The treatment of mosaics <u>In situ</u>

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A review of the methods used in treating mosaics must proceed hand in hand with an analysis of their historical meaning. Technical solutions have always been the result of cultural choices influenced by a prevalent attitude that has seen them as simply "aesthetic" objects, and thus detachable from their surroundings and capable of being seen as movable artifacts.

The 17th-century "discovery" of archaeological sites and their subsequent transformation into mines for treasure-seekers marked the beginning of a process of demolition that would continue for almost 200 years. During this period, detachment and removal were the favoured options. The sites and their buildings were divested of their most important elements, which were removed to museums, palaces, storage, dealer's shops. The original location of mosaics was not documented and their context was destroyed; information regarding the origins of the objects was not considered important, and mosaics were valued only by the image created by a fine layer of tesserae.

Mosaics were detached in ways that varied from lifting whole blocks that included all the bedding layers, in sizes and shapes determined by the cracks in the mosaic itself, to the cutting of pieces, usually larger than one square meter, done by first securing the exposed tesserae surface with gauze using glues or natural resins. Once lifted from the ground, the bedding layers were removed and the tesserae were reattached to stone slabs, or mounted on metal or plaster plaques, or even embedded directly onto walls or floors in new location.

These early approaches evolved as all components of archaeological sites came to be increasingly appreciated. Public interest for the ancient world expanded from the objects in museum to their places of origin. Mosaics continued to be lifted, the layers beneath the tesserae destroyed and surface irregularities flattened out. But floor pieces were occasionally replaced in their original position, on new supports that were fixed or moveable.

Over time, much attention continued to be payed to the tesselatum but a new option for treatment slowly started to emerge: the presentation of mosaics in their original location. Detachment procedures did not changed much, although the rolling technique was introduced and the lifting of very small sections at a time was sometimes used.
New fixed supports were introduced, usually consisting of reinforced concrete, and it was even suggested that surface irregularities be reproduced in the new bedding layers.

We are at the second half of the 20th century and this is an important time since solutions that were adopted have had strong implications for the conservation of mosaics. The increasing attention payed to mosaics and specially to archaeological sites generated a growing number of projects and initiatives. These activities brought about new experiences and, more and more applications of "modern technologies".
This was the moment of the "inventions" of the restorers; the time of cement, synthetic resins, panels, light panels, heavy panels, and foams. It was particularly a time of "experiments", the results of which we can still only partially assess today. (Many "unsuccessful" experiments can no longer be evaluated since the mosaics, without any documentation, have been lost.)
"This is how a restors of the past works:"

- the restorer works alone (or in a group of restorers);
- his attention is focused on a single mosaic at a time;
- his work proceeds day by day, or it is planned on a weekly basis;
- his work is cloaked in secrecy;
- his work ends when the direct treatment of an object is finished.

We can immagine the questions that were considered:

- how do I cut?
- how much will the piece weigh?
- which was the original pattern for the reconstructions?

- How do I clean the tesserae?
- Should I use resin No. 345 or No.2?
- how do I polish the mosaic?
- how can I reassemble the pieces?
- how much will I spend (and what profit will I make)?
- how can I save money?

But parallel with the proliferation of restoration projects, another cultural view was slowly maturing, and a different understanding of history was emerging. Slowly but with certainty, history is being viewed as a dynamic process, stratified through time. Archaeological sites were seen as places where history occurred, where the signs of life have been deposited and preserved in layers. More attention started to be payed to these signs, to what we can call the cultural value of the site. Cities, settlements, buildings and even objects increasingly took on the role of material evidence of a continuous process: the 'place-life'. Attention slowly shifted from the single object - the mosaic - to its context - the room, the building, the site. This new view led to a trend to keep italies all those elements that qualify and identify the site: movable objects stay in the site museums, frescoes and mosaics in their original locations. This approach fostered knowledge about mosaics, and the many components of the ancient structures started to be appreciated. The component materials, the techniques used, and the traces time had left were studied and documented. The principles of minimum intervention started to become policy and to be applied, not just to the aesthetic image of the mosaic, but also to its material substance. An archaeological mosaic became not only an aesthetic image, but it was seen to have also a physical reality created by its composing materials. Mosaics came to be seen as the result of a technical process or working production technique, and its history, created over centuries of existence.
Increasing cultural values started to encompass the study, documentation and respect of all these elements.

From this moment on, methods and techniques for the treatment of mosaics have followed an evolution similar to that of the conservation of frescoes, perhaps with a lag of twenty years. This evolution has taken the conservation of mosaics from regular lifting and re-laying on movable panels, to *in situ* consolidation, with detachment used only in rare cases. A new sensitivity governs the treatments, and techniques are modified according to new principles and methods. Materials and treatments reproduce the original recipes (mortars and the phases of their application), and respect the signs time has left on the mosaics.

The restorer became a conservator, and his task is no longer to trasform the mosaic. The traces left by the passing of time are preserved, made evident and passed on.

In situ conservation of mosaics does not refer to the place where the work is treated, and it refers, even less, to whether or not the mosaic is replaced in its original position. *In situ* conservation means respecting and preserving all the cultural values of the monument, including the historical, technical and material ones. The mosaic is kept in its original position within a distinct structural system: the layers that make up a floor are saved; the signs, or scars, left by time -- the changes, the tampering, the irregularities -- are studied, interpreted, preserved and made understandable to the public; the physical materials are not altered through the use ofextraneous and incompatible products. The intervention does not depend upon "miracle cures", unrelated to the original methods that created the piece.

The process of conserving mosaics *in situ* consists of several steps, namely, documentation and study; actual treatment of mosaics; and other steps taken for protection. The importance given to any of these steps depends upon the kind of mosaic that it is being considered, its state of conservation and, above all, on the time elapsed between the excavation and the treatment.

In order to better understand here the methods and purposes of the direct treatment of mosaics, their actual composition and the mechanics of their erosion/disintegration must be looked at.
A mosaic is placed on a series of superimposed layers (generally 4) made of mortars based on lime and various aggregates. The layer of tesserae is applied to the most superficial preparation layer.
Tesserae can be made of different sized pieces of inorganic material, mainly stone, but also vitreous paste and ceramic.
Deterioration can occur in any of these layers, due to pulverization of mortars, to creation of hollows and to

loss of adhesion among the elements. Hollow spaces can be found, then, between the preparatory layers and in depth. Mortar can be lost between the tesserae and hollows can be found between the tesserae and the bedding layer.
Finally, tesserae can be lost leaving the way open for the subsequent development of lacunae.

All of this can be caused by tampering due to reutilization, collapse of the surrounding structures, fire, vandalism, theft, sinking of the foundation layer, plant growth, wrong utilization during the modern era, the natural disintegration of the materials used.

Direct treatment must find a remedy for all this. After which, preventing the occurrance of the same damaging conditions will be the purpose of subsequent indirect interventions. Adhesion, continuity and compactness among all the layers of the mosaic must be recreated through direct treatment. It must be accomplished without including elements extraneous to the original structure, since they could prove to be unstable or might not bond with the original, and therefore be rejected. For this reason, great attention is dedicated to the study of the original components. The only materials that can promise durability and assimilation are those similar to the original ones.

For the last 15 years, research and on-site practice has moved ahead in this field: to perfect the combination between binder and filler in lime-based mortars, to refine application methods.
In the actual practice: to discover and to define the area to be treated, to combine the correct components in the mortar and to blend them, to clean and prepare the areas to be reinforced and to apply consolidants, the stabilize, to reinforce both in depth and on the surface, to treat edges and lacunae, to evaluate the results.

Parallel to the new ethics, the technical ability to keep the mosaic italies, with total respect for the work and its archaeological context, is growing. With regard to conservation problems, the principle of going beyond the mosaic and analysing its surroundings, taking them as a whole together with a larger environment, has also acquired importance. Problems are considered with a broader scope, with the objective of preventing further damage rather than reversing that which has already occurred.

From dedicating the greatest care to the tessellatum while destroying its context - as was the case in the 1800's (and in some instances even today) we have shifted to minimum intervention on the tesserae layer and concentrating instead on context and surroundings. Whereas once the mosaic was treated in a single intervention, we are focusing instead on preventive, long term care, and depending upon maintenance for the preservation of the work in the future.

A number of activities that do not touch the mosaic itself have become part of the tools available to the conservator. Water drainage, roofing, seasonal covers, back filling, protection from animals and vandals, suggestions and solutions for a proper use of the site, testing, creation of information systems, training courses for local operators and tourist guides, are all within the concern of the conservator. The conservator must recover the mosaic and must at the same time determine the condictions for its future active and passive protection, safeguard and maintenance. This means that potential risks must be anticipated in order to set up precautionary protection intended to curtail, if not altogether avoid, direct interventions on the mosaic in the future.

Herein lies the greatest transformation in the professional responsibilities of the conservator:
- attention is no longer focused singly on the mosaic, but encompasses the surrounding structure;
- work does not proceed day by day;
- work is planned not on a weekly basis but with an horizon of years;
- a conservator works no more in isolation, but is part of a team made up of various professionals;
- work is not carried out in secrecy and great attention is given to inform the public;
- a conservator's work does not end with the restoration of a mosaic but it carries on through maintenance and protection.

Some of the questions corservators consider today are:
- what are the priorities of the work?
- how can we minimize risks of further deterioration?

- what programme are we following?
- what resources and funds are available?
- what is the objective of our work?
- what are the steps to be followed and what is their schedule?
- how do we plan future maintenance?
- which part of the structures will be backfilled?
- how can the documentation be designed so that it is easy to use?
- how can we inform the public?

These indirect actions share the common characteristic of being highly effective and with low cost, even without considering the added benefit of prevented damage. The exact opposite is true of direct treatment, where costs are usually very high and benefit low.
Indirect actions can have excellent results in terms of preventing further damage, but they must be planned and this planning requires a considerable investment in terms of attention. Indirect actions are preventive and must be implemented before damage occurs. They cannot be considered a form of treatment of existing damage. They should be considered a form of insurance.

In pratical terms, everything that has been said points the need to broaden the range of action of the traditional restorer/conservator. This new professional must be prepared to consider, together with the direct treatment of the mosaic, also the surrounding elements that can change the environment. With this new vision, intervention will lead to the conservation of the mosaic as well as to the planning of its future active and passive protection. But if this new vision is to succeed a change must also take place in the attitude of institutions and teachers when planning courses for the new generations of professionals. We need more courses on prevention, management, archaeology, communication, together with restoration techniques.

Mosaic conservation can no longer consist of only direct interventions and treatments. It has come to be seen as a combination and interaction between direct and indirect activities, implemented according to precise theoretical methodologies. Mosaics are part of the archaeological record and they have to be considered in that context.
Direct treatment must be developed in the context of future plans for maintenance and protection. The significance of the archaeological context and the mosaics must be made evident, in order to live rather than to be fossilized. As in ancient times, mosaics will survive if they have value and have significance. The difference is that today, this significance will not be their function as flooring in residential, religious, or administrative structures. Their present significance is their cultural value, embodied in the historical message and its communication within the context of the archaeological site.
This cannot be the result of improvisation but it is something that can will be achieved through a global view and an active managment of the archaeological site.

1. Documentation

Documentation is today an operation universally accepted and implemented. More than the technique used, it is important that a common language be used to describe the various features of the monument. Nevertheless, it is important to stress that documentation is not simply registration of data: it is first of all an instrument for the study and understanding of the mechanisms of decay, that is essential for planning the corrective measures (on structures and floors) to be carried out in preventive conservation. Documentation is one of the first operations to carry out on-site: each mark on the mosaic's surface should be classified and represented graphically. The process starts by entering the state of conservation (type of decay) of the mosaic, details of the original techniques of making the mosaic (sinopia, *giornate*, retouchings), of the historic life of the building (uses, restorations, collapse). Documentation continues throughout the intervention, entering the operations carried out and the areas treated and will go on throughout maintenance. Photo CCA (Centro di Conservazione Archeologica).

2,3, In situ conservation

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Few years have passed since the ICCM fostered discussion regarding the steps to be taken for *in situ* consolidation of mosaics versus automatic detachment, and in favour of the use of traditional materials and techniques, as opposed to cement and synthetic resins. The years are so few, in fact, that it is surprising to see how much progress has been made. Photos CCA.

4. Informing the public

Conservation *in situ* is a great opportunity to inform the public about safeguarding the cultural heritage. Similar initiatives are the organized openings of the work-site to visitors and supplying, at the same time, information posters, updated briefings for tourist guides, lectures and guided tours. The relationship with the public must be active, it must be managed rather than endured; the public must be made to feel welcome by didactic aids or guided tours. All these contributee to turning the technical intervention into a cultural event, and creating greater sensitivity among the public. These initiatives usually meet with great public success and achieve considerable media attention: All these elements create understanding and greatly supports conservation. Photo CCA.

5,6,7: *Preventive measures of protection and maintenance*

Conservation *in situ* does not end with the intervention itself but must continue through the years with constant maintenance. We can say that a conservation programme's success is measurable in the future maintenance of today's results. The best way to ensure that maintenance will continue is to make it financially viable. This means minimal present costs, maximum future savings. To achieve this the resources found in the field must be used and maintenance must be immediately linked to the conservation intervention.

Maintenance will be organized in different parallel phases: preventive measures of protection, direct treatment of the mosaic and control.

The worksite must be organized with marked paths, information, observation points, temporary covers (seasonal), roofs, and whatever would facilitate an intelligent visit and at the same time an easy (and safe) maintenance of the monument. Photo CCA.

8,9. *Training and up-grading conservators*.

Conservation *in situ* could be intended as a "new discipline" in the "modern" approach of conservation. Sometimes this is true, sometimes not. Most of the time this is simply a different way of applying already known techniques and materials. In any case it is extremely important to insist on the needs of implementing training courses focused on this field. Those courses will deal with techniques for maintenance, temporary and preventive measures of protection, documentation, cleaning, consolidation using lime base mortars, traditional and local materials and communication, team-working, planning and reporting. Photo CCA.

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