspectives* examines rock art and its conservation from a number of angles. Neville Agnew, who has spearheaded the GCI's rock art conservation efforts for many years, outlines the challenges of preserving this earliest of humanity's cultural heritage and writes of some of the efforts the Institute has taken to meet those challenges, including training, site management, and, most recently, the initiation of an informal international network of individuals and organizations to promote awareness of this endangered global heritage. Jean-Michel Geneste, a world-renowned specialist in rock art, describes Chauvet, the extraordinary Paleolithic cave in France, and the steps taken to protect it, including the creation of a replica for visitors. Moving to North America, Carolyn Boyd of the Shumla Archaeological Research & Education Center offers an overview of a multifaceted and highly successful organization working to research and protect the wealth of rock art in southern Texas. And in another article, Richard Kuba of the Frobenius Institute in Frankfurt, Germany, recounts the extensive documentation of rock art in the first part of the twentieth century, particularly in Africa, and how the international exhibition of that documentation, then and now, has increased awareness of this universal heritage. Finally, in our roundtable, four experts from around the world—Janette Deacon, Peter Robinson, Paul Taçon, and David S. Whitley—offer their thoughts on the significance of rock art and on various ways we can increase interest in protecting it.

The creative impulse is a pronounced and enduring characteristic of humanity. It behooves us to do all we can to preserve and protect the earliest—and the more recent—manifestations of that human instinct.

Timothy P. Whalen
John E. and Louise Bryson Director

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ON THE COVER
The "Panel of the Horses" in Chauvet–Pont d'Arc Cave, drawn with wood charcoal using the stump drawing technique. The earliest rock art in Chauvet Cave dates back about 36,000 years. Photo: Jean-Michel Geneste / Ministry of Culture, France.

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SAVING ART ON THE ROCKS

BY NEVILLE AGNEW

In December 1994 three spelunkers entered a hitherto unknown cave in the Ardèche in southern France. The entrance had been blocked for millennia by a landslide. The astonishing Paleolithic paintings they found on the Chauvet–Pont d'Arc Cave's limestone walls immediately created a sensation.

Other no less extraordinary examples of prehistoric art are well known—famously Altamira in Spain, discovered in the late nineteenth century, and Lascaux in France, discovered in 1940. Writing in *The New Yorker* in 2008, Judith Thurman noted both the power of Chauvet's images and the reported comments of Picasso after visiting Lascaux: "They've invented everything." What those first artists invented, wrote Thurman, was "a language of signs for which there will never be a Rosetta Stone; perspective, a technique that was not rediscovered until the Athenian Golden Age; and a bestiary of such vitality and finesse that, by the flicker of torchlight, the animals seem to surge from the walls, and move across them like figures in a magic-lantern show (in that sense the artists invented animation)…and, more to the point of Picasso's insight, the very concept of an image. A true artist reimagines that concept with every blank canvas—but not from a void."

What of the age of these paintings? Although debate continues, the current view puts Chauvet at around thirty-six thousand years ago—older than Lascaux, and perhaps as old as Altamira. As beautiful as these Ice Age images are, they are not the earliest evidence of symbolic markings by our human family on rock surfaces. That distinction, for now, is found at the southern tip of Africa where geometric engravings on ocher are dated to about eighty thousand years ago.

To ask why such art was made at the dawn of modern humanity is also to ask why we make and greatly value art in our present age. Much has been written about the subject, but perhaps it is sufficient to say that creation of art is among the deepest of human expressions—a defining impulse at the very essence of our being.

DEFINING ROCK ART

Rock art, broadly defined as painting and engraving on natural rock surfaces, predates recorded history by many millennia and is found throughout the world in immense quantity. It poses mysteries about meaning and purpose, for the obvious reason that there is no written or verbal record. In most instances—with exceptions principally in Australia and to a lesser extent in South Africa—direct interpretation by the makers of the art is impossible since they are now long gone from the caves, rock shelters, and landscapes

Game Pass Shelter, Drakensberg, South Africa. This rock art panel, created by the San/Bushman community, depicts eland antelope, along with running and anthropomorphic figures, and is among the many rock art sites in Maloti–Drakensberg Park, a transboundary World Heritage Site. Photo: Tom McClintock.

The Mountford Site in West Arnhem Land, Northern Territory, Australia. The rock art depicts barramundi fish and magpie goose. Seen below it are members of the Gunbalanya community and Njanjma Rangers, an Aboriginal ranger group, which has responsibility for the care and maintenance of the natural and cultural resources within their traditional lands. Photo: Tom McClintock.

they inhabited. That the marks on the rock are often artistic to the highest degree cannot be disputed. Nor can it be disputed that the rock art record being lost to development, vandalism, and looting is a tragic consequence of today's world. As with the extinction of species, once a site is gone it will never be created again, because the cultures themselves no longer exist or are threatened by modernity and new ways of life resulting from technological development.

Rock art has long been overlooked as a major field of study by many archaeologists and anthropologists, even though it is part of the archaeological record and often the deposit below the wall comprises the stratigraphic record and contains artifacts of the makers of the art. One explanation for this neglect may be the difficulty in dating the art. Almost the first question asked about rock art is, "How old is it?" Dating of rock art is notoriously uncertain and often contentious, despite modern scientific techniques such as carbon-14 dating, optically stimulated luminescence, and a slew of other methods. The reasons for this include uncertainty about the extent of contamination and the restrictions on the size of sample that can be sacrificed without unduly damaging the decorated surface.

While the term "rock art" has been said to be an unsatisfactory description of this ancient and widespread human manifestation, so far no one has offered a better term. Most often paintings on rock surfaces are called pictographs, while engravings, incisions, or "pecked" surfaces are petroglyphs. Neither term really relates well to the other, but they are now in common usage and seem here to stay. Rock art's defining characteristics are that it was made by preliterate cultures, that it occurs in a landscape (including deep caves), and that the art and landscape should be viewed and conserved as one.

But what of other forms of art on rock? A nearly universal manifestation is cupules—multiple small hollows ground into the surface of an exposed slab—whose purpose is as yet unknown but must have meaning. And then there are the enormous Nazca lines in the Peruvian desert and the colossal moai sculptures of Rapa Nui (Easter Island) gazing out to sea. In general, though, rock carved in the round is not considered rock art. Perhaps most ubiquitous is the handprint. It is interesting to muse on this very human impulse, even today, to make and leave one's mark or in some way communicate one's passage through time and place.

The materials used to create rock paintings have been generally well identified. The pigments used for painting are natural ones, typically colored minerals (like red, yellow, and brown ocher), charcoal, and occasionally surprises like beeswax; the binding media detected are plant gums and resins, juices, blood, and, it seems, whatever might be on hand to provide a means of applying the pigment to the rock substrate. Our creation of painted art today is in essence no different—the canvas is the rock surface, the pigment and binding material the paint. Petroglyphs, on the other hand, being engraved or pecked into the rock to create an outline, are not painted (although exceptions exist). Sometimes they are shaded, but more usually the contrast has been achieved by cutting through the outer weathered skin, often called desert varnish, of the rock. Petroglyphs inherently have a longer natural life, as attested by their survival on exposed surfaces from the Sahara to the Arctic Circle.

CHALLENGES TO CONSERVING ROCK ART

Unlike cosseted art collections in the controlled environments of museums, painted and engraved rock surfaces are vulnerable to the vicissitudes of nature. Most art has certainly weathered away over the millennia except when protected in deep caves, incised on durable rock, or isolated by burial. While more effort is currently made to save rock art and every country with rock art has legislation to protect it, new threats now imperil this heritage. One response has been to keep the location of certain sites secret, but this has been of limited efficacy. In some parts of the world, pigment is scraped off for medicinal use or animals degrade the art. Wooden walkways for viewing art have caught fire, causing serious damage and soot deposition. An insidious practice is wetting painted art to enhance the colors for photography, but this leaches color and brings damaging salts to the surface. Even well-meaning conservationists have unwit-

tingly caused damage by applying chemical consolidants that seal paintings, resulting in sloughing off of the surface over time. Indeed, applications of almost any material compromise future treatments.

Community engagement and management are currently regarded as among the best measures to safeguard rock art. This is particularly—but not exclusively—the case in those places where the indigenous population feels directly connected to the local rock art. In parts of Australia today, the link between rock art of the ancestors and the living communities remains strong, and sites are managed, maintained, and sometimes even ritually repainted. The same is true for places in North America and elsewhere in the world where traditional cultures can lay claim to the art their forebears made. For example, when the highway north from Albuquerque, New Mexico, was proposed, native American tribes were among those who made impassioned pleas for the preservation of the integrity of their sacred landscape, although to no avail—the preexisting Petroglyph National Monument was bisected by construction of the road. In parts of Africa, tourism is important for local communities who manage the rock art sites, such as Tsodilo Hills in Botswana. It is also important at the famous site of Foz Côa in northern Portugal with its Paleolithic art engraved on outdoor exposures of rock; the site is managed by the local community, who provide guides and other services to visitors.

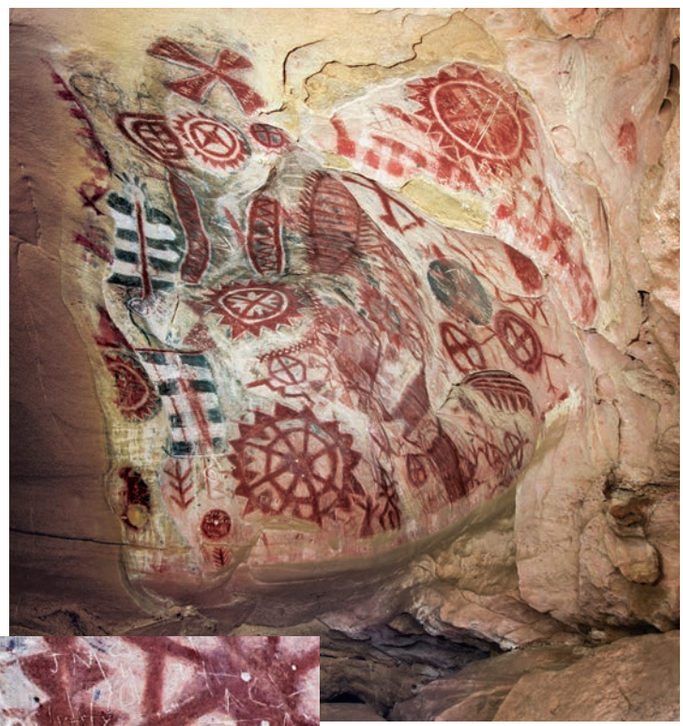
ROCK ART CONSERVATION TRAINING

A few years after it was established in 1985, the newly minted Getty Conservation Institute embarked on its first efforts in rock art conservation training. It was perceived in the GCI that there was a universal need for rock art conservation professionals. At the time, no programs existed.

Some of the necessary skills and knowledge existed among painting conservators, but rock art, an orphan of archaeology, had been largely overlooked. Rock art conservation requires specialized knowledge in a number of scientific and humanistic disciplines, including archaeology, geology, hydrology, and an understanding of chemical, biological, and physical weathering processes. It also requires the recognition that almost any treatment of a decorated rock surface with a foreign material, such as a chemical consolidant, or even chalking the outline of an engraved image (a frequent practice), will preclude the possibility of accurately dating the art. In addition, there is the need for sensitivity to continuing the values that local communities may attribute to the art. When local people have been excluded, or in cases denied access to sites with which they have long been associated, there are documented instances of vandalism of the art as an act of defiance.

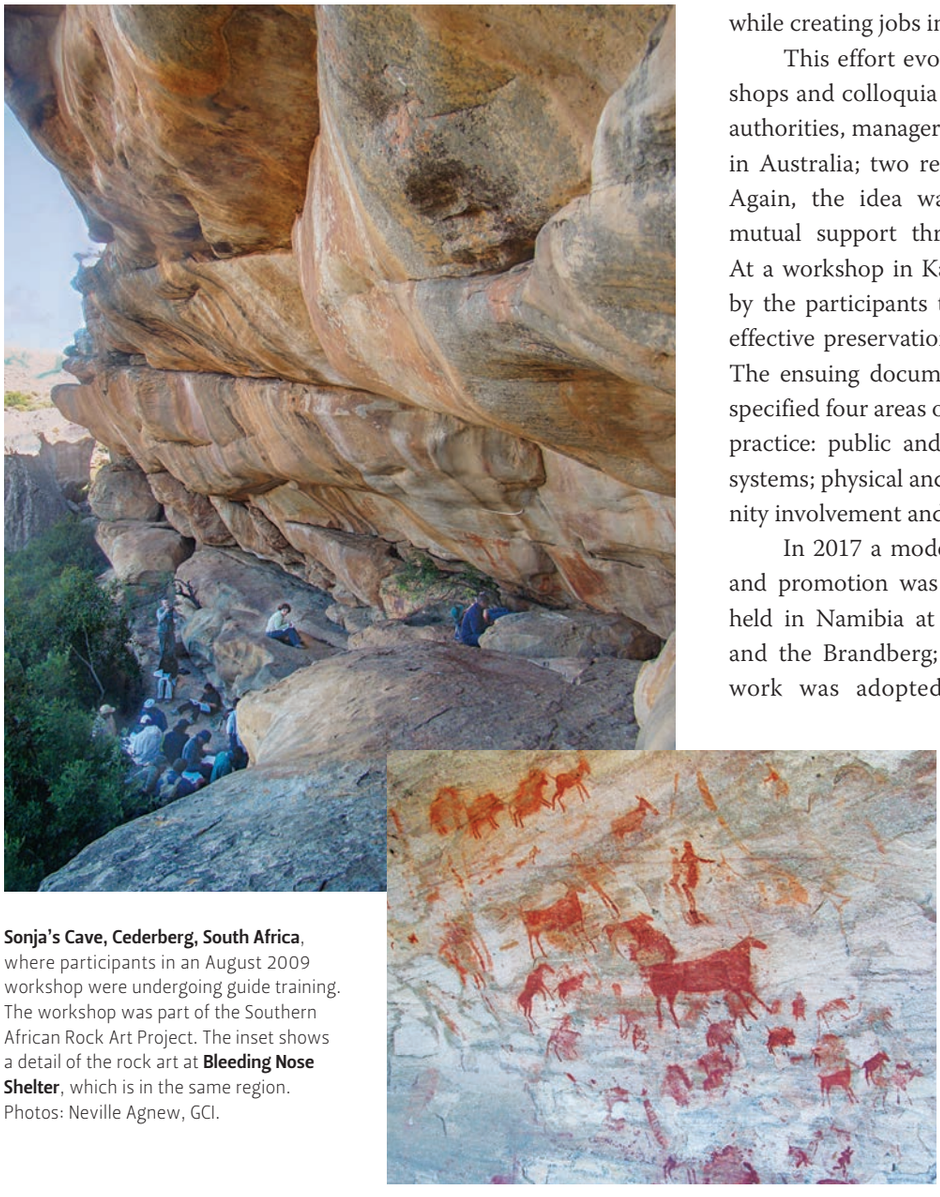
The GCI approached the need for training by following two parallel paths. One was the establishment in 1989 of a one-year graduate diploma in the conservation of rock art, in collaboration with the Canberra College of Advanced Education in Australia. The course was advertised internationally, and there were fourteen participants. The other was providing short courses for already trained professional conservators to expand their areas of expertise to include rock art. The first of these short courses, which were typically of a few weeks' duration, began in 1988 in California. They included instruction in the management and protection of rock art sites. Participants were drawn from a wide geographic base and usually included archaeologists and site managers.

Overall, the impact of these training efforts has been significant. Many of the Canberra graduates went on to careers specializing in rock art conservation and management. One, Johannes Loubser, said, "Following the course, my focus shifted to the best ways of conserving and managing archaeological and rock art sites and recording them in a holistic fashion. The 1989 course enabled me to create a niche to conduct rock art condition assessments and graffiti mitigation projects for various agencies." Nicholas Hall, who now runs a consultancy in Australia with a focus on rock art site management, interpretation, and the tourist development needs of traditional communities, observed that, "The Graduate Diploma in Rock Art Conservation set the tone for my professional career and provided me with a skill set balancing technical and social aspects of conservation practice."



Painted Cave, a Chumash rock art site in Santa Barbara County, California. Until an iron gate was erected in front of the site in 1908, the rock art was subject to vandalism in the form of graffiti, as seen in the inset. This form of protection was a necessary measure because the site's rock art would have been lost without it. Photo: Tom McClintock.

The momentum for rock art conservation begun in the late 1980s continued with a field project at one of the many rock art sites found along the mountainous spine of Mexico's Baja California Sur. The project was undertaken in collaboration with the Instituto Nacional de Antropología e Historia (INAH) at a site in the Sierra de San Francisco known as Cueva del Ratón—or Cave of the Mouse, though the "mouse" depicted is now interpreted as a cougar! Again, the team was selected from an international pool of applicants. From 1994 to 1996, this ambitious project put into practice many of the features of previous training courses—physical conservation treatment, site protection and stabilization, documentation and condition recording, and presentation and interpretation for visitors. It culminated in a weeklong site management planning meeting that brought together for the first time the local community, tour operators, and INAH officials. The objective was to create a plan that all parties could buy into, and this was largely achieved, as attested by its subsequent successful implementation.



Sonja's Cave, Cederberg, South Africa, where participants in an August 2009 workshop were undergoing guide training. The workshop was part of the Southern African Rock Art Project. The inset shows a detail of the rock art at **Bleeding Nose Shelter**, which is in the same region. Photos: Neville Agnew, GCI.

RECENT GCI INITIATIVES

In the late 1990s, the Institute began supporting the Southern African Rock Art Project, an initiative to develop capacity in the twelve or so countries in the subcontinent and to guide the process of nomination of rock art sites for World Heritage listing. In this enormous region are a great many painted sites, typically in rock shelters, made by the San people, who are likely the aboriginal peoples of southern Africa. They created art until relatively recently—that is to say, the last few centuries when they were driven from their mountain fastnesses and almost exterminated. Workshops were held, alternating between the World Heritage Sites of Mapungubwe—on the borders of South Africa, Botswana, and Zimbabwe—and Cederberg, part of the Cape Floral Kingdom, north of Cape Town. As with the previous capacity-building efforts of the GCI, these workshops selected promising candidates and conducted short courses in conservation, documentation, site management, interpretation, and guiding visitors to rock art sites. An objective was to provide practical, marketable skills around the theme of rock art as a resource to be sustainably used while creating jobs in these economically deprived regions.

This effort evolved into a series of annual exchange workshops and colloquia at Australian sites in collaboration with the authorities, managers, and communities in Kakadu National Park in Australia; two reciprocal events were held in South Africa. Again, the idea was that personnel exchange would create mutual support through practical measures and networking. At a workshop in Kakadu in 2014, a concerted effort was made by the participants to identify the needs at the global scale for effective preservation of rock art, and to outline a way forward. The ensuing document, *Rock Art: A Cultural Treasure at Risk*, specified four areas or "pillars" of rock art conservation policy and practice: public and political awareness; effective management systems; physical and cultural conservation practice; and community involvement and benefits.

In 2017 a model for future efforts in rock art conservation and promotion was developed at a GCI-organized colloquium held in Namibia at the World Heritage Sites of Twyfelfontein and the Brandberg; there the concept of a decentralized network was adopted. The following year, the group—comprising participants from Argentina, Australia, France, Germany, Kenya, Mexico, South Africa, Spain, the United Kingdom, and the United States—reconvened at the GCI and took stock of the effectiveness of networking through a colloquium entitled "Art on the Rocks: Developing Action Plans for Public and Professional Networking." Among the institutions represented were the Bradshaw Foundation, INAH, the Trust for African Rock Art (TARA), the Rock Art Research Institute (University of the Witwatersrand), Griffith and Newcastle

Above: **Detail of rock art in Australia's Kakadu National Park**. These paintings are in the "X-ray style," which is an iconic painting tradition in West Arnhem Land. Photo: Neville Agnew, GCI.

Right: ***Rock Art: A Cultural Treasure at Risk***, published by the GCI in 2015. This report grew out of a GCI co-organized workshop in Kakadu the previous year, in which participants identified the needs at the global scale for effective preservation of rock art, and outlined a way forward.

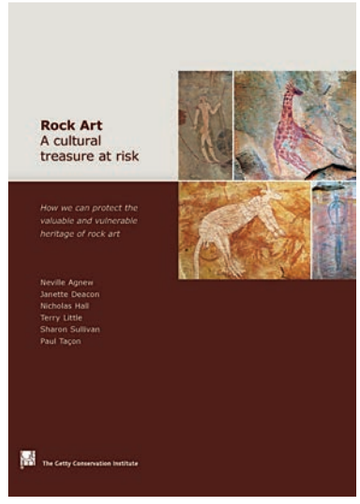
Universities, the National Scientific and Technical Research Council (Argentina), the University of California, Los Angeles (UCLA) Rock Art Archive, the Shumla Archaeological Research & Education Center (Texas), and the Frobenius Institute (Germany), as well as filmmakers, volunteer groups, and professional archaeologists who have specialized in rock art research, management, and conservation.

An effective way forward was determined to comprise intensive networking within the group with exchange of expertise and knowledge, outreach for professionals and site managers in need of support in underserviced countries and sites, and, importantly, the use of social media, a specialty of the Bradshaw Foundation, to support the essential momentum and awareness required in the public arena. A number of documentary films are in preparation. The Rock Art Network, as it is called, plans to cooperate with long-established professional organizations such as the International Federation of Rock Art Organizations and the Australian Rock Art Research Association.

The Network formulated a mission statement, which states in part that rock art "is a shared heritage that links us to powerful ancestral worlds and magnificent landscapes of the past.... Through its existence nature and culture are connected in the landscape. It resonates with our individual and collective identity while stimulating a vital sense of belonging to a greater past. Rock art illustrates the passage of time over tens of thousands of years of environmental and cultural change. It incarnates the essence of human ingenuity and facilitates contacts today between cultures and aspects of spirituality.... This fragile and irreplaceable visual heritage has worldwide significance, contemporary relevance, and for many indigenous peoples is still part of their living culture. If we neglect, destroy, or disrespect rock art we devalue our future."

LOOKING AHEAD

In 2019 the Rock Art Network plans to meet in France to visit the Lascaux replica, and possibly the Chauvet or Altamira replicas as well. This will enable participants to experience some of the best tourist and marketing presentations of rock art in the world and to see how success and sustainability have been achieved through the attraction of large numbers of visitors to modern, state-of-the-art replicas, rather than the fragile originals. It is hoped this will inspire opportunities elsewhere for creating public awareness of rock art and its preservation.



Effectively communicating the values and significance of rock art is far from easy. To do so will require a deeper understanding of the societal reasons for the neglect of this extraordinary heritage. Although Picasso saw the rock art of Lascaux as art (perhaps exclusively so), it is, of course, much more—it is also a book of humankind's past written on the rocks, and finding ways to imbue young people, especially, with an enthusiasm for the beauty and mystery of meaning of rock art is challenging. But it can be done. Public interest groups and enthusiastic volunteers working with professionals already spend spare time documenting sites and sharing the pleasures of the outdoors in the knowledge that they are contributing to safeguarding a universal heritage.

The GCI is working in partnership with other organizations and rock art professionals to establish the Rock Art Network as a self-sustaining independent network. This collaboration includes, among others, the Bradshaw Foundation, PERAHU (The Place, Evolution and Rock Art Heritage Unit) at Griffith University, Impact Partners Film Services LLC, the Altamira National Museum and Research Centre, Stepwise Heritage and Tourism in Australia, TARA, the Rock Art Archive at UCLA's Cotsen Institute of Archaeology, the Frobenius Institute of Goethe University, ASM Affiliates, Stratum Unlimited, the Shumla Archaeological Research & Education Center in Texas, and internationally recognized rock art scholars.

Neville Agnew is senior principal project specialist at the GCI.
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ICE AGE ROCK ART SITES

An Artistic and Spiritual Heritage

BY JEAN-MICHEL GENESTE

THE FLOWERING OF ROCK AND CAVE ART IN WESTERN EUROPE is associated with *Homo sapiens*, our direct prehistoric ancestors. When these first modern human Europeans arrived some forty thousand years ago to colonize new lands, they had already developed a rich visual art, which they inscribed on the walls of caves and rock shelters. This phenomenon is associated with the Aurignacian, a hunter-gatherer culture dating from the beginning of the Late Paleolithic, which spread throughout Europe when it was still plunged in the depths of the Ice Age.

The art of Paleolithic caves would persist with no significant changes from thirty-seven to fourteen thousand years ago. From its first appearance in Chauvet Cave, as well as in other decorated caves attributed to the same period, the Ice Age art of Europe was both figurative (large mammals and rare humans) and abstract (signs and graphic motifs). These artistic expressions are no more isolated than they are rudimentary; they must be considered in concert with innumerable works of portable art and decorated objects discovered in archaeological sites, attesting to the activities and preoccupations of these ancient human societies.

This cave art is masterful, intentional, codified with the intent to be shared, transmitted, and staged with poignant sensitivity in the privileged environment that is the underground world. Owing to its seclusion in deep galleries, distant from places of daily life and the light of day, the art imposes constraints on its visitors, even if only the mastery of a portable light source and the courage to venture into an unknown, obscure world frequented by animals. By its presence in caves alone, it is hallowed with spirituality.

Figurative animal art in all its splendor is that of Chauvet Cave in southern France, thirty-six thousand years old. The much later art of Lascaux, created twenty-one thousand years ago, evolved in the same manner. It was not until even later, around fourteen thousand years ago, that the phenomenon underwent a profound revolution, leading to the disappearance of figurative art, unchanged since the time of Chauvet, and that the caves lost their function as sanctuaries.

The numerous decorated caves are all unique and attest to a cultural practice largely distributed across Eurasia, remaining unchanged, as if atemporal, for at least twenty thousand years.

The "Alcove of the Lions" in Chauvet–Pont d'Arc Cave, with drawings made using wood charcoal. Photo: Jean-Michel Geneste / Ministry of Culture, France.

CHAUVET–PONT D'ARC CAVE

Chauvet Cave was discovered in 1994, and the first research supported by the French Ministry of Culture began there in 1998. After twenty years of exploration, discovery, recording, and analysis, the multidisciplinary research conducted in Chauvet Cave has yielded an exceptional body of information.

The impact of the discovery of the Chauvet Cave and the early age of its art was immediate and widespread. The Aurignacian age of thirty-six thousand years for the two rhinoceros figures on the cave's Panel of the Horses—one of the most representative in the cave and among the most original in European cave art—resounded throughout the scientific world. We now know, thanks to the numerous dates obtained, that Chauvet Cave was also frequented at a later time, around twenty-nine thousand years ago, before its entrance was sealed by successive rockfalls between thirty and twenty-one thousand years ago.

Within the cave, over four hundred animals and numerous signs, palm prints, handprints, and hand stencils have been recorded. The animals belong to thirteen species: mammoth, lion, woolly rhinoceros, horse, bison, aurochs, ibex, cave bear, reindeer, red deer, megaloceros, musk ox, and owl—making this cave unique in the universe of parietal art. Among the artistic techniques, stamping with the palm of a hand covered with a pigmented material was identified early on in some of the painted panels. The technique of stump drawing was also used, here consisting of applying powdered wood charcoal to soft, wet walls.

PRESERVING A FRAGILE HERITAGE

From the time of the first discoveries, not only have archaeologists been keenly interested in cave art, but the general public has been as well. From the beginning of the twentieth century, the major caves known and discovered have been frequented by tourists and were often significantly modified to make the artworks more accessible to them, sometimes seriously endangering these sites. The conservation problems at Lascaux and Altamira, for example, have existed for a very long time.

Our understanding of the fragility of this type of heritage site began with the first Lascaux crisis in the mid-1950s. This cave was opened to visitors in 1948 after intensive and destructive modifications were made to the archaeological layers, especially at the cave entrance. The resulting climatic and biological disturbances were responsible for the "white disease" and "green disease," which became evident between 1955 and 1960. In reaction to this biological and climatic instability, André Malraux, the minister of Cultural Affairs, ordered the cave's private owner to close it to the public in 1963. An expert committee implemented diverse treatments, but the reestablished equilibrium lasted only until the late 1990s. The new, serious bioclimatic crisis that I confronted in 2000 as curator of the cave required in situ treatments that, with the help of a scientific committee, continue today as part of a long-term conservation program, which includes the environmental protection of the entire hill on which Lascaux is located. For this reason, we decided to create a new replica at a safe distance from the original cave. Lascaux 4, a complete replica, opened to the public in December 2016 and continues to attract numerous visitors. The Lascaux hill is now protected as a sanctuary.

Learning from a long and sometimes disastrous history of trial and error, we now understand that decorated caves are very fragile natural systems whose equilibrium is dependent on hydrogeological, climatic, and biological factors in perpetual interaction. To reestablish the necessary preservation conditions, all measures must be taken to return to an anterior, natural state by controlling these factors and, most importantly, by drastically limiting human presence in the cave. Hence our reliance on replicas, such as those of Chauvet, Altamira, and Lascaux, to satisfy the legitimate desire of the public to tangibly experience these sites.

THE CHAUVET REPLICA PROJECT

In 1995, only a few months after the discovery of Chauvet Cave, it was evident that this exceptional archaeological site, so well preserved and unequivocally unique, was too fragile to be opened to the public. The constraints imposed by its conservation were incompatible with regular visitation, and thus it was necessary to formulate a satisfying solution for the promotion and development of tourism.

Chauvet 2, which includes a replica of Chauvet Cave itself, is a monumental project comprising five buildings constructed on the edge of a limestone plateau overlooking the small city of Vallon-Pont d'Arc, less than two kilometers as the crow flies from the original cave hidden in a cliff face of the Ardèche Gorges in southern France. More than its size (three thousand square meters), it is the spirit in which this center was created that should be emphasized—the desire to share the symbolic dimensions of the site, whether aesthetic, natural, or cultural, through its artworks and via an authentic replica re-creating the cave as completely as possible.

One of the fundamental principles of the replica was to reproduce ten decorated spaces at full-scale, from the simple isolated painting to the monumental compositions of the deepest galleries. Faced with the impossibility of reproducing the entire cave, given its length (more than 500 meters), global surface area (8,400 square meters),

The "Panel of the Engraved Horse" in Chauvet–Pont d'Arc Cave. The engraving was made on a soft limestone wall covered with brown clay, using fingers and a stone tool. Photo: Jean-Michel Geneste / Ministry of Culture, France.

amplitude of its volumes (44,000 cubic meters), and complexity of its underground landscapes, the cave was folded into itself to contain it within an appropriately sized building. To transmit the power of its artworks and the emotions they arouse, the creation of the decorated panels was entrusted to artists and archaeologists. The prehistoric drawings were reproduced with colors and materials analogous to those employed by the artists of the past. In this spirit, wood charcoal produced with Scots pine was used to re-create both the delicacy and the vitality of the curves that compose the animal figures drawn with charcoal crayons and enhanced with blending and shading.

The Chauvet Cave replica is accompanied by museum and didactic spaces in what is called the Aurignacian Gallery. Beginning with the first creations of rock art site replicas in France and Spain, the crucial question of the acceptance of facsimiles by a public eager to tangibly experience the original decorated caves was raised. Several elements have therefore been incorporated into the creation of facsimiles. The public is informed that the most fragile sites are closed to ensure their preservation for future generations; that several of the largest caves, including Rouffignac and Niaux in France, and El Castillo and Nerja in Spain, remain open to the public; and that the interpretation centers and museum spaces that accompany the replicas (which are never insolated) offer opportunities to broaden one's knowledge of prehistoric art and to understand the restrictions placed on access to the original sites. Finally, the public is reminded that state-of-the art digital 3-D techniques are employed to create very subtle copies in which the artworks are staged, in a manner that enhances the visual and sensory criteria that imbue them with exceptional "authenticity."

Today, visitors to Chauvet 2 quickly forget they are in a life-size replica. On the contrary, some have the impression they are visiting a real cave, and some even declare that they feel "emotion," especially in the replica of the End Chamber. Could we wish for a greater appreciation on the part of the public?

This technological and cultural success has won the public over, judging by their enthusiastic visitation of the site, which in its first season in 2015–16 received more than six hundred thousand visitors. Lascaux 4, inaugurated in December 2016 in Montignac (Dordogne), employs the same techniques and principles and has enjoyed the same success.

With this latest generation of decorated cave facsimiles, scientific and cultural education in the domain of rock art has adopted a new language and conceptual methods, attaining an unequaled, immersive, and multisensory authenticity. The facsimile commands its own autonomy and specificity; in it we stroll, and in it we live a deeply personal experience.

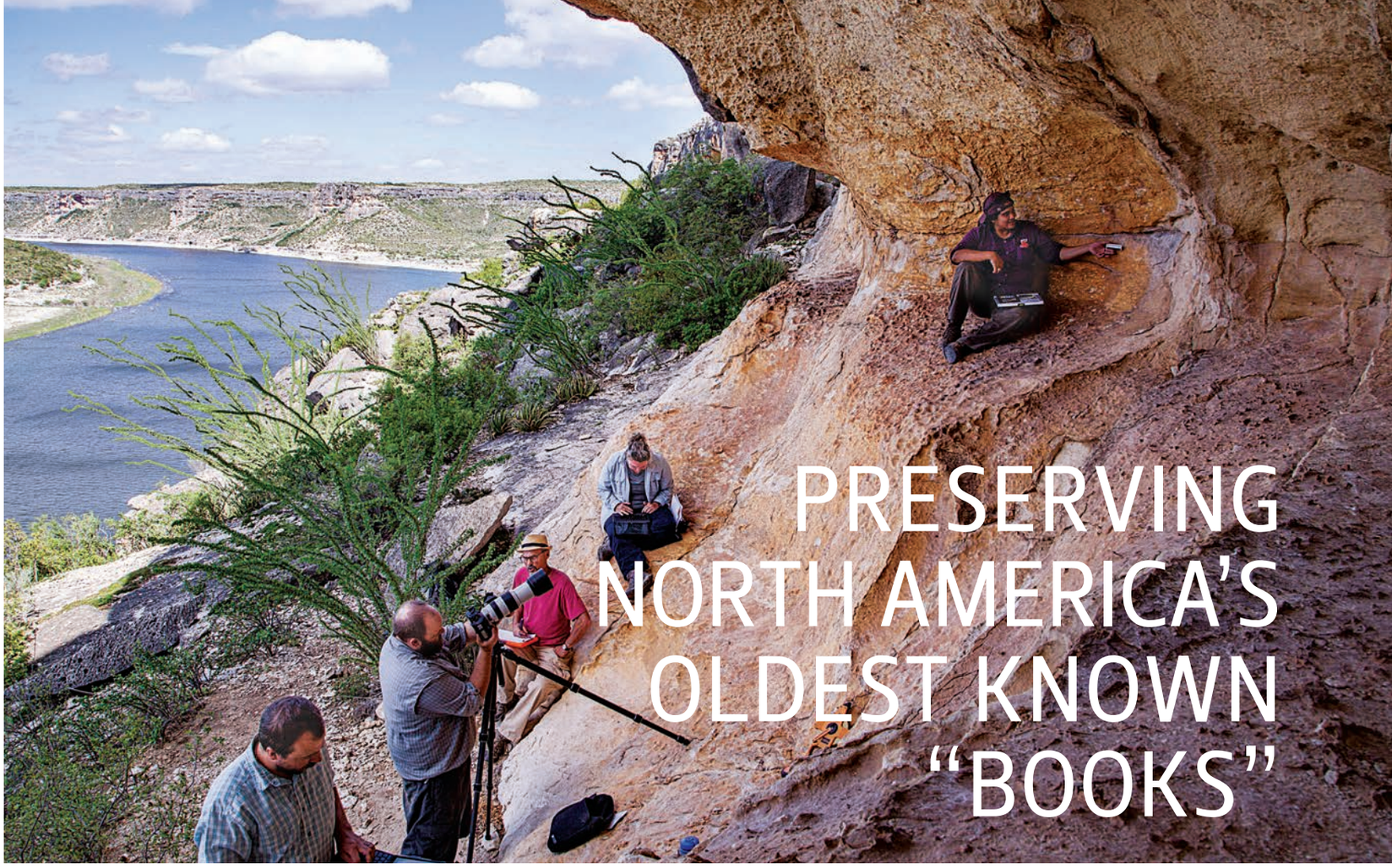
ROCK ART TODAY

Rock art today benefits from the extraordinary enthusiasm of the public worldwide. Not only are the European decorated caves appreciated, but the rock art sites scattered elsewhere around the world are as well—sites whose exuberance and richness touch all the inhabited continents and most of past cultures. While growth of tourism at these sites can be significant motors of development in some areas because of the potential economic benefits, rock art also engenders another more profound and sustainable type of development. In many places, it is a unique cultural phenomenon integrated within a landscape and natural spaces; it crystallizes a reappropriation of the past and engenders a deep societal awareness of this past—a past that is often absent for a multitude of reasons, but which suddenly motivates interethnic and intergenerational unity.

Rock art sites are an important but fragile reservoir of knowledge of the distant past. In light of their diverse attributes and values, they must be protected as a nonrenewable artistic and spiritual resource threatened by the incessant exploitation of the natural environments of the planet.

Jean-Michel Geneste is an archaeologist and honorary curator general with the French Ministry of Culture. He has been the director of scientific research at Lascaux and was head of the multidisciplinary research program at the cave of Chauvet-Pont d'Arc from 2002 to 2017.

Aurochs, horses, and red deer in the "Hall of the Bulls" of Lascaux Cave. Photo: Jean-Michel Geneste / Ministry of Culture, France.



PRESERVING NORTH AMERICA'S OLDEST KNOWN "BOOKS"

The Shumla Archaeological Research & Education Center

BY CAROLYN BOYD

CENTERED ON THE CONFLUENCES OF THE RIO GRANDE, PECOS, and Devils Rivers, the Lower Pecos Canyonlands of southwest Texas and northern Mexico were home to hunter-gatherers for over ten millennia prior to European contact. The visual and material culture characterizing the region and its inhabitants extends north and south of the United States–Mexico border, encompassing approximately eight thousand square miles. Although Lower Pecos visual culture includes petroglyphs (rock engravings), pictographs (rock paintings) are more abundant and include some of the most complex examples of rock art in the world—most notably, the spectacular Pecos River style murals. They are the defining archaeological phenomenon of the Lower Pecos.

Radiocarbon dates obtained for Pecos River style paintings range from 2700 BCE to 600 CE. Using vibrant earth colors of black, red, yellow, and white, hunter-gatherer artists painted enormous murals stretching expansive distances along the canyon walls. In some locations the paintings once towered thirty feet tall and spanned hundreds of feet in length. Repeated scouring by violent flash floods and exposure to sun and rain through the millennia have degraded these murals, but within the protection of hundreds of dry rock shelters some remain vivid. They help us appreciate how stunning and awe-inspiring the painted canyons once were and challenge our preconceptions of the art and its makers.

Scholars long feared that the meaning of these magnificent murals was lost with the artists who produced them. Recent research has demonstrated otherwise. Rigorous analyses of the art have produced compelling evidence about their manifold meaning, revealing stunning sophistication and complexity. Pecos River style murals are visual texts composed of graphic symbols communicating cosmological and mythological concepts that were later manifested in Mesoamerica among agricultural societies.

The Shumla Archaeological Research & Education Center[1] was founded as a nonprofit organization in 1998 to preserve, study, and share these ancient "manuscripts." Since its establishment, it has been a center of archaeological research, heritage preservation, community outreach, and education for students of all ages. Shumla is based in the heart of the Lower Pecos region with headquarters in Comstock, Texas, and a field station—the Harrington Campus—west of town on land donated by the Harrington family. The field station includes a large pavilion, a commercial kitchen, dormitories, a library, and a conference room.

Shumla's vision is that the rock art of the Lower Pecos will continue to inspire awe and scholarship for generations to come, and that members of the public, political decision makers, and the academic community will appreciate its significance, not only to the people who produced it thousands of years ago, but also to people today and in the future. This is vitally important for the conservation of rock art, both in the Lower Pecos and around the world. The following is an overview of Shumla's holistic approach to realizing this vision.

A team from the Shumla Archaeological Research & Education Center documenting rock art along the Devils River. Photo: courtesy of Shumla Archaeological Research & Education Center.

A HOLISTIC APPROACH TO PRESERVATION

The rock art of the Lower Pecos, like that of so many regions of the world, is at risk from a host of dangers, including vandalism, flooding, weathering, and industrial encroachment. Shumla works to preserve the rock art and the information it contains through four primary activities: documentation, research, education and outreach, and stewardship.

Documentation

Documentation is the cornerstone of Shumla's preservation activities. Within a matter of seconds, rock art that has endured through the millennia can be lost to a single act of vandalism. Therefore, systematic documentation of these irreplaceable resources using best practices is of paramount importance. Shumla creates permanent records of each mural and its place on the landscape using the latest technological advances, such as gigapanoramas (gigapixel panoramic photographs), Structure from Motion 3-D modeling, ArcGIS, digital microscopy to nondestructively examine paint stratigraphy, Decorrelation Stretch image enhancement, and portable X-ray fluorescence. It also produces textual and graphic databases that are searchable, replicable, and verifiable, and that will be useful to researchers for years to come. These data are stored on the Shumla servers, backed up off-site, and ultimately archived at the Center for Archaeological Studies, a curatorial facility at Texas State University. Non-georeferenced 3-D models and gigapanoramas are shared with the public on open source websites. All other data are available to scholars at the Shumla headquarters.

Research

Shumla's preservation efforts include a documentation program that is research oriented. Too often documentation strategies lack just that—a strategy. While any documentation that follows recognized standards and protocols is better than no documentation at all, the best documentation program is one informed by clearly articulated research questions. The questions determine the methods employed to document the art and increase the likelihood that the data will be usable by researchers in the future.

In 2017 Shumla and Texas State University established an endowed position in the Department of Anthropology—the Shumla Endowed Research Professorship. The holder of this position serves on the Shumla board of directors and as strategic head of research for the organization, working with Shumla staff to formulate research questions that guide documentation efforts. At Texas State University, the endowed professor conducts research on the rock art of the Lower Pecos, directs graduate and postgraduate rock art research, trains students in best practices, identifies and recruits student interns and volunteers to work at the Center, and makes available university resources—including research libraries, scholars, and staff—to Shumla. This furthers Shumla's reach and its ability to achieve its mission to preserve the rock art of the Lower Pecos.

Shumla recently expanded its research program to include chemical analysis. The types of analyses conducted include nondestructive techniques, such as portable X-ray fluorescence spectroscopy to determine elemental composition of paint, and destructive techniques, such as removing paint samples for radiocarbon dating. Pictographs can be dated if enough organic material is present in the paint. Shumla has constructed a plasma oxidation system to extract organic carbon from paint samples and prepare them for radiocarbon dating at an accelerator mass spectrometry laboratory. This plasma oxidation system is operational and is processing samples from around the world.

Cedar Springs Shelter. Many Pecos River style murals are large and highly complex. Ladders or scaffolds were required to paint this 10-foot-tall skeletonized anthropomorph. The figure's base begins 5 feet above the shelter floor, and the paintings continue 4 feet beyond the uppermost reaches of the anthropomorph. Photo: courtesy of Shumla Archaeological Research & Education Center.

Education and Outreach

Since its founding, Shumla has been committed to preservation through education. The Center offers youth and adult education programs at its headquarters and field station, where a learning-by-doing philosophy prevails. Shumla staff also partner with organizations such as Texas Parks & Wildlife, the National Park Service, and the Texas Archeological Society, to offer experiential education programs to a broad and diverse audience.

One of the most immersive educational programs is called Shumla Scholars. This is a high school STEM (Science, Technology, Engineering, and Mathematics) program conducted in partnership with the local school system, Comstock Independent School District. Students enrolled in the Scholars Program explore and learn about their own backyard, a region rich in cultural heritage and environmental diversity, as they help Shumla archaeologists document rock art or engage in other community-based heritage activities. For example, high school scholars utilized advanced technologies such as GIS mapping, high-tech imaging, drone photography, and 3-D modeling software to map the small community cemetery. The students used this data to apply for and obtain a Historic Texas Cemetery

Designation for the Comstock Cemetery. Through this and other Shumla programs, they learn academic and professional discipline, project management, and teamwork as they work toward the goals set each year for the new group of Shumla Scholars. Comstock school district superintendent O. K. Wolfenbarger has stated, "The tools and techniques our students have learned [at Shumla] can be applied in many STEM fields. What a great experience for our kids to take with them as they continue on to college and their future jobs."

But the Shumla Scholars program is even more than an excellent STEM experience. The program helps Comstock students connect with the wonder that is around them. It educates them about the importance of understanding and protecting their cultural heritage and builds a sense of pride in their community. In a few cases, graduates of the Shumla Scholars program have returned to work with Shumla staff as summer interns.

Shumla trains future rock art specialists through a program that provides internships, both paid and unpaid, to university students and recent graduates from around the world. It is a multidisciplinary program engaging students of archaeology, anthropology, studio art, art history, chemistry, and nonprofit management. Inevitably, Shumla's interns become passionate advocates for rock art, and many have gone on to pursue graduate studies in Lower Pecos archaeology.

Education through outreach is another Shumla directive. This includes public lectures, demonstrations, and exhibits in a variety of state, national, and international venues. Museum installations—temporary, permanent, and traveling—are an important component of Shumla outreach. These exhibits have reached broad and diverse audiences across the United States with stunning presentations of Lower Pecos rock art. One of the most recent and impactful exhibits was produced in partnership with the Witte Museum[2] in San Antonio, Texas. Shumla created an interactive rock art display introducing visitors to the rock art of the Lower Pecos and its rich narrative content. In the Kittie West Nelson Ferguson People of the Pecos Gallery, the Witte contextualizes the rock art, taking visitors back in time through life-size re-creations to explore life, art, and ritual in the Lower Pecos thousands of years ago.

Shumla also reaches a broad audience through social media, including Facebook, e-news, blogs, and webinars. Through these venues, Shumla keeps its supporters, and future supporters, engaged with reports from the field, new discoveries, and updates on cutting-edge research.

Stewardship

Shumla's work in the Lower Pecos provides an unprecedented opportunity to increase local and regional awareness about the irreplaceable cultural resources of the region. Caring for and watching over rock art across such an expansive area presents a challenge. Most sites are on private ranches that have been in the same families for generations—only a handful are on federal or state property. Shumla has worked with local ranchers and members of the community for nearly twenty years. Collaboration with landowners, with respect for their rights and wishes, has resulted in good working relationships, as well as strong partnerships with Amistad National Recreation Area and Texas Parks & Wildlife, the two government agencies that own and manage property in the region. To continually improve these relationships, and to further inform and engage landowners, Shumla established an annual event called the Rancher Steward BBQ. Landowners and their families are invited to Shumla's Harrington Campus to enjoy a day filled with food, fun activities, and informative presentations provided by Shumla staff. By involving and informing the community in the work Shumla is doing, the organization is fostering stronger bonds with landowners, current and future, and building a network of trained stewards.

Building these relationships was instrumental in the inclusion of some of the region's premier rock art sites in a nomination of the region for a National Historic Landmark designation. Together with the National Park Service and Texas Parks & Wildlife, Shumla recognized the national significance of the archaeological resources of the Lower Pecos and the need to nominate sites within it for a National Historic Landmark designation. Beginning in 2014, Shumla led a select team of representatives to pursue the nomination and engaged local landowners throughout the process. As a result, Shumla was able to include sites on both public and private property. The nomination covers the Lower Pecos Canyonlands archaeological region and thirty-six specific rock art sites within it, and it was formally submitted to the Landmarks office in Washington, DC, on July 1, 2017. However, no meetings to evaluate the nominations have been conducted so far. Not only would a National Historic Landmark designation further increase awareness of its significance, it would help Shumla and its partners in our efforts to preserve and study this irreplaceable national treasure.

KEYS TO SUCCESS

June 2018 marked the twentieth year of Shumla. In this relatively short period, the organization has become recognized as an international model for rock art documentation, research, and education. Its success stems from a holistic approach that develops programs to fulfill its preservation mission and that unites people of diverse backgrounds with purpose, by communicating the organization's values to a society in continuous change.

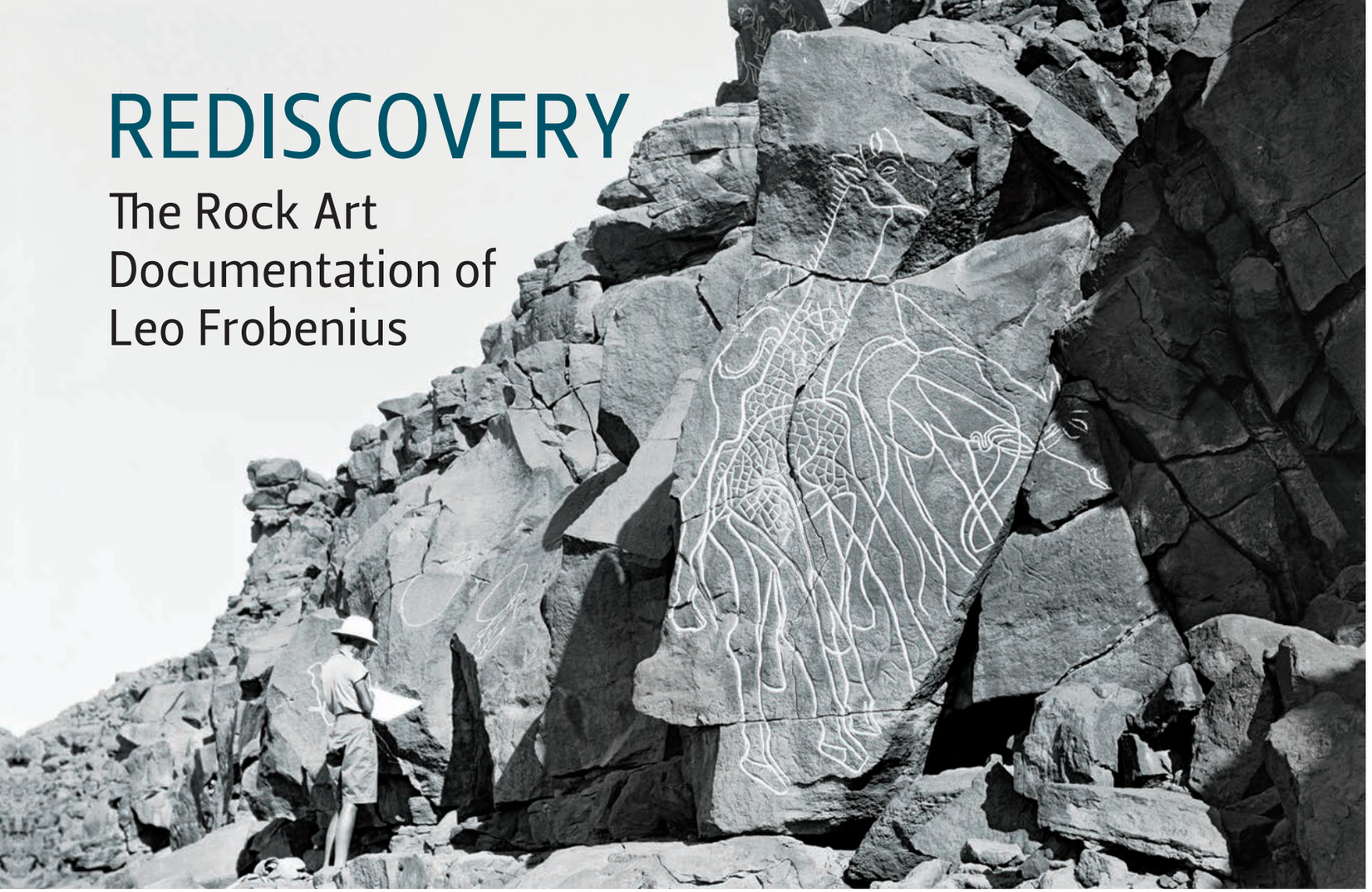
Carolyn Boyd is the Shumla Endowed Research Professor at Texas State University and head of Research at the Shumla Archaeological Research & Education Center.

1. www.shumla.org
2. https://www.wittemuseum.org/

Shumla Scholars visiting Fate Bell Shelter in Seminole Canyon State Park & Historic Site. Photo: courtesy of Shumla Archaeological Research & Education Center.

REDISCOVERY

The Rock Art Documentation of Leo Frobenius



BY RICHARD KUBA

OFTEN LOCATED IN PLACES DIFFICULT TO ACCESS—CAVES, ROCK shelters, and deserts—prehistoric paintings and engravings were first known to the general public early in the twentieth century through reproductions presented in publications and exhibitions in major American and European cities. When it became clear how old this art actually was, it was a shock for a public that saw itself as at the peak of cultural evolution. The high artistic quality of the images was anything but primitive, and it precipitated a kind of Copernican revolution in the way we understood ourselves in comparison to the "primitives" of the past.

THE WORK OF FROBENIUS

The German anthropologist Leo Frobenius (1873–1938) played a decisive role in the diffusion of awareness of rock art by organizing an effort to create the world's largest collection of prehistoric art facsimiles—about five thousand so-called "original" copies faithfully reproducing the sizes, shapes, and colors of the paintings. The copies were made throughout the world, primarily by professionally trained young female artists who accompanied Frobenius on his expeditions. The watercolors, some as large as three by ten meters, brought these rarely seen and distant images into the larger world. In numerous exhibitions, rock art—converted into two dimensions, in rectangular form, and hangable on a wall—was presented to the public with the cachet of recognized masterpieces.[1]

Although Frobenius was on the margins of the academic mainstream, he was a prominent and charismatic figure. Self-taught, he became director of the Museum of Ethnology in Frankfurt and an honorary professor only at the end of his career. Still, this "ethnologist-entrepreneur" was a pioneer of field research, organizing a dozen expeditions in Africa, from the central Sahara to the savannas of Zimbabwe, between 1904 and 1935. Thanks to the significant visual documentation gathered in these yearlong trips, his "Afrika-Archiv," founded in 1898 in Berlin, became a famous research center, which moved to Frankfurt in 1925.

Frobenius defined himself as an "archaeologist of culture." After collecting thousands of artifacts for ethnology museums and transcribing many African stories and myths, he devoted himself to the study of prehistoric images. He uncovered representations from the Paleolithic and Neolithic periods in North African rock shelters (expeditions in 1913, 1926, and 1932–35) and South Africa (1928–30), and in European caves (France, Spain, Italy, and Scandinavia, 1934–37). To further the study of African prehistory, Frobenius collaborated with the rock art specialists Hugo Obermaier and Henri Breuil, and he contributed to the so-called "exotic prehistory" room at the Paris Musée d'Ethnographie du Trocadéro in 1933, presenting a temporary exhibition of reproductions from his institute. He sought to prove the continuity of rock art between Europe and Africa, and by extending his research to Australia and Indonesia in 1938, his institute bore witness to the global nature of this art.

The African rock images were published in prestigious and richly illustrated volumes. However, it was through about sixty exhibitions in Europe and the United States that Frobenius reached a wider

Ruth Assisa Cuno sketching the prehistoric engraving of two life-size giraffes and an elephant at In Habeter, Fezzan, in the Libyan Sahara, 1932. The engraving had been "chalked" to make the engraving lines more apparent to the artist. This was common practice at the time, as was wetting rock paintings to saturate colors and motifs. These practices are no longer considered appropriate. Photo: © Frobenius-Institut.

audience. The most prominent of these exhibitions were organized by the Musée d'Ethnographie du Trocadéro in 1930 and 1933, in the Reichstag in Berlin in 1935, and at the Museum of Modern Art (MoMA) in New York in 1937.

INFLUENCE ON ART

In search of a universal artistic language and inspiration, the avant-garde discovered not only "primitive art" from Africa and Oceania but also rock art. Frobenius's research was published in French art journals such as *Cahiers d'Art* and *Documents*. Many artists visited his exhibitions, including Joan Miró, André Lhote, André Derain, Marie Laurencin, and Ossip Zadkine in Paris in 1930. Some of their works were exhibited in conjunction with the Frobenius collection, as was the case with André Masson, Jean Arp, Paul Klee, Miró, and Vladimir Lebedev during the exhibition *Prehistoric Rock Pictures in Europe and Africa* at MoMA in 1937, at the instigation of its director and founder, Alfred Barr, who declared that "the art of the twentieth century has already come under the influence of the great tradition of prehistoric mural art."[2] In 1948 works by Alberto Giacometti, Amedeo Modigliani, Miró, and Karl Schmidt-Rottluff were exhibited jointly with the institute's facsimiles at the *40,000 Years of Modern Art* exhibition at the Institute of Contemporary Arts in London.

At the crossroads of science and art, Frobenius's practice was not without contradictions. While he valued the work of the institute's artists—as evidenced by organizing his institute into scientific and artistic wings—he considered these copies of rock art primarily as scientific documents. Moreover, while he promoted non-European arts, he was undoubtedly a conservative and not particularly sensitive to the innovations of the twentieth century and its modern art. It was not his intention to encourage the appropriation of prehistory by the avant-garde or, by popularizing these images, to contribute to the development of modern art.

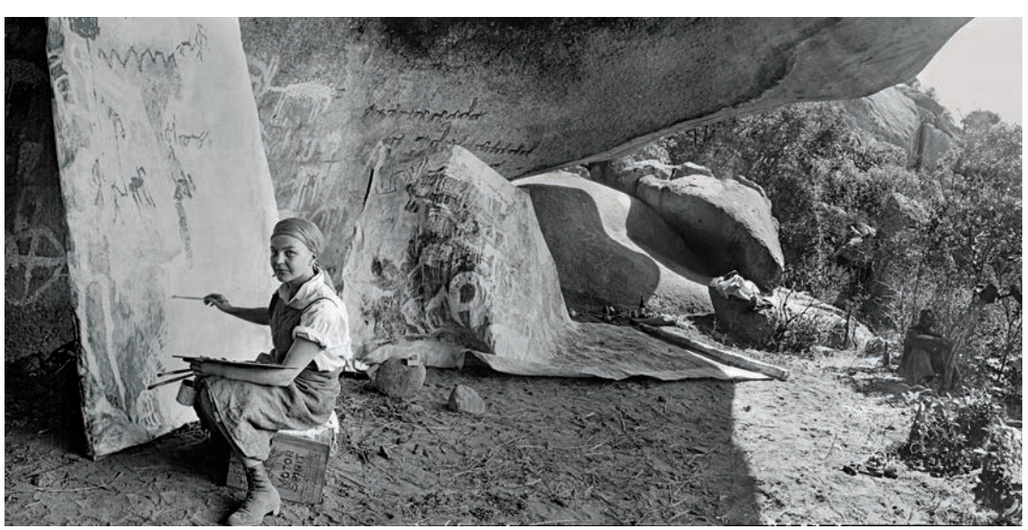
From the 1960s onward, this unique collection fell into oblivion. Color photography enabled much more accurate documentation of rock art, now supplemented by cutting-edge twenty-first-century technologies, such as 3-D scanning, photogrammetry, and DStretch. While the subjectivity of painted copies might not always achieve the standards of accuracy of these techniques, the watercolor reproductions have their advantages. Even photography, so dependent on the particular lighting and topographical conditions of each site, often has trouble capturing important yet barely perceptible details. The artist, however, can accentuate those details, and the powerful aesthetic of a painting by human hand cannot be overrated. What Frobenius's devoted artists produced painstakingly under difficult circumstances are often beautiful examples of scrupulous documentation coupled with real artistic talent.

The 2017 exhibition *Frobenius. El mundo del arte rupestre* in Mexico City's Museo Nacional de Antropología, seen by over 200,000 visitors. Photo: Richard Kuba, © Frobenius-Institut.

A few years ago, the Frobenius Institute rediscovered its collection and developed several exhibitions. In 2016 some 120 historical rock art copies were presented in the Martin-Gropius-Bau in Berlin, a leading exhibition venue. It was the largest display of copies from Frobenius's expeditions since the 1930s, and it drew some forty thousand visitors. The catalog[3] was reprinted three times, and reviews were extremely positive. A smaller exhibition on African rock art was displayed in Dakar, Senegal, in early 2017, involving modern artists of the Dakar art scene,[4] and in the second half of 2017 the exhibition *Frobenius. El mundo del arte rupestre* was seen by over two hundred thousand visitors in Mexico City's Museo Nacional de Antropología. All these exhibitions sought to establish rock art for what it is—a unique, universal form of art, connecting ancient and modern worlds, as inspiring to artists and to the general public today as it was a century ago. By increasing public awareness of this global heritage, the exhibitions also enhance efforts to preserve these precious legacies of our collective past.

Richard Kuba is senior researcher at the Frobenius Institute.

1. See Jean-Louis Georget, Hélène Ivanoff, and Richard Kuba, eds., *Kulturkreise: Leo Frobenius und seine Zeit/Cercles culturels: Leo Frobenius et son temps* (Berlin: Reimer Verlag, 2016).
2. Alfred H. Barr Jr., "Preface and Acknowledgment," in Leo Frobenius and Douglas C. Fox, eds., *Prehistoric Rock Pictures in Europe and Africa: From Material in the Archives of the Research Institute for the Morphology of Civilization, Frankfort-on-Main* (New York: Museum of Modern Art, 1937), 9.
3. Karl-Heinz Kohl, Richard Kuba, and Hélène Ivanoff, eds., *Kunst der Vorzeit: Felsbilder aus der Sammlung Frobenius* (Berlin: Prestel, 2016).
4. Richard Kuba, Hélène Ivanoff, and Maguèye Kassé, eds., *Art rupestre africain: De la contribution africaine à la découverte d'un patrimoine universel* (Frankfurt am Main, Germany: Frobenius-Institut, 2017).



Agnes Schulz copying a huge rock art panel in the Matopo Hills, Zimbabwe, 1929. Photo: © Frobenius-Institut.

ART IN THE LANDSCAPE

A Discussion about the Preservation of Rock Art

JANETTE DEACON is a South African archaeologist specializing in heritage management and rock art conservation. She has been a coordinator of the Southern African Rock Art Project since 1998, training employees at World Heritage Sites and national and provincial parks in the region to manage and conserve rock art.

PETER ROBINSON is editor for the Geneva-based Bradshaw Foundation, dedicated to disseminating information on global rock art and human evolution. He is also an artist and has been elected into the Royal Society of Sculptors.

PAUL TAÇON directs the Place, Evolution and Rock Art Heritage Unit in the School of Humanities, Languages and Social Science at Australia's Griffith University and leads research themes in the Griffith Centre for Social and Cultural Research and the Australian Research Centre for Human Evolution.

DAVID S. WHITLEY specializes in the prehistoric archaeology and ethnography of far western North America. His particular interests lie in sacred sites, rock art, and cultural heritage management.

They spoke with Neville Agnew, GCI senior principal project specialist, and Jeffrey Levin, editor of *Conservation Perspectives, The GCI Newsletter*.

JEFFREY LEVIN Rock art—which dates back thousands of years to a time before human settlements and written language—is found across the globe. What does that say about the human spirit and rock art's significance?

PAUL TAÇON Rock art is a unique visual archive of human experience, history, and encounters with animals and plants. In addition, it's a record of encounters among different peoples, between different indigenous groups in Australia, the Americas, and elsewhere—but also between indigenous groups and Europeans and Asians who came to their shores in more recent times. From this incredible archive we can learn about the past in an alternative way to the excavated archaeological record. Many rock art sites are in spectacular landscapes and have spiritual significance. For many, these sites are a reflection and a focus of their identity. In some countries, such as South Africa, France, and China, they're part of a national identity that's celebrated in various ways.

JANETTE DEACON I see an analogy between rock art and the belief systems of today. For example, when you see the variety in Christian and other religious arts, you notice the different ways people have approached the same belief system. The Christian elements in a small church in Norway are very different from those in Chartres Cathedral in France. In the cathedral, you see almost every aspect of Christianity, as opposed to a small church with simply a cross inside. One of the main reasons for an interest in rock art today is to understand how people tens of thousands of years ago had belief systems they needed to record for themselves and to inspire others.

DAVID WHITLEY Rock art almost uniquely represents both human universality and the particularity of human societies. Universally, it demonstrates both our need and our ability to communicate and our concern with aesthetic values going back forty thousand years. On the side of particularity, it remains in Native America an important element of self-identity, a symbol that people can rally around and where they can find their essential and particular place.

PETER ROBINSON As one who works with rock art researchers from around the world, and as an artist myself, I believe that what makes rock art ubiquitous is that it reflects a human urge. Art makes us human and was one of our first forms of communication. Right from the beginning we have had this ability and urge, and we find it around the world. As Janette and David were saying, we have similarities and we have differences. That's the intriguing thing.

WHITLEY I agree. There is a big debate in archaeology about the origins of what's sometimes called behavioral modernity. I prefer to call it archaeological modernity or cognitive modernity, but it represents the complex of abilities that occurs at the beginning of the Upper Paleolithic, ten to fifty thousand years ago. It is the appearance of the ability to make complex art that signals when we become humans as we know ourselves. We have examples of geometric scratching on ochre pebbles, on ostrich eggshells, as well as beads and things that are much earlier—but they're nothing like Chauvet Cave, which represents a true turning point.

TAÇON Art indeed makes us human, but a sense of history also makes us human, as well as being able to express that in lots of different artistic ways—through visual art, through performance,

Photo: Sue Buckland, courtesy of Janette Deacon.

What we see on rock shelter walls and on rock engravings out in the open is thought put into a visual medium. Just like poetry, it's there to inspire as much as anything else.

JANETTE DEACON

through song, and so forth. I work with communities across Australia, and they consistently say that these rock art sites are their history books and the big complexes their libraries.

ROBINSON That's right, but what is often forgotten are the techniques employed in rock art. Right at the beginning, we have stylization and symbolism imbued in rock art. These were the first artists, and yet they came up with a stylization and sophistication of line that staggers me as an artist.

WHITLEY When art appears, it appears full blown. We have what are clearly artistic geniuses from the beginning. We get changes in the human genome that result in certain characteristics very representative of artists.

NEVILLE AGNEW Calling it art can confuse the issue. I think it's a deeper thing—a manifestation of an urge to communicate, to leave a mark. Once humans emerged, they were creating marks and hand imprints on rock walls. People today still do this. In fact, here at the Getty Center the staff had the opportunity to commemorate the center's opening by leaving their handprints in wet cement in an interior hall. So this impulse dates back to the prehistoric world.

TAÇON Indeed, these marks on fixed parts of the landscape could be used to communicate different experiences and knowledge across generations. That's something that's really important about rock art.

WHITLEY But it's also important to recognize that art for art's sake is a late nineteenth-, early twentieth-century conception. If we look at Renaissance or medieval art, it's suffused with religious themes. So is the earliest art.

DEACON When I was at university, one of my lecturers defined a poem as a thought in words. What we see on rock shelter walls and on rock engravings out in the open is thought put into a visual medium. Just like poetry, it's there to inspire as much as anything else. Recognizing that ability to transfer to a visual medium something you've been thinking about is a very important and powerful motivation for art. In terms of today's art, it's the same impulse.

AGNEW Could you speculate on what a person's thoughts might have been in some of the earliest rock art?

TAÇON We'll probably never know exactly what they were thinking. However, I believe that human creativity and a sense of discovery are at the heart of it. How did we go from Australopithecus three million years ago to our world today? Human creativity, the use of the human hand, discovery, travel—there are a number of things that helped us along the way, such as the invention of stone tools, slings to carry babies so we could travel further, watercraft, and so on. At some point, people became aware that they were creating the world for themselves and needed to have some symbolic story requiring images, symbols, and fixed places in the landscape.

WHITLEY There are two questions being asked that get rolled into one when we discuss this topic. One is "Where did we come from? What changes led to us today?" But there's another question that's not one of evolution. It's a question of history and self-identity. You cannot compare scratches on ochre with polychrome murals like Chauvet, Lascaux, and Altamira. They're profoundly different. That's when we became what we recognize as ourselves today.

TAÇON That's true, but what that also emphasizes is that rock art is a shared heritage. All of our ancestors created rock art at many different points in the past, and this imagery, this way of recording experience, and this communicating of identity is something that can bring us together.

DEACON It's also quite interesting that some of the earliest pieces of art were portable—smaller than the palm of your hand. They've got designs on them and display the same kind of transformation you sometimes see in rock art where you get a combination of human and animal forms. The same ideas seem to have gone through the minds of those people and at some stage extended onto the walls of innumerable rock shelters. It is a fundamental change to go from something that could be carried around and be part of your identity to something that is more of a group identity where a whole place has been given a power.

Photo: courtesy of Peter Robinson.

We have the responsibility to preserve rock art just as we have the responsibility to do something about our climate, or just as we have the responsibility to do something about poaching of rhinoceros in Africa.

PETER ROBINSON

ROBINSON I've been fortunate to work on sculptures inspired by these figurines Janette mentioned, and it gives me, as an artist, an understanding of what I think the original artist sought to achieve. And it's not just me. There's a direct line from Paleolithic art to a contemporary artist. When the age of Altamira was established, and prehistoric art was acknowledged in the late nineteenth century, European artists were dropping art dating back just five hundred years to the Renaissance and taking up the bold lines and the unadorned colors of cave art. All the elements of modern art were in the caves.

WHITLEY Regarding the question, "Is it art?"—it's difficult for those of us raised in one of the Abrahamic religions to deal with the fact that much of rock art in the western United States was essentially a graphic visualization of something already there—a supernatural power, a spirit, a god, or however you want to phrase it. Rock art isn't just a graphic image. It is what we would define from the Abrahamic tradition as essentially pagan idols, and because it's so ingrained in us that idols are wrong, it's hard for us to recognize that this is not an image, it's a thing—a thing with potency and power. I have statements from Native Americans who say that if this art is destroyed, evil spirits will be released and sickness will cross the world. These are supernatural entities, not graphic images.

LEVIN For Native American communities, rock art resonates in the present. But for the wider society, how do we make the case that it's worth preserving?

ROBINSON We have the responsibility to preserve rock art just as we have the responsibility to do something about our climate, or just as we have the responsibility to do something about poaching of rhinoceros in Africa. We have the responsibility.

WHITLEY Thoreau said, "In wildness is the preservation of the world." You could say that about art in the sense that we need certain kinds of values and experiences that are hard to articulate in a material world. What's the value of the Getty Museum? Why does the Getty Conservation Institute exist? The same answers—and there are many of them—apply directly to rock art.

DEACON It's not about money, that's for sure. For the vast majority of people who are taken to rock paintings, the joy of seeing them is not only the images—it's the journey of getting there and the experience of seeing them in the landscape. That is very powerful indeed. It makes me sad to think that that kind of experience may disappear and our great-grandchildren will never have it.

TAÇON The joy and excitement in the experience of seeing rock art occurs around the world. A couple of years ago I did fieldwork in the Philippines, and we went to the site of Angono, which is open to the public. It's about an hour-and-a-half drive from Manila, but people want the experience of getting out of Manila traffic jams and going to this isolated area to see rock art. While we were there, hundreds visited. The staff who curate the site told us that they get thousands of visitors a year, most of them Filipino. It's something families do as an outing, but the experience of seeing that imagery seems to have a profound effect on people. And that's true in other parts of the world. For some in France, for instance, these are powerful places where they can connect to people who were there before. In Australia, I've been interviewing Aboriginal traditional owners—elders, as well as younger people—to learn why rock art is important for them today. A common response is that these places connect them to their ancestors. In some cases, it's direct ancestors like parents, grandparents, and great-grandparents. Further back in time it's Ancestral Beings that created people in the first place. So ancestral connections are very important.

AGNEW Rock art and landscape are integrally connected. That's why it's so powerful an experience for people to visit a rock art site. The process of getting there and seeing what people would have seen in very ancient times is all part of the experience.

WHITLEY Surveys have demonstrated that seeing these places in their natural landscape is one of the compelling reasons people visit. That said, a quarter of a million people visit the reconstructed cave of Altamira every year. So multiple motivations drive human interest.

LEVIN Given that rock art constitutes an ancient archaeological record—whether it's thirty thousand years old or two thousand years old—why hasn't there been more interest and activity within the archaeological community with respect to it?

Photo: Justin Ma, courtesy of Paul Taçon.

> All of our ancestors created rock art at many different points in the past, and this imagery, this way of recording experience, and this communicating of identity is something that can bring us together.
>
> PAUL TAÇON

WHITLEY It varies substantially by country. In France, for example, the development of rock art research followed the development of archaeology in general. They've always had that interest, perhaps because the French consider themselves the first painters and they're seeing their heritage. In Australia, there's a greater integration of rock art research in general archaeology, and probably in Africa as well. The United States has lagged behind, and there are reasons for that. The big reason is that ultimately rock art is primarily religious in nature and origin. Archaeologists, like all scientists, aren't much interested in religion. This goes back to the Enlightenment, which set up religion as a kind of thought that science opposed. But another issue is that rock art is not in the stratigraphic record.

AGNEW The question of age cannot be easily answered, and this has been an inhibition for archaeologists in their work. Unless they can answer that with authority, they are nervous about it. The age question is almost always the first question people ask.

WHITLEY The dating problem has always been critical. But the other issue is that archaeology in general has been a Western colonial activity where intellectual authority comes from studying in Western universities, and that devalues the potential for indigenous contributions to knowledge. While we may have a region where there are good accounts of why the art was made and what it signified, until recently archaeologists were persistent in ignoring that. Part of this had to do with authority, and part of it had to do with lack of training in understanding ethnographic accounts.

TAÇON That's true in Australia, where we have the added complexity that for Aboriginal Australians rock art isn't an artifact and part of archaeology. It's a part of living culture and an expression not only of history and identity but evidence that "we've always been here." There have been these crazy debates in Australia that disenfranchise indigenous people from their lands. Rock art is a way that they can say "we've been here a long, long time." In addition, for indigenous Australians, rock art places help them connect to their ancestors. For nonindigenous Australians, it wasn't their ancestors who made this rock art, so they don't have that connection. Gradually, we're getting some people to feel a part of this heritage, but it's a battle. Only since the 1980s has archaeology begun to recognize the importance of studying rock art, integrating it with the rest of the archaeological record, and incorporating contemporary indigenous thought. I have colleagues who still feel that if we include indigenous interpretation into archaeology we're diluting the so-called science.

WHITLEY Both Australia and South Africa have good academic programs in rock art where people can do research and get degrees. The United States does not. The reasons for that are complex and involve the age cohort in American universities. When the initial, postwar cohort started to retire, we went into an economic decline—departments shrank, positions were reduced, and rock art as a new topic wasn't one that was selected.

DEACON In South Africa, it became of interest only when David Lewis-Williams and Patricia Vinnicombe started reading the ethnography and realized what some of those paintings meant and how they linked back to the belief system of the San people. For at least a decade, and probably longer, there was still a powerful cohort of dirt archaeologists who didn't want to think about how valid the interpretation was. We've been very lucky in South Africa—and to some extent in Australia—that we've still got people who understand what things mean. But despite thirty or forty years of publications detailing interpretations of the rock art, probably 99 percent of the population still believe that there's a reason not to accept the ethnographic interpretation. Which is strange, really.

TAÇON That highlights a paradox. We want archaeology to take rock art seriously, while at the same time we don't want to present it to the public as a dusty relic. We somehow have to get across the concept that this is a potent living entity. You've got a real paradox here.

WHITLEY It's different in the United States, where there is widespread interest in rock art. If you give the average person an opportunity to view a rock art site, they would be interested in it. The US general public is more interested in Native Americans than in archaeology, and for that reason it's easier for me to sell my ethnographic interpretations of rock art to the public than to archaeological colleagues. My ethnographic interpretations are pretty much accepted

all over the country—and they're accepted because people recognize that this is what the Native American people say. That provides a very important opportunity for us in terms of rock art preservation, rock art visitation, tours, and things like that. People want to know about it because they are interested in American Indian tribes.

LEVIN David, you've just articulated one avenue for engaging the public in rock art and its preservation within the United States. What about elsewhere? How do we do it more universally?

TAÇON We have to be creative with a multipronged approach. We have to make rock art relevant to the general public and use technology that they want to use—so social media is very important. This is where Peter and the Bradshaw Foundation have set a great example. We need to look at how we can have interactive experiences related to rock art that aren't just in the field but in museum and cultural settings. We need to work with the media to get more of our stories into the public realm. In Australia, the media are very interested in rock art stories. Often when bad things are happening to indigenous peoples in the world, rock art stories are an alternative. They're good news that can be offered to the public, especially if they involve new discoveries.

DEACON What the Bradshaw Foundation is doing on their website is fantastic. There is such a variety of things, the images are so good, and they're in small blocks. You don't have to read a large book or go to the library or even Google. That's the kind of thing that my head tells me is going to be good because it has the potential to expand the number of people who are aware of rock art.

ROBINSON One thing we try to do at the Bradshaw is get across the simple point that rock art is basically art—it's the first art. We often make the analogy of imagining that if a famous art museum is left to go to ruin, or damaged by an earthquake or looted by vandals—would there be a public outcry? Of course. There would be state intervention. We're just trying to share the message that we should look after our art.

LEVIN In galleries and museums, art has a monetary value we've assigned to it. It's art that people have bought and sold over time. This can never be the case with rock art. It is public art in a very original sense that can't be acquired. It must remain where it is, or otherwise you destroy it. Is that in some way an impediment to getting a fuller public appreciation of rock art?

WHITLEY For the general public, the art in the Getty Museum has monetary value, but that's so abstract in relation to their daily lives that it's just an expression of its rarity and its brilliance. I think rarity and brilliance in aesthetic values can also be found in rock art.

TAÇON Well, because it has monetary value, an incredible amount of money is spent every year around the world to protect art in institutions. Millions and millions of dollars are spent for security. Compare that to the amount spent to protect rock art. There's no comparison.

WHITLEY You're absolutely right. Someone buying an Impressionist painting is spending tens of millions of dollars on it. If just one of those people every year took those tens of millions and put them into preserving rock art, the world would be a happier place.

AGNEW I do think the noncollectibility of rock art is a huge impediment to its wider appreciation. Paintings are movable and collectible. Rock art isn't, and that affects the way it's valued. Though the looting of rock art has now become widespread in some regions.

WHITLEY I could argue that the history of viewing art as very valuable feeds into rock art preservation. People recognize that great art is valuable, partly because it is collectible. They also recognize that the Sistine Chapel paintings are valuable beyond belief, and that helps us.

ROBINSON Perceptions can change. Modigliani died a penniless young man, but now look at his paintings. I don't think monetary value should be an impediment in recognizing the value of the rock art. It's priceless because it's irreplaceable. And it's the first art. Somehow, we have to get the populace on a global scale to act on that.

WHITLEY The argument I'm making basically is that the US general public values rock art because they value Native Americans. Do Australians have that same fascination and interest in Australian Aborigines? Do South Africans in general have that same interest in the San? I see that as being as big an issue as using technology to reach people.

TAÇON A certain percentage of Australians really are interested in the indigenous peoples, but a large percentage aren't. Visitors to Australia are obsessed with Aboriginal Australians and want to see different aspects of their culture. It's koalas, kangaroos, and Aboriginal people.

LEVIN Returning to the question of getting the greater public interested—I think the point about the Sistine Chapel is well taken. But how do we get across the message that the progenitor of the Sistine Chapel is on rock walls around the world?

ROBINSON We have to get into the zeitgeist that this is art. That's the easiest way to getting it into the public consciousness. And we have tools. We have social media, which is pretty much global, and the Internet, which gives us access to what nearly everybody is carrying around. That is the way we can spread the word to achieve maximum impact.

TAÇON In the past we used all sorts of pictures to communicate, then written letters and words were invented. Now with the new technology, we're going back to pictures—emojis, for instance. That's a connection we can emphasize.

DEACON In southern Africa there are tens of thousands of rock art sites. At last count, there were probably fewer than fifty open

Photo: courtesy of David S. Whitley.

> It's difficult for those of us raised in one of the Abrahamic religions to deal with the fact that much of rock art in the western United States was essentially a graphic visualization of something already there—a supernatural power, a spirit, a god.
>
> DAVID S. WHITLEY

to the public. Would it make a difference to open more to the public? We tend to think that it would not—at least not to public appreciation of rock art. A lot of appreciation comes through the research, which helps to interpret the paintings or engravings. You've got spectacular rock art in the Drakensberg park, a World Heritage Site, and it probably gets fewer than ten or fifteen thousand visitors a year. It's not easy to get there. It's a very steep path, and you need to be in good shape to do it. But the site's power has come through research that has identified one of its key paintings showing the metaphorical relationship between the eland antelope and the shamans of the San belief system. Anyone with a little interest who might have gone on the Bradshaw website or done some reading would have identified this as *the* site to see in South Africa.

WHITLEY A lot of non-archaeologists get interested in visiting rock art sites. That, in a way, is advantageous. We give them more to experience. Obviously, we don't want all sites open. They've got to be managed. But making sites accessible really helps.

ROBINSON It's important for public engagement to get celebrities and politicians involved. It sounds mercenary, but I don't think it is. We need people with a big crowd to get the public on board. Science first, absolutely, but in this fickle world we need to be told what to look at. As Paul was saying, it's ironic that rock art started with graphics and now we're dealing with graphics primarily. Social media works—if it's a fantastic picture. Let's work with the tools we have.

AGNEW Rock art in itself is sometimes amazingly compelling, but a lot of it isn't. One problem with rock art generally is that much of it is eroded, faded, covered in dust, or vandalized and damaged. It can be possible to see the wonderful grandeur of the original art glimmering through the damage by man and the natural loss. Even faded and small paintings can be very beautiful, particularly if you know something of their interpretation and what to expect. But it's an uphill battle preparing people to appreciate the beauty of the art. It's not self-explanatory. Very few sites have got that immediate visual impact.

WHITLEY I agree. Painted Rock on California's Carrizo Plain is a site I've been involved with for a long time, and there is no interpretation there because the tribes have asked that there not be. For this site, one lesson a visitor should walk away with is how people have destroyed what would have been the most magnificent rock art site in North America. There are a lot of messages we need to deliver to the public, and we can find different sites to broadcast those different messages.

TAÇON We need to emphasize the "wow" factor of rock art sites. In some cases, it's "wow" because it survived so well and the images are amazing. In other cases, it's "Wow, look at the terrible vandalism and destruction."

DEACON That's why displays like the excellent dioramas at the Witte Museum in San Antonio are so powerful. They offer easy, visible, and identifiable images of rock art re-created on the walls.

AGNEW I've been talking with a company in London about virtual reality, and they are close to creating a virtual cave. You put on the gear, and you're in Chauvet, you're in Altamira. If you can do that, you can bring in all sorts of things. When technology catches up with the rock art, that will help. That's a tool we have to explore.

DEACON Think about the Taj Mahal, for example. We all know exactly what it is if we see a picture of it. But the number of people who have actually gone there is relatively small. Maybe the way to go is to promote rock art in places where the public is, rather than expecting them to go where the rock art is. Virtual access.

LEVIN We've covered a lot of topics, but one thing that's clear in this conversation is that rock art is both archaeology *and* art—art embedded in the landscape that transcends a particular place or time. It's a universal form that should be universally valued and protected.

RESOURCES **ROCK ART CONSERVATION**

For links to the resources listed below that are available online, please visit http://bit.ly/resources_34_1

ONLINE RESOURCES, ORGANIZATIONS & NETWORKS

Bradshaw Foundation. The foundation focuses on archaeology, anthropology, and genetic research, and its primary objective is to discover, document, and preserve ancient rock art around the world.

British Museum's African Rock Art Image Project. The project is cataloging and digitally preserving images of African rock art.

Centre for Rock Art Research and Management. The Centre is committed to continuing research on projects within the University of Western Australia, as well as in collaboration with national and international universities.

ICOM-CC Murals, Stone, and Rock Art Working Group. The group aims to promote conservation of wall paintings, stone, rock art, and mosaics and to consider their survival in their original locations.

International Federation of Rock Art Organisations (IFRAO). A federation of national and regional organizations globally promoting "the study of palaeoart and cognitive archaeology."

Mesa Prieta Petroglyph Project. The MPPP in New Mexico seeks to preserve petroglyphs on Mesa Prieta through the education of the local community and through recording.

Place, Evolution and Rock Art Heritage Unit (PERAHU), Griffith University. The unit seeks to advance knowledge of human cultural evolution.

Rock Art Research Institute, University of the Witwatersrand. Researchers are dedicated to the study and analysis of the rock art of the Maluti Mountains of South Africa's Free State and the Drakensberg Mountains of Kwazulu-Natal/Eastern Cape.

Trust for African Rock Art (TARA). TARA is an international, Nairobi-based organization committed to recording the rock art heritage of Africa, to making this information widely accessible, and, to the extent possible, safeguarding those sites most threatened by humans and nature.

A small section of the 144-foot-long mural at Panther Cave, which is located in Seminole Canyon State Park & Historic Site in Texas. The red anthropomorphic (humanlike) figure stands 10 feet tall. Photo: courtesy of Shumla Archaeological Research & Education Center.

BOOKS, JOURNALS & CONFERENCE PROCEEDINGS

African Rock Art: Paintings and Engravings on Stone by David Coulson and Alec Campbell (2001), New York: Harry N. Abrams, Inc.

Art on the Rocks: Engaging the Public and Professionals to Network for Rock Art Conservation, edited by Neville Agnew, Janette Deacon, Nicholas Hall, Tom McClintock, Sharon Sullivan, and Paul Taçon (2018), Los Angeles: Getty Conservation Institute.

AURA Newsletter: The Newsletter of the Australian Rock Art Research Association (AURA) Inc. 18, no. 1 (July 2001).

Cave Art by Jean Clottes (2008), London and New York: Phaidon Press.

Cave Paintings and the Human Spirit: The Origin of Creativity and Belief by David S. Whitley (2009), Amherst, NY: Prometheus Books.

A Companion to Rock Art, edited by Jo McDonald and Peter Marius Veth (2012), Chichester, West Sussex, UK: Wiley-Blackwell.

"Conservation of the Cultural Heritage and Transformation of the Serrana Society in the Central Highlands of the Baja California Peninsula, Mexico" by María de la Luz Gutiérrez Martínez, in *Conservation and Management of the World's Petroglyph Sites* (2014), Ulsan and Seoul, Korea: Bangudae Petroglyphs Institute, University of Ulsan and Hollym, 143–62.

Handbook of Rock Art Research, edited by David S. Whitley (2001), Walnut Creek, CA: AltaMira Press.

Lascaux et la conservation en milieu souterrain: actes du symposium international, Paris, 26 et 27 février 2009 (*Lascaux and Preservation Issues in Subterranean Environments: Proceedings of the International Symposium Paris, February 26 and 27, 2009*), edited by Noël Coye (2011), Paris: Éditions de la Maison des sciences de l'homme.

Myths about Rock Art by Robert G. Bednarik (2016): Oxford: Archaeopress Publishing Ltd.

Relating to Rock Art in the Contemporary World: Navigating Symbolism, Meaning, and Significance, edited by Liam M. Brady and Paul S.C. Taçon (2016), Boulder, CO: University Press of Colorado.

Rock Art: A Cultural Treasure at Risk by Neville Agnew, Janette Deacon, Nicholas Hall, Terry Little, Sharon Sullivan, and Paul Taçon (2015), Los Angeles: Getty Conservation Institute.

Rock Art at Little Lake: An Ancient Crossroads in the California Desert, edited by Jo Anne Van Tilburg, Gordon E. Hull, and John C. Bretney (2012), Los Angeles: Cotsen Institute of Archaeology, University of California.

Rock Art Research, the journal of the Australian Rock Art Research Association.

Rock Art: The Meanings and Myths behind Ancient Ruins in the Southwest and Beyond by Stewart M. Green (2018), Guilford, CT, and Lanham, MD: FalconGuides, an imprint of The Rowman & Littlefield Publishing Group.

Working with Rock Art: Recording, Presenting and Understanding Rock Art Using Indigenous Knowledge, edited by Benjamin W. Smith, Knut Helskog, and David Morris (2012), Johannesburg, South Africa: Wits University Press.

World Rock Art by Jean Clottes, translated from the French by Guy Bennett (2002), Los Angeles: Getty Conservation Institute.

World Rock Art: The Primordial Language by Emmanuel Anati (2010), Oxford: Archaeopress Publishing Ltd.

For more information on issues related to rock art conservation, search **AATA Online** at **aata.getty.edu/home/**

GCI News

Project Updates

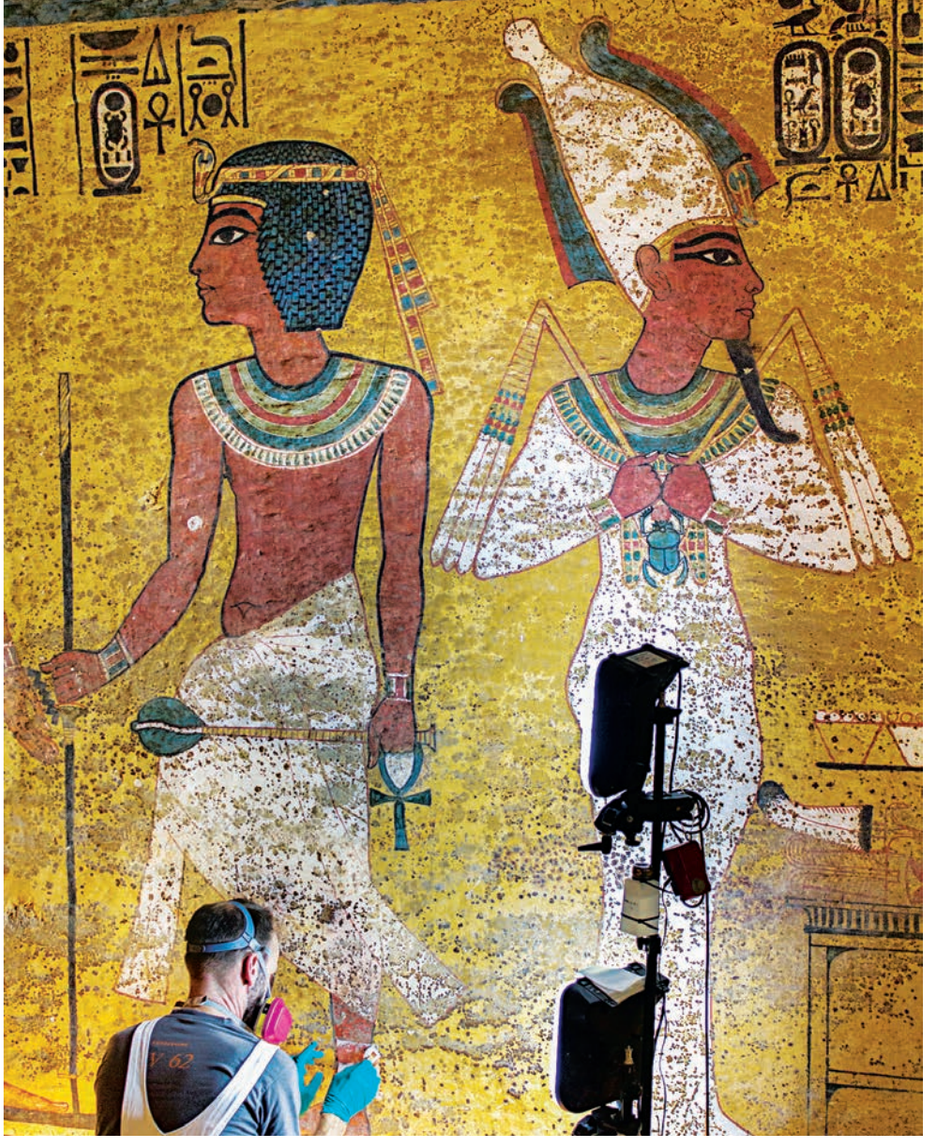
PROJECT AT TOMB OF TUTANKHAMEN COMPLETED

In January 2019 the GCI announced completion of almost a decade of research, conservation efforts, and infrastructure improvements at the Tomb of Tutankhamen in Egypt. The project—a collaboration between the GCI and Egypt's Ministry of Antiquities (MoA)—addressed Egyptian authorities' concerns about the impact of high levels of visitation on the wall paintings, by focusing on conservation and the creation of a sustainable plan for continued management of the tomb, which remains open to the public.

To mark the occasion, the GCI and MoA held a handover ceremony and symposium on January 31 at the Mummification Museum in Luxor, Egypt. The morning ceremony included remarks by Timothy Whalen and Neville Agnew of the GCI; Dr. Zahi Hawass, former Minister of State for Antiquities, who also initiated the project with the GCI; and Dr. Mohamed Yahia, Head of Antiquities for Upper Egypt, MoA. A screening of the Getty video *Saving Tutankhamen's Tomb* (available on the GCI's YouTube channel) and a visit to the tomb were included in the ceremony.

The symposium featured presentations about the project by GCI staff, consultants, and Egyptian colleagues, followed by discussion with the audience. The presentations included an overview of the tomb and its wall paintings, their materials, and technology; the overall condition and threats to the tomb, such as high visitation rates; conservation approaches and treatments for the wall paintings; improvements to the tomb's environment to mitigate dust infiltration and temperature and humidity fluctuations; infrastructure improvements, such as walkways, a viewing platform, barriers, lighting, a ventilation system, and signage; and future management of the tomb. Attendees included GCI and MoA staff, several Egyptian and foreign archaeological missions working in Luxor, and international press.

Following the handoff to Egyptian authorities, the GCI will work with MoA colleagues during a transition phase to ensure that established protocols for monitoring and maintenance of the tomb are well understood and implemented.



Wall paintings conservation being conducted in the tomb of Tutankhamen's burial chamber in 2016. Photo: Lori Wong, GCI.

The January 31, 2019, symposium on the Tutankhamen tomb project, held at the Mummification Museum in Luxor, Egypt. Photo: Bassem El-Kashef, for the GCI.

ARCHES MOBILE COLLECTION APP RELEASED

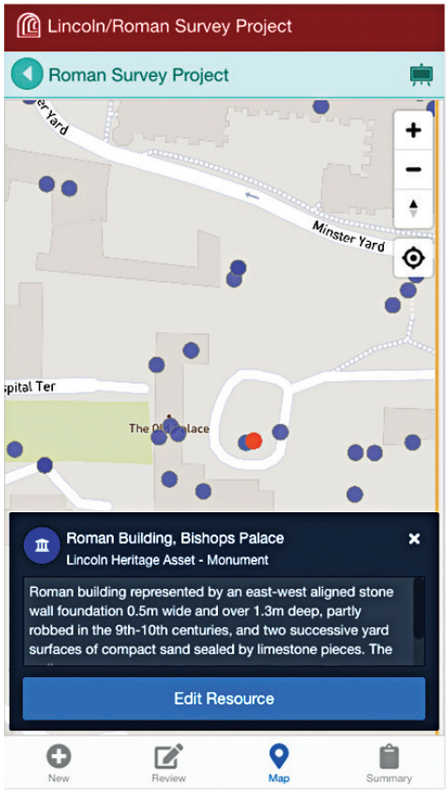
The Arches Project has released Arches Collector, the mobile data collection companion application for the Arches cultural heritage data management platform. Arches Collector is a

powerful online and off-line app for small- and large-scale data collection efforts, such as field surveys. Arches Collector users can create and update cultural heritage data in the field and synchronize that data with an existing Arches v4 implementation.

Arches Collector is compatible with iOS and Android devices and allows users to collect data in the field even when a cellular or network connection is not available. All data collected can be synchronized with the associated Arches implementation as soon as a connection is accessible and can be flagged as provisional data to be reviewed before publication.

Administrators for each Arches implementation can deploy a data collection project, such as a survey, to specific users and define the start and end dates, relevant geographic areas, and relevant data entry fields for each project. Invited users can then collect information about cultural heritage by pinpointing map locations, taking photos, selecting from prepopulated controlled lists, or writing text.

Arches, developed jointly by the Getty Conservation Institute and World Monuments Fund, is an open source software platform purpose-built for cultural heritage data management. More information about Arches Collector can be found at archesproject.org.



A screenshot of the Arches Collector app.

The fourth MOSAIKON Regional Advisory Meeting, held in March 2019 in Rome. Photo: Logiudice & Bufo, courtesy of ICCM.

MOSAIKON REGIONAL ADVISORY MEETING

The fourth MOSAIKON Regional Advisory Meeting was held in March in Rome. Member countries Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, and Tunisia were represented by their directors general of antiquities and one additional heritage expert, joining MOSAIKON project team members from the four partner entities: the GCI, the Getty Foundation, the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), and the International Committee for the Conservation of Mosaics (ICCM).

The meeting focused on measures that will solidify the initiative's achievements to date, which include training more than two hundred mosaic conservation technicians and archaeological site managers, creating models for best practice through research and field projects, strengthening professional networks, and disseminating and translating information in a variety of formats. Each country presented concrete plans to ensure that the advances and opportunities created by MOSAIKON continue in the long term and that there will be sustained support for the conservation and maintenance of archaeological heritage in the southern and eastern Mediterranean regions.

Previous regional advisory meetings were held in Rome (2008), during which the member countries established strategic priorities for the initiative based on the most pressing regional needs for archaeological heritage, and Ravello (2014) and Venice (2016), during which project progress was measured against achieved outcomes and agreement reached on priority actions going forward.

A number of key strategic transition activities are planned to enhance the accomplishments of MOSAIKON, as the initiative comes to a close in 2020.

Recent Events

CAPS COURSE TRAVELS TO LATIN AMERICA

Last fall, two consecutive Cleaning of Acrylic Painted Surfaces (CAPS) workshops were offered in Latin America—in Buenos Aires, Argentina, and in Belo Horizonte, Brazil. Partners for these workshops were institutions the GCI worked with on the Concrete Art in Argentina and Brazil project: the Instituto de Investigaciones sobre el Patrimonio Cultural (TAREA) at the Universidad Nacional de San Martín in Buenos Aires; and in Belo Horizonte, the Conservation Science Laboratory of the Center for Conservation & Restoration of Cultural Properties (CECOR), at the Universidad Federal de Minas Gerais.

The participants—who came from Argentina, Chile, Colombia, Cuba, and Uruguay for the Buenos Aires course, and from all parts of Brazil for the course in Belo Hori-

zonte—worked in both museum collections and private practice. Strong professional networks were created, as evidenced by continuous exchanges after the workshops and by course evaluations. For both workshops, lectures were projected simultaneously in Spanish and English. Summaries of lecture sessions, as well as translation assistance during Q&A periods and practical sessions, were provided in Spanish or Portuguese. Instructional videos created for the CAPS workshop were closed-captioned in both English and Spanish.

Some of the key concepts taught were the use of conductivity in designing effective cleaning systems, the importance of observing and controlling swelling in paint films during cleaning, the potential use of water-in-oil microemulsions for water-sensitive surfaces, and, above all, the introduction of a broad range of options for cleaning acrylic surfaces, all of which have shown promise in scientific testing. Through these workshops, the GCI hopes to stimulate the development of problem-solving frameworks, facilitate a dialogue on the application and evaluation of new treatments, and guide future research on acrylic painted surfaces.

Cleaning of Acrylic Painted Surfaces is a workshop series, integrating emerging scientific research with the latest perspectives on cleaning technology within art conservation.

NEW AATA ONLINE FIELD EDITORS NAMED

Mary Coughlin and Priya Jain are AATA Online's newest field editors. They will serve as expert advisers in their areas of specialty by helping monitor AATA Online's scope of coverage, evaluating abstracts for quality and relevance, bringing new and notable literature to light, and serving as ambassadors for this important resource.

Mary Coughlin, assistant professor at the Corcoran School of the Arts & Design at George Washington University, will focus on abstracts related to conservation education and a variety of materials, including plant- and animal-based materials, resins, lacquers, and plastics.

Priya Jain, a licensed architect with experience in building reuse and renovation, is currently assistant professor of architecture and associate director of the Center for Heritage Conservation at Texas A&M University. She will concentrate on abstracts related to architectural heritage.

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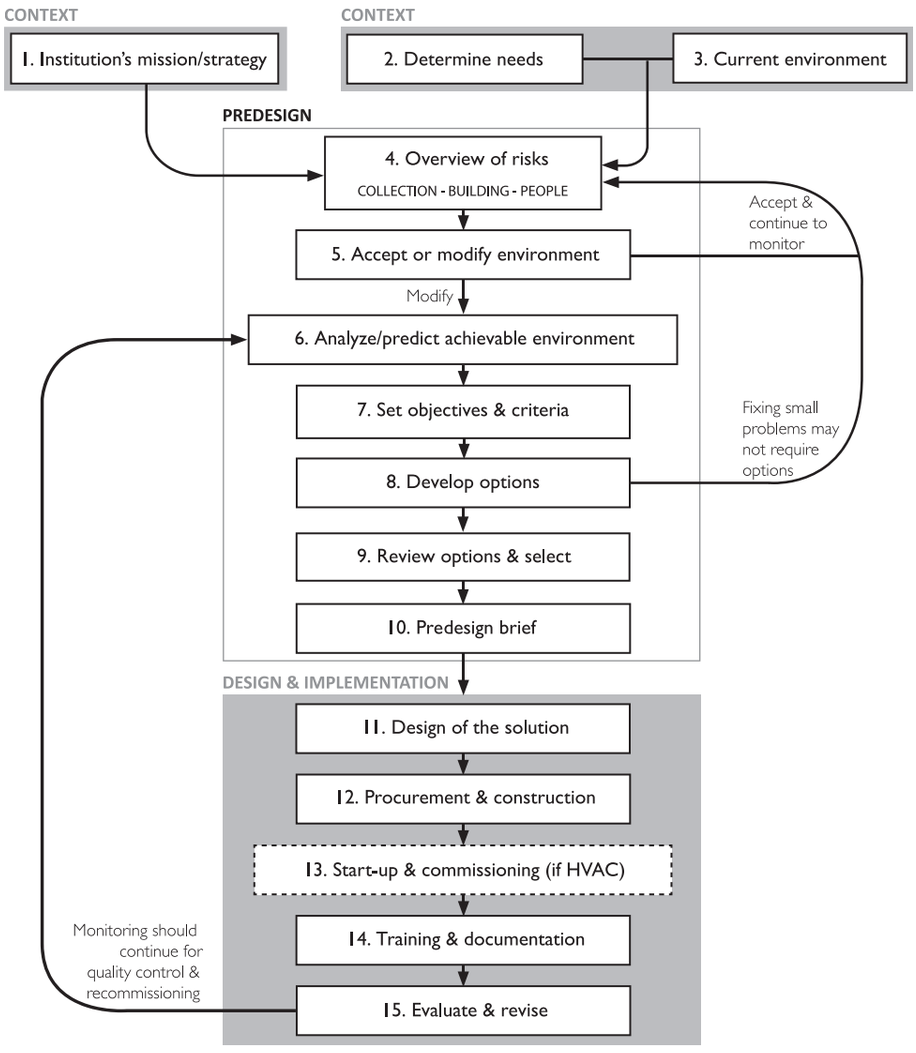
Fan Jinshi, director emeritus of China's Dunhuang Academy, being honored in Beijing, December 2018. Photo: courtesy of the Dunhuang Academy.

The CAPS workshop in Belo Horizonte, Brazil. Photo: Stephanie Auffret, GCI.

FAN JINSHI HONORED

Fan Jinshi, director emeritus of China's Dunhuang Academy, the GCI's longest—and continuous—foreign partner, was honored in Beijing on December 18, 2018, at the China Reform Fortieth Anniversary Ceremony, where she was among a hundred individuals to receive the Reform Pioneer award.

Fan Jinshi was recognized for being a pioneer in China for effective cultural heritage conservation. The GCI has collaborated with the Dunhuang Academy for nearly thirty years on site management, wall paintings conservation, and training, particularly at the Mogao Grottoes, a World Heritage Site. For the bulk of those years, Fan Jinshi headed the Academy, and her strong and dedicated leadership was instrumental in the success of its work with the GCI. The Academy and the GCI are currently collaborating on the development of a set of principles—consistent with the China Principles, previously developed by Chinese authorities in partnership with the GCI—that can guide the management of Buddhist grotto sites in Gansu Province.



Decision diagram for environmental strategy development in museums, galleries, archives, and libraries, which will appear in the ASHRAE MGAL chapter.

Upcoming Events

UPDATED ASHRAE CHAPTER ON MUSEUMS, GALLERIES, ARCHIVES, AND LIBRARIES

Since 1999 the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) has provided guidance on the museum environment through the Museums, Galleries, Archives, and Libraries (MGAL) chapter of its *Handbook—HVAC Applications*. Though primarily intended for engineers, the chapter is often referenced in the cultural heritage field and serves as a tool to improve communication among stakeholders involved in defining and implementing environmental strategies for collections.

The MGAL chapter is revised every four years, and for its scheduled 2019 release a subcommittee of an international group of heritage professionals, including team members from the GCI's Managing Collection Environments Initiative, was formed. The subcommittee has significantly expanded and updated the chapter in part to better align with current thinking on the museum environment, particularly as it relates to sustainable collection management. The aim of these revisions is to present "best practices and sound advice on the decision-making process for planning, designing, and implementing environmental strategies for the long-term preservation of cultural heritage."

A new introductory section of the 2019 MGAL chapter is focused on the decision-making process and is summarized by a schematic outlining the broad stages of defining context, developing a predesign brief, and designing, implementing, and evaluating a solution. This process accommodates the development of nonmechanical and mechanical strategies for buildings ranging from historic houses to new purpose-built structures. The schematic also coalesces the chapter's various themes, with each step referencing relevant sections in the chapter.

Since its inception, a cornerstone of the MGAL chapter has been a table of temperature and relative humidity specifications that provides a risk management–based approach to defining the collection environment. The 2019 revision refines details of this specification and associated sections, including defining the necessary building envelope performance in various climate zones to achieve different interior specifications, an emphasis on the historic environmental conditions of the permanent collection to anchor proposed interior environments, and further elucidation on the application of temperature and relative humidity specifications.

The 2019 MGAL chapter also features updated sections on the environmental effects on collections, including the impact and management of airborne pollutants, and an extensive review of controls design, system design, and equipment selection focused on the needs of cultural heritage institutions.

The 2019 MGAL chapter will be available on the ASHRAE website (www.ashrae.org) in June 2019.

Staff Update

CAROL CRESSLER RETIRES

Carol Cressler, a staff member at the GCI for twenty-five years, retired in November 2018.

A native of Phoenix, Carol attended the University of Arizona in Tucson, and not long after that moved to Los Angeles at the sug-

Photo: Joan Groener, courtesy of Carol Cressler.

gestion of one of her sisters. Early on in her career, her jobs were in aerospace, entertainment production, and advertising.

In 1993, when the advertising agency where she was employed closed, Carol was hired on a temporary basis to work in the GCI library. After two months, she became a regular member of the staff, as a library assistant. Her responsibilities included handling the circulation desk, helping patrons, processing library invoices, and supervising student assistants. She was promoted to senior library assistant in 1995, where her responsibilities included database searches, book ordering, and reference work. The following year she got involved in web production and with her increased responsibilities was promoted to project management assistant in 1998.

In more recent years, Carol's work focused exclusively on web production; she became an associate web content administrator in 2000 and was promoted to web content administrator in 2014. In addition to helping produce and maintain the online version of *Conservation Perspectives*, she coordinated various aspects of new content production for the site, including preparing digital images, tracking production of web material, and maintaining website files—as well as finding web files when no one else could. She enjoyed the creative and challenging nature of work in the online medium and appreciated the opportunity to be part of the effort to promote awareness of the Institute's activities.

Everyone could count on Carol's integrity and collegiality—she was consistently open, friendly, and willing to help in any way she was able. The work she did at the end of her GCI career was very different from the work she did when she started at the Institute, but she handled the changing work landscape and new tasks with an admirable willingness, as well as with a welcomed sense of humor. Her many GCI colleagues very much miss Carol's regular presence but are glad she is able to enjoy the free time she has definitely earned.

Tributes

JAN SHIPMAN (1932–2018)

Jan Shipman, who for two decades was a dedicated member of GCI Administration staff, passed away in November 2018 after an extended illness.

Photo: the Getty Conservation Institute.

Originally from Illinois, Jan was a young woman when she moved to California, where she went on to marry and raise a family. After her sons were grown, she decided to return to the workforce and was hired at the GCI as a temporary receptionist in August 1985, a few months after the Institute moved into its Marina del Rey facility. Within a year, Jan was made a regular Getty employee and remained with the GCI until her retirement in May 2006, ten years after the Institute's move to its permanent home at the Getty Center.

At the Marina del Rey office, Jan was the first person each day to greet staff members and visitors from around the world to the Institute, as well as to handle the GCI's incoming calls, all of which she did with conviviality and poise. Greeting visitors—domestic and international—and assisting callers to the GCI continued to be her main role after the Institute moved to the Getty Center, while she also undertook a variety of other administrative duties.

Those who had the pleasure of working with Jan will remember her as warm and gracious, and one who took a genuine interest in the well-being of her colleagues. She also displayed great cordiality to all visiting the Institute. She was the welcoming human face of the GCI, one whose presence provided a down-to-earth touch for staff and visitors alike. She is recalled fondly and with heartfelt appreciation for her friendship.

FRANK L. LAMBERT (1918–2018)

Frank L. Lambert, who served as an early adviser to the GCI Science department and who participated in a number of GCI scientific research projects, passed away in December 2018.

Frank received his undergraduate degree from Harvard University and his PhD from the University of Chicago, before joining the faculty of Occidental College in Los Angeles in 1948, where he was a professor of chemistry. In 1961 he was the first professor in science to be selected by faculty to be the Faculty Award Lecturer. In 1967 he was the first professor chosen by student vote to receive an award for outstanding teaching.

Following his retirement in 1981, Frank became an adviser and consultant to the newly forming GCI scientific program. Frank assisted the first director of the program, Frank Preusser, in assembling the department's initial staff, and he went on to provide technical expertise on some of the Institute's early investigations, including research on adobe consolidation at Fort Selden in 1986.

Frank was particularly involved in the Institute's nitrogen anoxia research, working closely with GCI scientist Shin Maekawa. That research—which included the use of anoxia environments for elimination of insect infestation, and the design of hermetically sealed cases to protect Egyptian mummies—resulted in several GCI scientific publications, including: *The Feasibility of Using Modified Atmospheres to Control Insect Pests in Museums* (1993); *Oxygen-Free Museum Cases* (1998); *Inert Gases in the Control of Museum Insect Pests* (1998); and *The Use of Oxygen-Free Environments in the Control of Museum Insect Pests* (2003). Even after his consulting with the GCI ended, Frank was publishing well into his nineties—especially in the *Journal of Chemical Education*—on the difficult subject of entropy, and this resulted in changes to some textbooks for beginning chemistry students.

Those who worked with Frank in the GCI's early years remember his kindness and generosity and that he could always be counted on to help. He was a warm and caring colleague, and, as one GCI staff member observed, one always came away from professional interactions with Frank "feeling smarter."

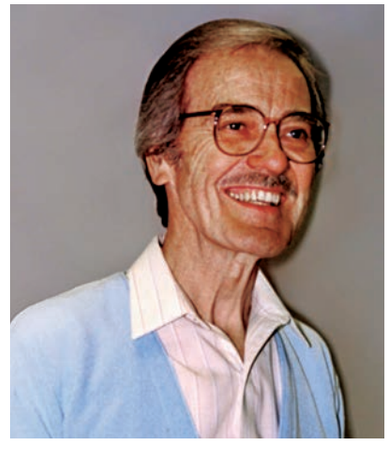
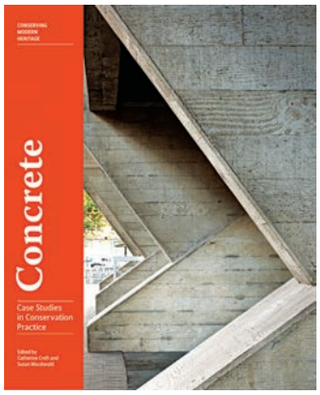


Photo: the Getty Conservation Institute.

Publications



Concrete
Case Studies in Conservation Practice

Edited by Catherine Croft and Susan Macdonald with Gail Ostergren

Fourteen case studies address the challenges of conserving the twentieth century's most ubiquitous building material—concrete. Following a meeting of international heritage conservation professionals in 2013, the need for recent, thorough, and well-vetted case studies on conserving twentieth-century heritage became clear. This book answers that need and kicks off a new series, Conserving Modern Heritage, aimed at sharing best practices.

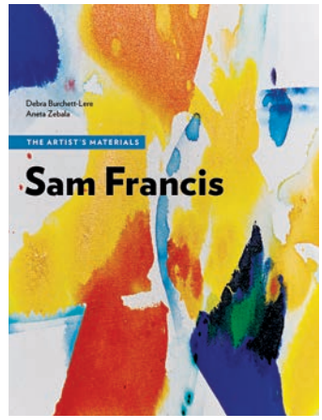
The projects selected represent a range of building typologies, uses, and sizes, from the high-rise housing blocks of Le Corbusier's Unité d'Habitation and public buildings such as London's National Theatre to small monuments like the structures at Dudley Zoological Gardens and a sculpture by Donald Judd. They also represent a range of environmental and economic contexts.

Some projects benefit from high levels of heritage protection and access to funding, while others have had to negotiate conservation with stringent cost limitations. All follow a rigorous conservation approach, beginning with a process of investigation and diagnosis to identify causes and target repairs, balanced with conservation requirements to preserve significance.

Sam Francis: The Artist's Materials

Debra Burchett-Lere and Aneta Zebala

American artist Sam Francis (1923–1994) brought vivid color and emotional intensity to Abstract Expressionism. He was described as the "most sensuous and sensitive painter of his generation" by former Guggenheim Museum director James Johnson Sweeney. Francis's works, whether intimate or monumental in scale, make



indelible impressions; the intention of the artist was to make them felt as much as seen.

At the age of twenty, Francis was hospitalized for spinal tuberculosis and spent three years virtually immobilized in a body cast. For physical therapy he was given a set of watercolors, and, as he described it, he painted his way back to life. The exuberant color and expression in his paintings celebrated his survival; his five-decade career was an energetic visual exploration that took him around the world.

Francis's idiosyncratic painting practices have long been the subject of speculation and debate among conservators and art historians. Presented here for the first time in this volume are the results of an in-depth scientific study of more than forty paintings, revealing new information about his creative process. The data provide a key to the complicated evolution of the artist's work and inform original art historical interpretations.

Available for purchase at shop.getty.edu

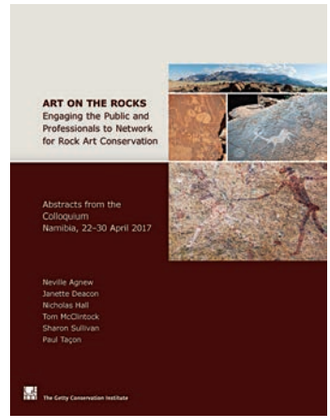
Online Publications

Art on the Rocks
Engaging the Public and Professionals to Network for Rock Art Conservation

Edited by Neville Agnew, Janette Deacon, Nicholas Hall, Tom McClintock, Sharon Sullivan, and Paul Taçon

In April 2017 the Getty Conservation Institute organized the colloquium Art on the Rocks at the World Heritage Site of Twyfelfontein and at the Brandberg, in Namibia, as part of its Southern African Rock Art Project.

The purpose was to explore how best to promote the values of rock art conservation and management to audiences beyond professionals and academics, to reach both the public and policy makers in order to build awareness of this endangered global heritage.



Twenty-four notable scholars, site managers, conservators, filmmakers, and artists participated in this colloquium, from which two principal ideas emerged: first, that the establishment of an international network of professionals and site managers would improve the exchange of information and resources; and, second, that harnessing the power of modern media would facilitate dissemination of content of varying levels of complexity and appeal to a broader audience base.

This publication includes an introduction that places the colloquium in the context of the GCI's previous rock art projects, abstracts of participant presentations, and a section on outcomes and future direction.

Eames House Conservation Management Plan

Sheridan Burke, Jyoti Somerville, Gail Ostergren, Laura Matarese, and Chandler McCoy

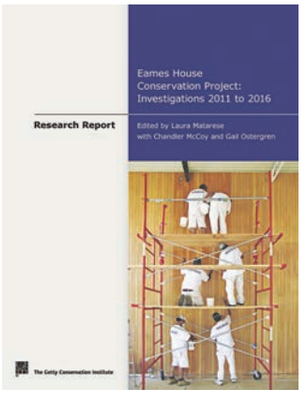
The Eames House Conservation Management Plan (CMP) provides a framework for the ongoing care and management of the Eames House, including decisions about its conservation. Based on a thorough assessment of the house's heritage values, the plan provides policies to assist the Eames Foundation in the long-term management of this

National Historic Landmark as a house museum.

The first four chapters of this well-illustrated volume give a comprehensive history of the site; provide an analysis of its current physical layout, form, and fabric; and make a comparative analysis between the Eames House and sites that share similar key characteristics. This research serves as the foundation for an assessment of the site's heritage significance in Chapter 5 and the development of a series of detailed conservation objectives and policies to protect that significance in Chapter 6.

The final chapter details implementation priorities. Developed in accordance with international conservation planning practice, this plan is tailored to the specific needs of the Eames House and its steward, the Eames Foundation.

The Eames House Conservation Management Plan Overview, which accompanies the CMP, is a brief illustrated summary of the larger document. It provides readers with a snapshot of the Eames House's significance, as assessed in the CMP, and presents a selection of the policies developed to guide the conservation, interpretation, and management of the site in a manner that preserves its cultural significance for future generations.



Eames House Conservation Project: Investigations 2011 to 2016

Edited by Laura Matarese with Chandler McCoy and Gail Ostergren

In this volume, six chapters cover the investigations undertaken at the Eames House by the Getty Conservation Institute and its consultants between 2011 and 2016 as part of the Eames House Conservation Project.

This publication supplies technical guidance for immediate conservation needs and long-term maintenance of the house and includes analysis of paint stratigraphies, pigments, and organic binders; in situ paint investigation of the exterior steelwork of the house and studio; wood panel investigation and conservation treatment; environmental assessment; geotechnical evaluation; and a landscape survey and assessment.

Numerous testing and investigation techniques were used, demonstrating the wide range of approaches to conservation that are available to others charged with maintaining a building from the modern era. A preface and introduction set the investigations in context of the overall goals of the Eames House Conservation Project and the Conserving Modern Architecture Initiative.

Le Corbusier's Three Museums: A Workshop on Their Care and Conservation

Ana Paula Arato Gonçalves, Chandler McCoy, and Susan Macdonald

In February 2018 the Getty Conservation Institute convened the meeting, "Le Corbusier's Three Museums: A Workshop on their Care and Conservation," in India. At the meeting were representatives from the three museums designed by Le Corbusier: the Sanskar Kendra (Ahmedabad, India, 1954), the National Museum of Western Art (Tokyo, Japan, 1959), and the Government Museum and Art Gallery (Chandigarh, India, 1960), as well as a representative from the Fondation Le Corbusier.

This publication reports on the activities and discussions developed during this workshop, which focused on the challenges of balancing building conservation and a collection's needs. 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. The exchange of knowledge revealed the challenges to and opportunities for these institutions to preserve their cultural significance.

The workshop was organized by the Conserving Modern Architecture Initiative and the Managing Collection Environments Initiative, with support from the Ahmedabad Municipal Corporation and the Government Museum and Art Gallery in Chandigarh.

Available for free download at http://bit.ly/GCIPublications

For more information about the work of the GCI, see getty.edu/conservation and

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

The Getty Conservation Institute (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.

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The Getty Conservation Institute

1200 Getty Center Drive, Suite 700
Los Angeles, CA 90049-1684
Tel 310 440 7325
Fax 310 440 7702
gciweb@getty.edu
www.getty.edu/conservation

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Rock art panel in Cueva de las Flechas, located in Baja California's Sierra de San Francisco, which is home to a number of rock art sites. Photo: Guillermo Aldana, for the GCI.

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