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Mosaics, Hammamet, Tunisia,
November 29–December 3, 2005

Lessons Learned: Reflecting on the Theory and Practice of Mosaic Conservation



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Reflecting on the Theory and
Practice of Mosaic Conservation**

**Leçons retenues :
Les enseignements tirés des expériences
passées dans le domaine de la
conservation des mosaïques**

Proceedings of the 9th ICCM Conference
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FRONT COVER: In situ conservation of a floor mosaic at Thurburbo Majus, Tunisia.
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Learning from Past Interventions: Evaluation of the Project to Conserve the Orpheus Mosaic at Paphos, Cyprus

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Abstract: *In 1988–89 a project to lift and re-lay the Orpheus mosaic at Paphos, Cyprus, was undertaken by the Getty Conservation Institute and the Department of Antiquities, Cyprus. The project was evaluated in 2004 to determine whether it had met its intended goals and contributed to the field of mosaic conservation. This paper presents the methodology for evaluation of the project as a whole, poses the main issues and questions raised during the in situ assessment, and provides an overview of results and the three main lessons learned, which relate to the importance of values in decision making, the critical role of documentation, and the need for effective management for sustainability.*

Résumé: *En 1988–89 la dépose et la repose de la mosaïque d'Orphée à Paphos, Chypre, a été effectuée par l'Institut Getty de Conservation et le Département des Antiquités de Chypre. En 2004, ce projet a fait l'objet d'une évaluation pour déterminer dans quelle mesure il avait atteint ses objectifs et contribué au domaine de la conservation des mosaïques. Cette communication présente la méthodologie d'évaluation, évoque les problématiques survenues lors de l'évaluation in situ et résume les résultats ainsi que les trois principaux enseignements, à savoir l'importance des valeurs dans la prise de décisions, le rôle essentiel de la documentation et la nécessité d'une gestion efficace pour assurer la durabilité.*

In 1988–89 an exceptional figural mosaic of Orpheus and the Beasts, dated to the late second/early third century C.E., was lifted and relaid in situ on a new support in Paphos, Cyprus. The technique and materials used—rolling of the mosaic and re-laying on a lightweight honeycomb aluminum support

(Aerolam® panels)—had been employed in the detachment of mosaics, but on a smaller scale and mainly for preservation in a museum context.¹ The relaid mosaic was further protected with what was intended to be a temporary shelter, pending construction of permanent shelters by the Department of Antiquities over all the mosaics at the Paphos site.

The project to lift and re-lay the mosaic was a joint undertaking by the Getty Conservation Institute (GCI) and the Department of Antiquities, Cyprus, and constitutes one of the GCI's earliest field projects. As part of a larger initiative of the GCI to assess some of its previous projects, it was decided in 2003 to evaluate the Orpheus project. The purpose of evaluation is to determine whether the project has met its intended goals and contributed to the advancement of the theory and practice of conservation (and if not, why not?). Evaluation may be thought of as an interface between the past and the future, since it involves a systematic investigation of a past activity in order to inform and improve future activities. The goal, then, is to learn lessons, both the lessons of success and those of failure.

This paper presents the basic methodology developed for evaluation of the project as a whole, poses the main issues and questions raised during the in situ assessment, and provides an overview of the results obtained and the three main lessons learned from the assessment.

The Project to Lift and Re-lay the Orpheus Mosaic

The Orpheus mosaic (4.25 by 5.10 m) was excavated in 1984 by one of the authors under the auspices of the Department

of Antiquities, Cyprus.² It suffered from root intrusion that resulted in a few large lacunae and dislocation and loss of tesserae along the top part of the mosaic, destruction of its edges from ancient robbing of the walls of the room, subsidence caused by the presence of earlier structures below the mosaic, which became more pronounced as the subsoil dried out following excavation, and lack of cohesion of the mortar of the bedding layer (fig. 1) (Michaelides 1991).

For these reasons, particularly lack of cohesion and subsidence of the bedding layers, and in line with common practice of the Cypriot Department of Antiquities, the Orpheus mosaic was to be conserved through lifting and re-laying. The technique of rolling the *tessellatum* on a large wooden cylinder (or drum) was selected because the mosaic was largely intact, without structural cracking, was accessible to large machinery, and, most important, could be lifted as a single intact, pictorial composition. The project began in 1988, under the general direction of Paolo Mora, as consultant to the GCI, and entailed three main components: lifting and re-laying of the mosaic, training of conservators in the technique, and temporary sheltering of the mosaic (see Stanley-Price 1991 for details of the project implementation, participants, and costs).

Lifting of the mosaic using the rolling technique and re-laying it on an isolating support of Aerolam® panels with epoxy

adhesive and fiberglass sheets constituted the core of the project. Other aspects included analysis of tesserae and mortars and a yearlong environmental monitoring of the site. Lifting and re-laying took place over two years, 1988–89, but since the details of the technique are not the subject of this evaluation, we will compress the complexity and technicalities of the undertaking into a very brief review of the steps involved:

- documentation and preparation (facing and consolidation) of the mosaic;
- detachment of the *tessellatum* from the bedding layers and rolling it on a wooden cylinder as it was detached;
- cleaning of mortar from the back of the *tessellatum* while on the cylinder (and again after it was laid facedown) (fig. 2);
- transport of the rolled mosaic by bulldozer to its temporary storage, where it was unrolled facedown;
- application of new mortar to the back of the *tessellatum*, followed by epoxy adhesive and fiberglass sheets;
- construction of the new support, consisting of an Aerolam® panel (with aluminum honeycomb core), adhered to the prepared mosaic with epoxy;
- preparation of the original site with a concrete slab;

FIGURE 1 Orpheus mosaic (foreground) prior to being lifted in 1988, with the Amazon and Heracles mosaic (background) already partially lifted and relaid. Photo by Guillermo Aldana 1998.
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- reinstallation of the mosaic with panel in its original location using a crane to lift it in place; and, finally,
- removal of the facing and filling of lacunae with mortar.



FIGURE 2 Mortar being removed from the back of the Orpheus mosaic while it is rolled on the drum. Photo by Paolo Pastorello 1998. © J. Paul Getty Trust.

Figure 3 shows the mosaic on its Aerolam® panel after it was relaid in its original position.

The project was designed with a didactic component. It would provide conservators with hands-on experience in the rolling technique, which was infrequently used at the time but was believed to have potential for greater use as a method for lifting and re-laying figural mosaics to avoid the potentially destructive aspects of cutting a mosaic in sections. Nine conservators from the Mediterranean region took part in the project. During Phase 1, training was divided between formal classroom lectures on other aspects of and approaches to mosaic conservation and on-site work on the Orpheus and other mosaics at Paphos. Phase 2 training was exclusively hands-on work, aimed at implementation of the project.

The construction of a shelter to protect the Orpheus mosaic was a later addition to the original project objectives (fig. 4). It arose out of a GCI initiative to develop a lightweight, modular, and temporary shelter for protection of archaeological sites. The so-called hexashelter began as an experimental design by Neville Agnew that was field-tested and evaluated in 1988 at Fort Selden, New Mexico (Agnew and Coffman 1991; Agnew et al. 1996). In 1989 it was decided to apply the prototype to protect the Orpheus mosaic temporarily (no more than five years) pending permanent sheltering and site

FIGURE 3 Orpheus mosaic on the Aerolam® panel relaid in its original position but before final cleaning, filling of lacunae, and rebuilding of the surrounding walls of the room. Photo by Guillermo Aldana 1989. © J. Paul Getty Trust.

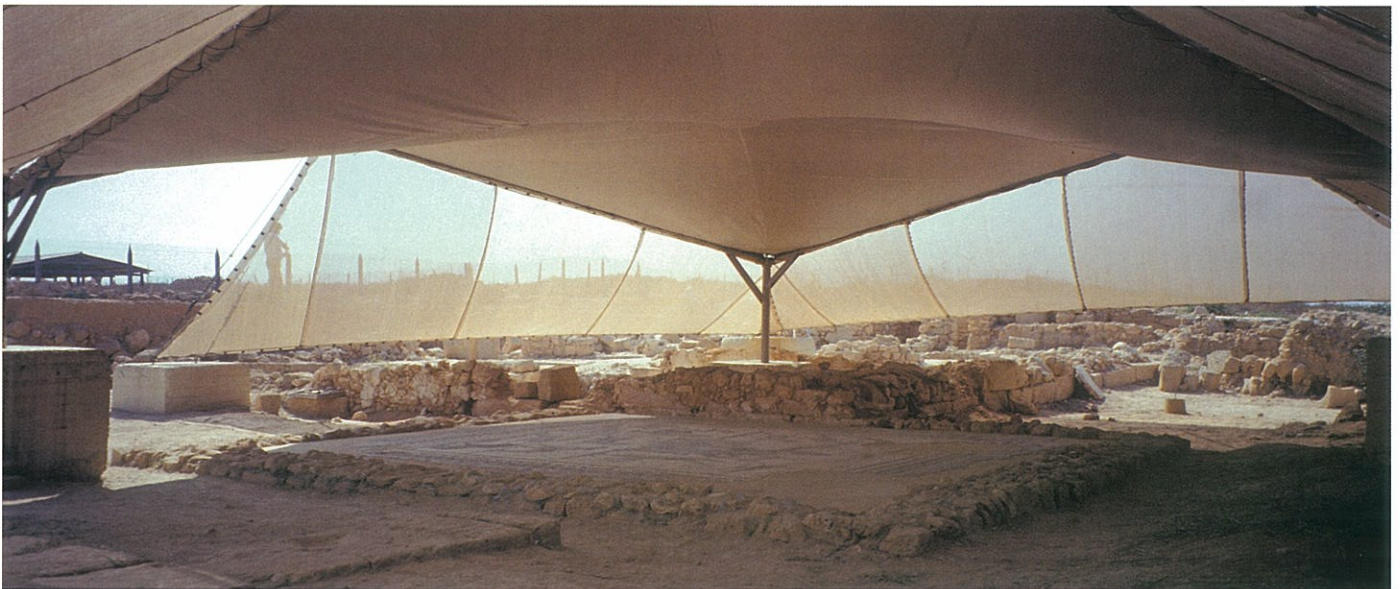




(a)

FIGURE 4A, B The “hexashelter,” a modular system designed as temporary protection for the Orpheus mosaic, as seen from the exterior (a) and interior (b). Photos by Martha Demas 1992.

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(b)

development for Paphos, which was at that time under discussion as part of a World Bank loan.³

The Orpheus Mosaic Project was completed in 1989 and published soon after (Stanley-Price 1991). The decision to evaluate the project was prompted in part by an experts’ meeting on mosaic conservation held in Cyprus in 2002, at which

evaluation of previous projects was raised as an important need in the field. Because the Orpheus project was the second field project of the GCI (founded in 1985) and the GCI was again involved with mosaics, it was decided that an evaluation of the Orpheus project would serve both institutional needs and those of the field of mosaic conservation.

Methodology for Evaluation

The methodology used for evaluation of the project consists of two parts. The first is simply collection of background information and documentation, and needs no elaboration or explanation, except to note that gathering such information can be time-consuming and frustrating if the documentation has not been archived in an orderly and accessible manner.

The second part, the analytic component, is the crucial one. Cultural heritage conservation has not developed models for project evaluation, but nature conservation offers plenty, as do the educational and corporate worlds. The models from nature conservation were generally more compatible with the aims and ways of working in cultural heritage conservation, and we thus adapted the methodology of the World Conservation Union,⁴ formerly the International Union for Conservation of Nature and Natural Resources.

The methodology is based on what are defined as “key questions of evaluation.” These are broad and generic, but they bring to the fore the most salient aspects of project evaluation: relevance, effectiveness, impact, and sustainability. In our evaluation the key questions were answered by considering the following:

- the history of the project and all supporting documentation;
- a new condition survey of the Orpheus mosaic and shelter;
- comparison with the condition of the adjacent Amazon and Heracles mosaic;
- a review of the literature on lifting and citation searches of the Orpheus publication;
- professional input from colleagues involved in the original project;
- an analysis of the values of the Orpheus mosaic; and
- informal on-site assessment of the mosaic and shelter over the years since implementation of the project.

The remainder of this paper focuses on a selection of the issues that emerged from the evaluation and were judged to be of most interest to and with broad implications for the mosaic conservation field. The review is structured according to the key evaluation questions.

Relevance: Was the Project a Good Idea Given the Situation Needing Improvement?

How was the “situation needing improvement” defined eighteen years ago? The issue was never made explicit in those

terms, but there were several assumptions and entrenched practices that were implicit in determining the goals of the project. These were as follows:

- The artistic value of a mosaic is paramount or at least takes precedence over historic and scientific values.
- Mosaics cannot be left in situ without risking their destruction (hence the common practice of lifting and re-laying).
- Lifting of mosaics in sections, though standard operating procedure at the time, could not be accomplished because the Orpheus mosaic—a single pictorial composition—could not be easily subdivided into smaller panels to enable lifting. Further, were it to be lifted in that manner, the result would be substantial loss of tesserae and difficulties in aesthetic reintegration.
- Archaeological excavation below the mosaic, to investigate earlier use of the site, was highly desirable (from the archaeologist’s perspective) and was common practice at the time.

In light of these assumptions and ways of operating, the situation needing improvement might be formulated in retrospect as a method to lift and re-lay the mosaic in a manner that would cause least damage, ensure aesthetic integrity, and allow excavation below it. Given that limited situation to improve, we can conclude that the project had relevance and was a reasonably good idea. But was this really the situation that needed improving?

While acknowledging that methods of lifting and re-laying are still a challenge, we now recognize far more significant challenges in conserving mosaics. In 1987, when the decision on the project was made, the field of mosaic conservation was on the cusp of moving toward a much broader concept of conservation and the values attributed to archaeological sites. It is not without some irony that the year after the Orpheus project was completed, the GCI organized the first of its two international courses on conservation and management of archaeological sites in Paphos, which encapsulated this larger vision.

Certainly today we would define the “situation needing improvement”—at Paphos and indeed at most archaeological sites—very differently:

- regular maintenance of sites;
- conservation and management planning for archaeological sites;

- a management structure responsive to the needs of conservation;
- a better understanding of causes of deterioration to mosaics left in situ in relation to treatment options;
- trained and dedicated personnel to conserve, manage, and monitor sites; and
- the continuing excavation of archaeological sites in the absence of all the above.

Thus we would have to acknowledge that the aims of the project were soon made obsolete and are today not highly relevant given changed circumstances and approaches to conservation.

Effectiveness: Have the Planned Results Been Achieved? Were the Methods Used Effective?

Effectiveness can be measured in many ways, and we propose two ways for the Orpheus intervention: the effectiveness of the technique in preserving the materiality and the values of the mosaic.

As an intervention, the rolling and re-laying procedure was complex, technically and logistically challenging, and risky. It was carried out with professionalism and skill, and it was largely successful inasmuch as it demonstrated that the *tessellatum* could be lifted and relaid in its entirety, with relatively little loss or damage. This is not to suggest that there were no problems and difficulties,⁵ but it is to recognize that the rolling proved an effective technique for lifting a mosaic in one piece.

But how effective was the intervention in preserving the material object (i.e., the relaid *tessellatum*) over time? To answer this question, an assessment of the physical condition of the mosaic was undertaken in 2004 by the authors of this paper.⁶ The assessment was also an opportunity to determine whether documentation carried out during the project was adequate to permit a meaningful evaluation of the interventions to the mosaic fifteen years later. In addition to rephotographing and recording the condition graphically,⁷ we used the rapid assessment form developed for the initiative to assess the performance of shelters over mosaics (see Stewart, this volume).

In summary, the survey revealed that after fifteen years the Orpheus mosaic was in good condition. The most significant deterioration that could be attributed to the years after the re-laying in 1989 were as follows:

- loss of tesserae: approximately seventy-five tesserae had been lost since 1989, most from border areas

(mainly those embedded in polyester resin after re-laying in 1989) (fig. 5), as well as a few loose or detached tesserae;

- continued erosion and exfoliation of the glass tesserae;
- detachment and extensive loss of the infill mortar in the large lacuna and around the edges of the mosaic; and
- detachment of the new bedding: detachment occurred between the epoxy layer and the panel (not where one might expect it, between the mortar and epoxy layers) and was documented over approximately one-fifth of the area of the mosaic but was particularly noticeable in the southeast corner.⁸

With the exception of the loss of tesserae, these are correctable problems. Certainly the overall good state of preser-

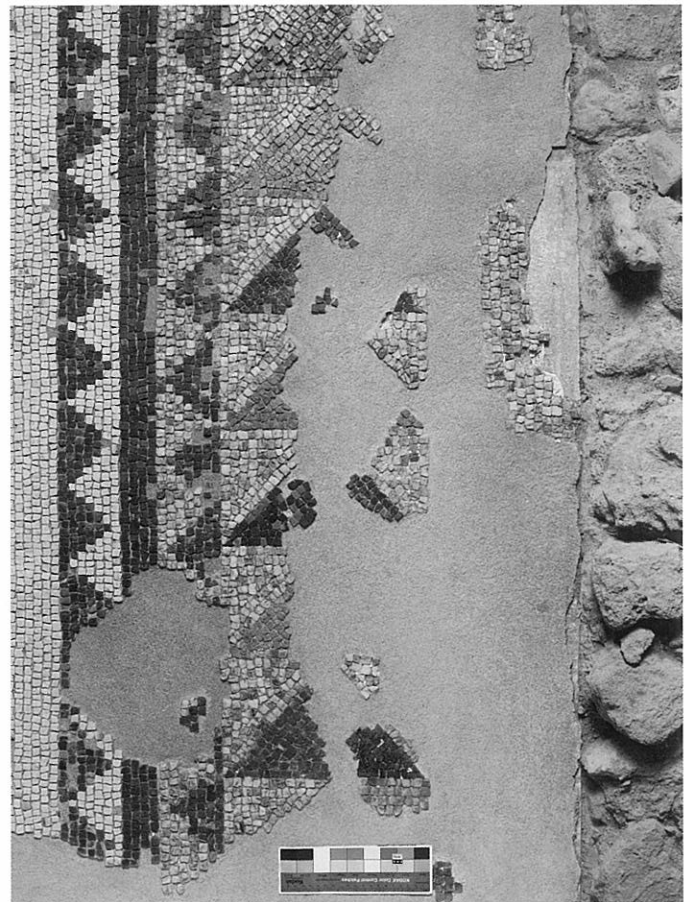


FIGURE 5 Loss of tesserae that had been embedded in polyester resin soon after the re-laying; loss of infill mortar is visible on the right. Photo by Vassos Stylianos 2004. © J. Paul Getty Trust.

vation of the mosaic can be attributed to its isolation from the ground, but it is also important to remember that the mosaic had been sheltered for the entire period of its re-laid life. It is difficult to assess the effectiveness of the re-laying on Aerolam® panels as distinct from the protective function of the shelter.⁹ What is clear, however, is that the majority of post-1989 conditions can be attributed to lack of maintenance and monitoring of the mosaic and the shelter, whose materials were allowed to degrade to a point where it was no longer serving a protective function (fig. 6). It should also be noted that despite a simple barrier, there was no supervision of visitors, allowing direct access to the mosaic. All these conditions could have been reversed or corrected had routine monitoring and maintenance been undertaken.

The Amazon and Heracles mosaic is located in the room adjacent to that of the Orpheus mosaic (see fig. 1). It has had a complicated life, with several episodes of excavation and reburial (beginning in 1942) and partial lifting and re-laying in 1984. Since 1990 the mosaic had been protected, in a fashion typical at the site, by a shallow covering consisting of green netting and a layer of sand (4–5 cm) and expanded clay pellets; the covering became shallower as the years passed. The assessment of the Orpheus mosaic entailed a comparison of its condition with that of the Amazon and Heracles mosaic; and the latter was uncovered and inspected for this purpose. However, due to uncertainty regarding its treatment history and the

techniques and materials used (there was no documentation available), and the many variables, it was not possible to make a meaningful comparison. It is of interest to note, however, that many of the tesserae (red, blue-gray, and white limestone) were actively flaking, which was exacerbated by the infiltration of rootlets from vegetation that grew in the shallow covering (as micro-cracks developed in the tesserae, the rootlets penetrated these). We believe this is the result of the very shallow covering leading to wetting/drying cycles and perhaps salt crystallization.¹⁰

A more challenging, less quantifiable measure of effectiveness is the success of the intervention in preserving the values of the Orpheus mosaic. As noted earlier, aesthetic considerations were uppermost in the decision to use the rolling technique to lift this figural mosaic. All methods of lifting a mosaic privilege certain artistic and historic values that reside in the *tessellatum*—such as artistic composition, iconography, and attribution to mosaic schools, makers, and patrons. Such information and appreciation, which is found in the surface of a mosaic (fig. 7), can, however, also be gleaned from mosaics removed to a museum. The decision to re-lay the mosaic in its original location (rather than a museum) was a recognition that mosaics do indeed “make a site” and contribute significantly to the architectural ensemble of which they are a part.

These are all critically important values to preserve, but other aspects of the mosaic’s significance have been lost through

FIGURE 6 The covering materials of the hexashelter had severely degraded by 2004, fifteen years after the shelter was erected. Photo by Martha Demas 2004. © J. Paul Getty Trust.





FIGURE 7 The Orpheus mosaic after re-laying on its new support in 1989 (before infilling lacunae) retains aspects of artistic and historic value—artistic composition, iconography, and attribution—that are most prized in mosaics. Photo by Guillermo Aldana 1989. © J. Paul Getty Trust.

the lifting and re-laying process. The historic and scientific information that resided in the stratigraphy of the bedding layers, including evidence of the preparatory design drawing and layout, was destroyed by this procedure. The stratigraphy was photographed and drawn, but other evidence was only noted and not otherwise documented. Whether such basic recording is sufficient compensation for the loss of information is debatable. Another aspect of historic value is the object as an authentic testament to its physical history—its patina of age. As has been observed, however, one person's patina is another's damage (Muñoz Viñas 2005: 104), and this is well illustrated in the differing opinions about the rigidity and extreme flatness of the relaid Orpheus mosaic—its appearance of having been ironed: some would argue that it helps reinstate the artistic significance; others, that it detracts from both its aesthetic and historic values, especially in its ruined architectural context. Ultimately, this is a question of values—and a conflict of values—that needs

to be better articulated, defended, and justified in every intervention we make to a mosaic.

Impact: To What Extent Has the Project Contributed (Intentionally or Unintentionally) to Longer-Term Goals and Benefits to the Field?

Impact is an especially important parameter in the field of conservation, where financial resources are limited. The Orpheus project was intended to have a larger impact on the field. Paolo Mora's message in the foreword to the 1991 publication expresses the intention:

While the rolling technique used for lifting the Orpheus mosaic will not be applicable to all mosaics, and the cost or unavailability of specialized materials might be prohibitive in some cases, we consider it very important that conservators be made aware of this method. Increased familiarity with the technique will not only allow conservators to make more educated decisions in mosaics preservation, it may also serve as the basis for future developments and improvements in the technique. (Stanley-Price 1991: vi)

Despite the training component and the timely publication of the project, this intention of achieving wider impact was not realized. A literature and citation search,¹¹ and an assessment of unpublished practice to the extent that we know it, has not revealed any discernible influence on conservation thinking; on the use, development, or improvement of the rolling technique; or on the lifting and re-laying of mosaics generally.

This, we believe, can be attributed to two factors. One is the technical and logistical difficulties and cost implications of this technique. The second, more important factor is the changing approach to mosaic conservation (the trend toward conservation in situ and a broader understanding of what conservation entails), which was beginning to be felt just about the time the project was undertaken.

Nor did the project have any impact on the authorities responsible for the site; indeed, an unintended consequence of the project may have been to encourage the notion that because the mosaic was relaid on an isolating support, it required little or no maintenance. Certainly little was done over the fifteen years to maintain or monitor the mosaic, its setting, and its shelter (fig. 6).

And finally, there was no impact on the visiting public. This is because the project had not been integrated into a

larger vision for the site. The result was a lost opportunity to interpret the conservation intervention to the public. We have all experienced the fascination of the public with conservation activities; if visitors can be engaged watching people clean a mosaic, how much more engaged might they be by the rather dramatic story of the rolling and re-laying of the mosaic, and what more impressive didactic tool than the large wooden cylinder that lay just outside the shelter for thirteen years until it was removed in the initial stage of landscaping the site?

Sustainability: Was the Project Design Adequate to Ensure a Sustainable Result?

Technical conservation solutions that do not take into account the larger context in which they are being undertaken are ultimately not sustainable. For cultural heritage conservation, *context* means the cultural context that contributes to significance; the management context in which the object is cared for and interpreted; and the physical and environmental context in which the object exists. The only reasons to preserve a mosaic in its original location (rather than place it in a museum) are to present it in a cultural context and, increasingly, to attract visitors, but in the absence of a management context that would ensure maintenance, protection, and interpretation, that purpose is compromised, if not defeated. The Orpheus project provided conservators with a technical solution for an object seen in isolation, but over the years the architectural setting

of the mosaic and its protective shelter deteriorated due to the absence of effective management. One might argue that in the face of ineffective management and maintenance, the lifting and re-laying proved a more sustainable result than conserving the mosaic in situ, since it “hardened” the mosaic against the vicissitudes of humans and nature. That may well be true, and there may be situations that require such an approach, but for a site of World Heritage stature, such as Paphos, sustainability should be the result of good management rather than of fortifying a site against lack of management.

Another important aspect of sustainability pertinent to conservation projects is documentation. Baseline documentation is fundamental to assessing change in the future and determining whether deterioration is ongoing. Documentation of the Orpheus mosaic was undertaken in 1988, 1989, and 2004 (fig. 8), but over the years condition terminology changed, technology evolved, grids shifted, and cameras and lighting differed, making it difficult to replicate and be consistent. Nevertheless, baseline documentation of the Orpheus mosaic was actually quite good, and the close-up photography was especially useful for assessing change in surface conditions. But even the best documentation is useless if it is not properly archived, accessible, and used. Most project materials were archived, some were lost, not all the necessary documentation was provided to the partner institution, and what was provided could not always be found.

FIGURE 8 Graphic recording of the condition of the Orpheus mosaic in 2004, used for comparison with documentation undertaken in 1988 before re-laying and in 1989 after re-laying. Photo by Neville Agnew 2004. © J. Paul Getty Trust.



Although photodocumentation was well archived and cared for, it was never subsequently used or consulted, precisely because it was archival. A duplicate set of photographs was never prepared in a form to be used (and accessed) by site personnel for future monitoring.

Conclusion

The answers to the evaluation questions do not tell us whether the project aims were right or wrong, a success or a failure. That is not the objective of evaluation. What is important are the messages from the past that should inform our present and future actions. The results of the evaluation converge toward three key messages.

The first pertains to values and decision making. Values should be central to deciding whether to move a mosaic to a museum (for exhibition or storage), lift and re-lay it in situ, or conserve it in situ. Assessing values is not a purely subjective undertaking, although it sometimes seems so; consensus among stakeholders matters, and it is the reason the field of mosaic conservation has moved toward in situ preservation. Nevertheless, whatever the conservation intervention, we need to be more effective at assessing and communicating those values we are trying to preserve and what the implications of our intervention decisions are for significance. While the primary response should be to seek solutions that preserve as many of the mosaic's values as possible, the secondary response, when we destroy aspects of significance, must be to compensate as fully as possible for that loss, especially if the intervention, like the Orpheus one, is irreversible.

The second message concerns the importance of accurate, precise, and repeatable documentation that is archived and accessible. Accessibility is a function of how widely the documentation is published and disseminated and the medium in which it is recorded, especially for digital recording. However, even if archived and accessible, documentation will not be routinely used for monitoring unless it is specifically tailored for that purpose. This requires monitoring protocols that define the indicators of change, such as photographs of specific conditions to be monitored over time, which are placed in the hands of those charged with using them.

Undoubtedly the most important lesson to be learned is that conservation interventions require effective management (assessment and planning, trained personnel, a maintenance regime, good leadership) if they are to be sustainable. Effective management demands holistic approaches but does not seek final solutions; there is never a final solution for cul-

tural sites. Orpheus and its shelter (and the adjacent Amazon and Heracles mosaic, with its few centimeters of protective sand) hung on valiantly for fifteen years waiting for such a solution¹²—permanent shelters and landscaping—and during this period, our values changed, the site deteriorated, documents were lost, personnel moved on, thousands of visitors came and went without being informed and educated, and innumerable opportunities were lost for incremental change for the better. Surely, these are situations we can improve by taking them into account whenever we embark on a new project and must decide how to conserve and how best to use the limited resources that are available to conservation.

Notes

- 1 Aerolam® panels are more commonly used for exhibiting detached mosaics in a museum, and rolling is generally done with smaller cylinders; for a recent review of the history of lifting and current trends, see Podany 2006: 115–28.
- 2 Demetrios Michaelides, archaeological officer in Paphos at the time. See Michaelides 1986 for discovery and excavation of the Orpheus mosaic.
- 3 For a journalistic overview of the need for a master plan at Paphos and the origins of the World Bank project, see Wigg 1994: 1–24. For a more recent description of the plan, from the perspective of the Cypriot authorities, see Hadjisavvas 2003.
- 4 For the IUCN methodology, part of its Global Monitoring and Evaluation Initiative, see Woodhill 2000. The methodology was selected based on research carried out by David Myers (project specialist, GCI).
- 5 For example, shallow linear indentations in the *tessellatum*, seen only in raking light, are attributed to creasing of the plastic sheeting on which the *tessellatum* was unrolled, and there were small areas of tesserae loss, most noticeably around the neck of the partridge. These conditions were recorded by conservator J. Claire Dean in a post-re-laying assessment.
- 6 The condition assessment was carried out September 4–11, 2004, with the permission of the Department of Antiquities, Cyprus. In addition to the authors of this paper, participants in the fieldwork were conservator Andreas Georgiades and technician George Tapakoudes (Department of Antiquities) and Maria Ktori and Evi Charalambous, students from the Department of History and Archaeology, University of Cyprus. The report on the field assessment with recommendations was sent to the Department of Antiquities.
- 7 The condition photography was undertaken by Vassos Stylianou using a Hasselblad camera fitted with a digital back and followed the grid established for the 1989 photography. Giorgio Capriotti, who had undertaken the original condition recording and

participated in the project in 1988–89, undertook the 2004 recording with Thomas Roby.

- 8 We cannot be certain, however, that the detachment occurred in the fifteen years after re-laying. It may have been present in an incipient state upon re-laying in 1989.
- 9 See Agnew et al. 1996 for the effectiveness of the hexashelter prototype in modifying the environment under the shelter.
- 10 The Amazon and Heracles mosaic was reburied by the Department of Antiquities after the 2004 assessment under a deep (50 cm) covering of soil.
- 11 A literature search was undertaken through 2004 using the major conservation databases (e.g., AATA, ArtIndex, BCIN, ICCROM library catalogue); citation searches were done in the Arts and Humanities database and through the Web. Dissemination of the Orpheus publication was searched through Worldcat, which searches some 53,000 libraries in 96 countries, although the majority are in the United States; only 135 libraries contained the Orpheus mosaic. The authors are grateful to Valerie Greathouse (reference librarian, GCI) for undertaking the searches and Sibylla Tringham (GCI graduate intern in 2004) for compiling the information.
- 12 The lightweight materials of the shelter (an impermeable membrane and a permeable woven fabric) held up far beyond their intended life but were severely degraded by the time of the assessment in September 2004. The Department of Antiquities attempted to repair the membrane in late 2004, but unsuccessfully, as during winter storms in 2005 rainwater was observed falling on the mosaic and pooling. The membrane developed a large tear, necessitating its removal in February 2006. The Orpheus mosaic has since been reburied, pending construction of the permanent shelters.

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