

ΕΥΡΩΠΑΪΚΟ ΚΕΝΤΡΟ ΒΥΖΑΝΤΙΝΩΝ ΚΑΙ ΜΕΤΑΒΥΖΑΝΤΙΝΩΝ ΜΝΗΜΕΙΩΝ
ΕΦΟΡΕΙΑ ΒΥΖΑΝΤΙΝΩΝ ΑΡΧΑΙΟΤΗΤΩΝ ΘΕΣΣΑΛΟΝΙΚΗΣ
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**ΕΝΤΟΙΧΙΑ ΚΑΙ ΕΠΙΔΑΠΕΔΙΑ ΨΗΦΙΔΩΤΑ:
ΣΥΝΤΗΡΗΣΗ, ΔΙΑΤΗΡΗΣΗ, ΠΑΡΟΥΣΙΑΣΗ**

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**WALL AND FLOOR MOSAICS:
CONSERVATION, MAINTENANCE, PRESENTATION**

Thessaloniki 29 October - 3 November 2002

ΠΡΑΚΤΙΚΑ - PROCEEDINGS

ΘΕΣΣΑΛΟΝΙΚΗ - THESSALONIKI 2005

GIULIANO DE FELICE *

**THE DOCUMENTATION DURING CONSERVATION
OF THE MOSAICS OF ZEUGMA, TURKEY**

*Università di Foggia – Italy. g.defelice@unifg.it

SUMMARY

The work of documentation carried out on the mosaics of Zeugma is based on the consideration that the analytical quality the relief practice entails makes graphic documentation an instrument of knowledge of ancient monuments, exactly in the same way as the longstanding "confidence" with the manufacture, that the very process of restoration develops, produces a deep knowledge of its nature.

The documenting procedures of the mosaics of the Zeugma project were worked out on the basis of premise that the necessity of recording all restoring intervention is warranted by the transformations every monument undergoes in the process of restoration and were elaborated relying on a wide use of computer and digital instruments.

The necessity of documenting all restoring intervention is warranted by the transformations every monument undergoes in the very process of restoration. The documentation of the state of the monument before the preservative intervention and of the preservation operations which are carried out on the monument itself allows the restorer to save a huge amount of data, which restoration would otherwise render invisible or cancel altogether. All restoring intervention indeed constitutes a great opportunity of study, in that it implies the possibility of carrying out tests concerning the intrinsic features of the manufacture. It also allows one to study the changes the manufacture has undergone in the course of history, from the moment of its realization to the phases of its transformation into an archaeological find.

The documenting procedures of the mosaics of the Zeugma project were worked out on the basis of these premises, in order to organize mapping in the best possible way; mapping itself was processed by the conservators while restoration was being carried out, with the aim of recording and rendering immediately intelligible data as diverse as:

- features concerning technology and modalities of realization (e.g. use of different materials and colours, traces of preparatory drawings), which are relevant to historic and artistic studies;
- earlier restorations and remakings, or historic and archaeological data, regarding the life of the manufacture and of the containing site;
- instances of destruction and traumatic events, or elements concerning the history of the manufacture's obliteration (post-depositional processes);
- restoration which was carried out, in order to give evidence of the intervention methodology that was used, as well as of the operations of preservation which were carried out.

The documenting techniques which have been set up were elaborated relying on a wide use of computer and digital instruments. This warranted speed and versatility of management were rendered necessary by the huge amount of data which were produced in the course of the restoration project of the Zeugma mosaics. The project entailed the movimentation and treatment of a wide quantity of mosaics (about 700 square metres), adding up to about 500 fragments, which were carried out by a great number of conservators over a long period of time. The whole project implied also a great use of materials and facilities covering a wide working field (2 labs for 250 square metres in all).

Video and photo documentation

The photographic documentation which has been realized is basically made up of "yard" photos, documenting the preservation state of the mosaics, as well as the various intervention operations. Approximately 3000 shots constitute a wide data bank, which not only testifies to the memory of the manufactures, but is also relevant in terms of divulgation and teaching methodology. The final photographic documentation, on the other hand, required the intervention of professional photographers, due to the need for professional equipment connected with difficulties in shooting manufactures which cover an area bigger than fifty square metres. Digital video documentation too is made up essentially of shooting covering the various stages of the different intervention methodologies. This will not be shown here,

due to the long-lasting montage it needs.

Graphic documentation

While video shooting and photos are a relevant part in the documentary archive of this project, graphic documentation constitutes the most demanding and significant component of the archive itself.

The decision to entrust the recording of all the preservation interventions which were carried out on the Zeugma mosaics to drawings is basically grounded on the qualities which characterize the graphic language as universal, immediate and synthetic. Such qualities perfectly meet the needs for clear and effective documentation of all the properties of the restored objects, as previously mentioned.

The method used

The entire documentation was managed on a local network which was made up of two PCs of average power, using a software for CAD vectorial drawing and raster graphics for the creation of the final mappings. An A3 format printer allowed for the colour printing of documents – even of large format – while the printing of smaller and monochromatic documents was carried out with an A4 laser printer. The photos of the lab activities and those supporting drawings were taken with a compact digital camera, and with a Digital Video videocamera.

The main operational difficulty in the realization of drawings to be used as a basis for the mapping consisted in the absence of any sort of documentation (sketches, measurements, etc.) for most of the mosaics. It is clear enough that it is not easy at all to draw something you have never seen, which is cut into panels for the most part and set with the mortar on the back in sight, when you have no possibility of following the phases of montage on new bearings.

The only possible way of drawing the mosaics was to proceed, one panel at a time, from the back, during the cleaning of the backs themselves, while the restoration was being carried out. Through the integration of what was visible from the back of the panels with the few photos at our disposal it was possible to single out the fundamental geometric elements, and realize a first draft by turning the drawing over. This procedure made it possible to provide the graphic bases to record the operative interventions on the mosaics immediately. By connecting the different drawings the relief of the mosaic as a whole was realized, at least as far as its fundamental components were concerned (fig. 1).

After drawing the mosaic frames and panels, blocks which contained the geometrical filling patterns (braids, meanders, perspective cubes, etc.) were

inserted. The separate geometrical components were drawn on the basis of vertical photos of detail and measurements, and were later multiplied by the exact number of their occurrences.

It was necessary on the other hand to wait for the final mounting to be able to check the mosaics' real dimensions and complete the pattern with those elements which had turned out to be illegible from the back, such as especially complex geometrical patterns or figured panels. The use of CAD drawings warranted the handling of all the operations of overturning, assembling and reorganization.

In particular, as far as figured panels are concerned, it turned out that we could not proceed from the back to the drawing, due to the variety of the tesserae's chromatic effects and the complexity of the drawings themselves. As a consequence, figured *emblemata* were drawn once they had been turned over, "unveiled" and cleaned only, whereas the most urgent mapping were dealt with by making use of sketches, or photos which had been taken before removal, if available, that were used as a basis.

These drawings were carried out following three steps (fig. 2):

1. Orthogonal photography, which was realized with a digital camera at its highest resolution. For the bigger figured panels a series of photos was prepared, which was followed by recomposition by means of a special software.
2. Vectorialization of raster images with different layers, in order to highlight the difference between the outlines and the essential traits of the figures, and their details.
3. Re-elaboration by software of treatment images until the final graphic format is achieved.

Elaboration of a standard method

The drawings which have been realized by making use of the above described method provide the basis for the documentation of the mosaics' history, from the moment of their removal from the site to workmanship in Gaziantep museum. To this purpose, a pattern was worked out; it was made up of four tables, each in turn subdivided into sub-tables, in order to avoid overcrowding elements, devoted to the various elements to be documented (fig. 3).

One table is given up to the analysis of ancient techniques (fig. 4) (use of tesserae made of glass paste, changes in texture of tesserae, ancient polishing, use of preparatory drawings) as well as to the floor's life (ancient restorations); another table is devoted to the removal from the site.

The following table is given up to the preservation state. In the drawings devoted to the preservation state all pathologies the mosaics underwent in the course of their life and in their condition as finds are included; whereas for the mosaics which were already under restoration and had been previously stored in a museum, separate headings have been set, in order to document their special preservation conditions. Lastly, table four concerns the preservation interventions which have been carried out (fig. 5).

From the mosaics drawings it was possible to reconstruct the original appearance of the mosaic floors, by integrating the areas covered with geometrical decorations which were missing by means of a sort of "virtual restoration", as a form of support to documentation, which makes the object "visible" "as it actually was" – or, at least, "as it probably was" – without any alteration of the original object (fig. 6). The integration with the excavation documentation allowed the elaboration of tridimensional reconstructions of the original settings in which the mosaics were placed, pointing to a museum-to-come which will offer a faithful reconstruction of the setting.

Conclusions

In order to draw the Zeugma mosaics it was constantly necessary to understand the features of composition of the different elements which were figured; in particular, it was important to understand the geometry and modules which were needed to realize the geometrical patterns. These, in turn, showed great fantasy and structural complexity, together with an extraordinary executive accuracy. Finally, we needed to understand how the mosaic workers used colours. Drawing the Zeugma mosaics, then, similarly to any archaeological find, has turned out to be a form of interpretation of reality, and every table which has been produced can be considered as the result of a synthesis which followed accurate analysis of the object, with the peculiarity of being a "drawn up", and not "written", report.

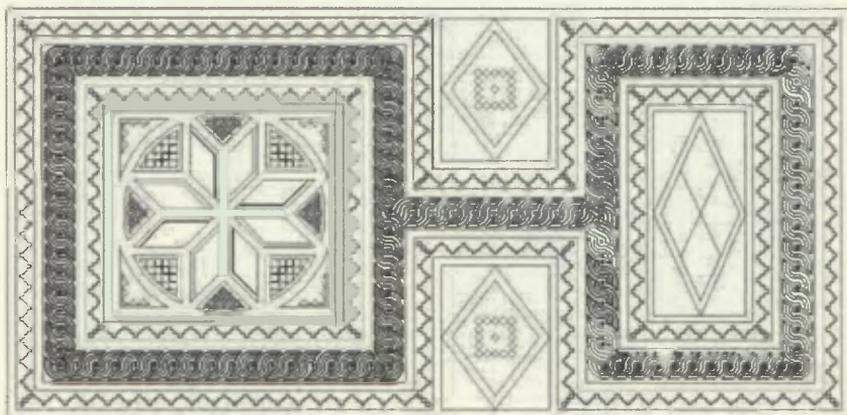
The use of digital instruments and computer application allowed us to rationalize and co-ordinate many restorers' work, which was carried out over a long stretch of time and on a considerable quantity of mosaics; the use of computer tools allowed us to manage easily a great quantity of images, to work out versatile drawings, which can be printed on any scale, any colour or trait, etc.

Computer application to documenting activity allowed us to achieve relevant increases of productivity, which did not imply the distortion of a method of relief which was based a priori on methodologically consistent foundations, thus avoiding the risk of erroneously identifying the computer

product (the drawing in our case) with the end of the work itself. In spite of the enormous development of computer applications in the field of archaeological research, relief and documentation, we cannot rely nowadays on instruments so intelligent as to be able to substitute the relief phase, and, even if we could one day, we would be made to ask critically to what extent they represent a commodity rather than a distortion of the correct, however slower, analytical method.

As a final remark, the work of documentation which has been realized is founded not so much on a blind faith in the possibilities computers offer, which are likely to continue to astonish and enchant us in the future, as on faith in the expressive potentialities of drawing, which have been previously mentioned. Above all, it is based on the consideration that the analytical quality the relief practice entails makes graphic documentation an instrument of knowledge – as well as description – of ancient monuments, exactly in the same way as the longstanding "confidence" with the manufacture, that the very process of restoration develops, produces a deep knowledge of its nature.

FIGURES



1. Achilles mosaic: drafting of geometrical patterns.



2. Achilles mosaic: from orthogonal picture to raster image.

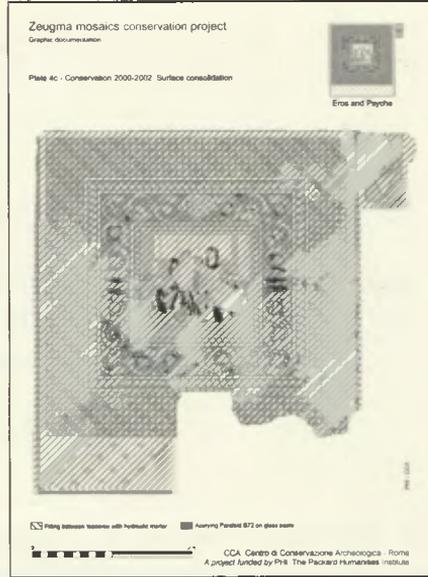
Plate 1a	Plate 1b	Plate 1c	Plate 2	Plate 3a	Plate 3b	Plate 3c
Historical analysis	Historical analysis	Ancient restorations	Previous interventions	Condition	Condition	Condition
Glass paste tesserae	Traces of preparatory drawing on reverse (Black)	Use of original or similar tesserae to reconstruct the motifs	Numbering of fragments due to removal from the site (museum)	Lacunae	Insoluble surface deposits	Scratches
Changes in texture and dimensions of tesserae in areas with inscriptions	Traces of preparatory drawing on reverse (Yellow)	Use of original or similar tesserae, without reconstructing the motifs	Cement fillings	Cracks	Iron oxide	Damage due to mechanical stress
Original polishing	Traces of preparatory drawing on reverse (Red)	Use of tesserae that differ from the original, reconstructing the motifs			Copper oxide	
Polishing due to ancient restoration		Use of tesserae that differ from the original, without reconstructing the motifs			Burned areas	
		Use of different materials for tesserae (marble)			Microbiological growth	

Plate 3d	Plate 4a	Plate 4b	Plate 4c	Plate 4d	Plate 4e	Plate 4f
Condition	Conservation 2000-2002 Reapplication on new support	Conservation 2000-2002 Treatment of lacunae	Conservation 2000-2002 Surface consolidation	Conservation 2000-2002 Cleaning	Conservation 2000-2002 Finishing	Conservation 2000-2002 Surface protection
Decohesion	Panels, final numbering	Lime mortar fillings	Filling between tesserae with hydraulic mortar	Mechanical, with water	Surface polishing with plastic brushes	Applying Paraloid B72 1.5%
Disaggregation of tesserae	Re-laid from the reverse side	Re-laid tesserae	Applying Paraloid B72 on glass paste	Chemical and mechanical		
Disaggregation of glass paste tesserae	Re-laid from the front side					
Exfoliation						
Surface Corrosion						

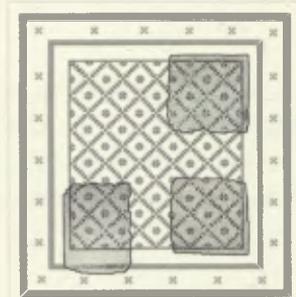
3. Pattern of the plates used for documentation.



4. Daedalus and Dionysus mosaic: plate 1b, documentation of preparatory drawings on reverse side.



5. Eros and Psyche mosaic: plate 4c, documentation of preservation interventions.



6. Geometric mosaics from baths: virtual reconstruction of geometrical patterns.