TECHNICIAN TRAINING FOR THE CONSERVATION OF MOSAICS

PART 3
THE CONSERVATION OF ARCHITECTURAL REMAINS AND THEIR DECORATIVE SURFACES

Structures and decorative surfaces:
their documentation during conservation interventions

Livia Alberti, Ermanno Carbonara, Thomas Roby
STRUCTURE

Group of architectural elements designed to be occupied by people or to fulfill a variety of functions. A structure can be a building or a monument.
Architectural elements of a STRUCTURE
Wall
Construction in masonry, earth or other material, that is continuous in nature, rising vertically from the ground or a habitable floor and whose length and height are greater than its width.
Pavement
Part of a structure made up of a horizontal platform on the ground floor or a separation between two floors.
Vault
Curved construction that is a type of ceiling. A vault works under compression and distributes the weight that it supports to the weight-bearing elements.
Arch
Curved construction that is the thickness of a wall. An arch works under compression by distributing the weight that it supports to the weight-bearing elements.
Seating
Element composed of a riser and footer allowing spectators to be seated.
Stairway
Construction made up of a regular series of footers and risers or steps to move from one level to another, ascending or descending.
Column
Independent support element that is circular in section, fluted or composite, usually made up of a capital, shaft and base. The shaft can be monolithic or made of several blocks.
Pillar
Independent support element that is rectangular in section, square or composite. The shaft can be monolithic or made of several blocks.
Different typologies of CONSTRUCTIONS
Different typologies of CONSTRUCTIONS

Small stone work
Masonry made with small elements.

Stone work: Masonry made with elements that are placed not thrown, making up a construction.
Large stone work
Masonry made with large elements.

Stone work: Masonry made with elements that are placed not thrown, making up a construction.
Mixed stone work
Masonry made with elements that are very different in terms of their dimensions and role in the wall.

Stone work: Masonry made with elements that are placed not thrown, making up a construction.
Irregular stone work
Masonry made with elements that are laid, not following regular courses.

Stone work: Masonry made with elements that are placed not thrown, making up a construction.
Coursed stone work
Masonry made with a series of elements essentially placed on the same level, forming superimposed courses.

Stone work: Masonry made with elements that are placed not thrown, making up a construction.
Wall core

Interior part of a wall between two **faces** made of small stones or stone fragments embedded in a layer of mortar.

*Faces : Visible part that makes up the external layer of the wall.*
Blocage
Lime-based mortar (ancient cement) poured into a trench or temporary formwork which is removed once the mortar has set.
Dry wall construction
No binder present.
A CONSTRUCTION is generally made up of:

**Elements:**
construction unit
- Rubble stone
- Block
- Brick
- Ceramic elements

**Binders:**
materials that hold together the construction elements
- Mortar
  - Lime-based
  - Earth-based
- Metallic elements
Elements

- Rubble stone as extracted from the quarry.

- Rubble stone with worked facing side.

- Rubble stone worked on several sides, sometimes all sides.

Rubble: stone element either worked or not, fairly small in size able to be carried by a single man.
Rubble Stone

- **Raw rubble**
  Rubble stone as extracted from the quarry.

- **Dressed rubble**
  Rubble stone with worked facing side.

- **Squared rubble**
  Rubble stone worked on several sides, sometimes all sides.

*Rubble*: stone element either worked or not, fairly small in size able to be carried by a single man.
Rubble Stone

- Raw rubble
  Rubble stone as extracted from the quarry.

- Dressed rubble
  Rubble stone with worked facing side.

- Squared rubble
  Rubble stone worked on several sides, sometimes all sides.

Rubble: stone element either worked or not, fairly small in size able to be carried by a single man.
Block

- **Raw block**
  Block as extracted from the quarry.
- **Dressed bed block**
  Block with only the bed (horizontal) sides worked.
- **Ashlar block**
  Block worked on all sides.
- **Sculpted stone**
  Block worked in a decorative, artistic or symbolic way.

*Block*: stone element either worked or not, too large to be carried by a single man.
Block

- **Raw block**
  Block as extracted from the quarry.

- **Dressed bed block**
  Block with only the bed (horizontal) sides worked.

- **Ashlar block**
  Block worked on all sides.

- **Sculpted stone**
  Block worked in a decorative, artistic or symbolic way.

*Block*: stone element either worked or not, too large to be carried by a single man.
Block

- **Raw block**
  Block as extracted from the quarry.

- **Dressed bed block**
  Block with only the bed (horizontal) sides worked.

- **Ashlar block**
  Block worked on all sides.

- **Sculpted stone**
  Block worked in a decorative, artistic or symbolic way.

*Block*: stone element either worked or not, too large to be carried by a single man.
Block

- **Raw block**
  Block as extracted from the quarry.

- **Dressed bed block**
  Block with only the bed (horizontal) sides worked.

- **Ashlar block**
  Block worked on all sides.

- **Sculpted stone**
  Block worked in a decorative, artistic or symbolic way.

*Block:* stone element either worked or not, too large to be carried by a single man.
Brick
Clay-based mix formed into a rectangular shape, then either fired or dried, and used in masonry.
Brick

Fired clay-based mix

Dried clay-based mix
Ceramic elements
Clay-based mix that is made into various shapes, generally by hand, and fired.
Ceramic elements

Vaulting tubes
Mortar
Combination of a binder (lime, etc.), aggregates (sand, gravel, etc.) and an appropriate amount of water.
Mortar

- **Lime-based**
  Mix of lime and aggregates used when still soft and malleable that fulfills its structural function when it sets and becomes hard.

- **Earth-based**
  Mix of earth and aggregates used when still soft and malleable that fulfills its structural function when it dries and becomes hard.
Mortar

• Lime-based
  Mix of lime and aggregates used when still soft and malleable that fulfills its structural function when it sets and becomes hard.

• Earth-based
  Mix of earth and aggregates used when still soft and malleable that fulfills its structural function when it dries and becomes hard.
Metallic elements
Metalwork in different shapes, generally made of iron or bronze, used to hold masonry elements in place.
Metallic elements - cramp
Typologies of Roman construction
Opus caementicium

Rubble work masonry made up of a mixture of mortar and stones poured and packed between two formworks or two facings.
Opus incertum

Rubble work masonry using small unworked stones, laid in irregular courses.
Opus reticulatum

Rubble work masonry created with squared rubble stone laid at 45 degree angle.
Opus mixtum

Name given to all masonry that mixes rubble and brick, or with parts in *Opus reticulatum* surrounded by parts in brick.
Opus testaceum

Masonry created entirely from fired brick.
Opus latericium

Masonry created entirely from unfired brick.
Opus africanum

Masonry composed of vertical chains of large ashlar blocks connected by rubble stone work.
Different typologies of DECORATIVE SURFACES
Stone facings

Veneer
Wall mosaic
Mortar coverings

Wall Plaster

Thomas Roby 2007 © J. Paul Getty Trust
Mortar coverings

Painted wall plaster
Mortar coverings

Stucco
Mortar coverings

Coccopesto - mortar with ceramic fragments
Ceramic coverings

Zellij
PAVEMENTS
Mortar flooring

Cociopesto - mortar with ceramic fragments

Mortar with stone fragments
Stone slabs
Documentation of Structures and Decorative Surfaces
Graphic or photographic base

Drawing of the structure:

• Direct measured drawing
• Retracing on tracing paper from a photo

Photography of the structure:

• Photograph of the structure in a single frame
• Photograph of the structure by area to create a photo montage by computer
Measured drawing
Retracing on tracing paper from a photo
Photograph of the structure in a single frame
Photograph of the structure by area to create a photo montage by computer
**DATA FORM – CONSERVATION OF STRUCTURES AND DECORATIVE SURFACES**

**Structure/Decorative Surface ID:**

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>ID</th>
<th>Space</th>
<th>Top</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This form should be accompanied by an overall photograph of the structure or surface decoration before and after conservation treatment, and by a plan of the building, indicating the location of the room. Mark also the location of the wall elevation if the object is a vertical surface.

**PART OF THE STRUCTURE**

- Wall
- Vault
- Steps
- Cistern/Basin
- Pavement
- Other:

**CONSTRUCTION MATERIALS**

- Dry Stone
- Stone and lime mortar
- Stone and earthen mortar
- Brick
- Earth
- Other:

**TYPE OF SURFACE DECORATION**

- Wall Plaster
- Painted Wall Plaster
- Crushed Ceramic Mor.
- Marble Plaque
- Stone Slabs
- Tile/Zellij
- Stucco/gyps. plaster
- Other:

**PREVIOUS INTERVENTIONS**

- Repairs of the structure
- Repairs of the surface decoration of wall or pavement
- Graphic documentation map attached

**CONDITION ASSESSMENT**

- Loss of stones or mortar of the structure
- Repairs of the structure
- Repairs of the surface decoration of wall or pavement
- Vegetation
- Deformations (bulge or depression)
- Loss of surface decoration of wall or pavement
- Micro-organisms
- Detachment of surface decoration of wall or pavement
- Incrustations
- Deteriorated surface decoration
- Efflorescences
- Deteriorated previous interventions

**CURRENT INTERVENTIONS**

- Vegetation removal
- Cleaning
- Removal of modern repair mortars
- Graphic documentation map attached

<table>
<thead>
<tr>
<th>Mortar compositions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repair of the structure with mortar and/or stones</td>
</tr>
<tr>
<td>Resetting in place of detached stones</td>
</tr>
<tr>
<td>Other interventions on the structure:</td>
</tr>
</tbody>
</table>

- Repair of the surface decoration with mortar (in-filling/edging repair)
- Grouting voids below the surface decoration
- Removal and resetting in place of parts of the surface decoration
- Reintegration of area of loss with:
- Other treatment of the surface decoration:

**PREPARED BY**

<table>
<thead>
<tr>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
DATA FORM – CONSERVATION OF STRUCTURES AND DECORATIVE SURFACES

**Structure/Decorative Surface ID:**

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Building</th>
<th>Room</th>
<th>Elevation</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 2018</td>
<td>Scott Warren</td>
<td>J. Paul Getty Trust</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This form should be accompanied by an overall photograph of the structure or surface decoration before and after conservation treatment, and by a plan of the building, indicating the location of the room. Mark also the location of the wall elevation if the object is a vertical surface.

### Part of the Structure
- Wall
- Vault
- Steps
- Cistern/Basin
- Pavement
- Other:

### Construction Materials
- Dry Stone
- Stone and lime mortar
- Stone and earthen mortar
- Brick
- Earth
- Other:

### Type of Surface Decoration
- Wall Plaster
- Painted Wall Plaster
- Crushed Ceramic Mor.
- Marble Plaque
- Stone Slabs
- Tile/Zellij
- Stucco/gypsum plaster
- Other:

### Previous Interventions
- Repairs of the structure
- Repairs of the surface decoration of wall or pavement

### Condition Assessment
- Graphic documentation map attached
- Loss of stones or mortar of the structure
- Cracks
- Detached stones of the structure
- Deformations (bulge or depression)
- Vegetation
- Loss of surface decoration of wall or pavement
- Micro-organisms
- Detachment of surface decoration of wall or pavement
- Incrustations
- Deteriorated surface decoration
- Efflorescences
- Deteriorated previous interventions

### Current Interventions
- Graphic documentation map attached
- Vegetation removal
- Cleaning
- Removal of modern repair mortars
- Mortar compositions:
- Repair of the structure with mortar and/or stones
- Resetting in place of detached stones
- Other interventions on the structure:

- Repair of the surface decoration with mortar (in-filling/edging repair)
- Grouting voids below the surface decoration
- Removal and resetting in place of parts of the surface decoration
- Reintegration of area of loss with:
- Other treatment of the surface decoration:

### Prepared by

Date: 2018 | Scott Warren | J. Paul Getty Trust |

Scott Warren: 2018 | J. Paul Getty Trust |

Ermanno Carbonara: 2018 | J. Paul Getty Trust |
**DATA FORM – CONSERVATION OF STRUCTURES AND DECORATIVE SURFACES**

| ID: Ch / NRM /1 / a /1- 2 |

**STRUCTURE/DECORATIVE SURFACE ID:**

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>building</th>
<th>room</th>
<th>elevation</th>
<th>section</th>
</tr>
</thead>
</table>

This form should be accompanied by an overall photograph of the structure or surface decoration before and after conservation treatment, and by a plan of the building, indicating the location of the room. Mark also the location of the wall elevation if the object is a vertical surface.

### PART OF THE STRUCTURE
- Wall
- Vault
- Steps
- Cistern/Basin
- Pavement
- Other:

### CONSTRUCTION MATERIALS
- Dry Stone
- Stone and lime mortar
- Stone and earthen mortar
- Brick
- Earth
- Other:

### TYPE OF SURFACE DECORATION
- Wall Plaster
- Painted Wall Plaster
- Crushed Ceramic Mor.
- Marble Plaque
- Stone Slabs
- Tile/Zellij
- Stucco/gyps. plaster
- Other:

### PREVIOUS INTERVENTIONS
- Repairs of the structure
- Repairs of the surface decoration of wall or pavement

### CONDITION ASSESSMENT
- Repairs of the structure
- Graphic documentation map attached
- Loss of stones or mortar of the structure
- Cracks
- Detached stones of the structure
- Deformations (bulge or depression)
- Vegetation
- Loss of surface decoration of wall or pavement
- Micro-organisms
- Detachment of surface decoration of wall or pavement
- Incrustations
- Deteriorated surface decoration
- Efflorescences
- Deteriorated previous interventions

### CURRENT INTERVENTIONS
- Repairs of the structure with mortar and/or stones
- Resetting in place of detached stones
- Other interventions on the structure:

<table>
<thead>
<tr>
<th>Mortar compositions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repair of the surface decoration with mortar (in-filling/edging repair)</td>
</tr>
<tr>
<td>Groffing voids below the surface decoration</td>
</tr>
<tr>
<td>Removal and resetting in place of parts of the surface decoration</td>
</tr>
<tr>
<td>Reintegration of area of loss with:</td>
</tr>
<tr>
<td>Other treatment of the surface decoration:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PREPARED BY</th>
<th>DATE</th>
</tr>
</thead>
</table>
DATA FORM – CONSERVATION OF STRUCTURES AND DECORATIVE SURFACES

<table>
<thead>
<tr>
<th>Structure/Decorative Surface ID:</th>
<th>Ch</th>
<th>NRM</th>
<th>1</th>
<th>a</th>
<th>1-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviations</td>
<td>building</td>
<td>room</td>
<td>space</td>
<td>elevation</td>
<td>section</td>
</tr>
</tbody>
</table>

This form should be accompanied by an overall photograph of the structure or surface decoration before and after conservation treatment, and by a plan of the building, indicating the location of the room. Mark also the location of the wall elevation if the object is a vertical surface.

### PART OF THE STRUCTURE
- [ ] Wall
- [ ] Vault
- [ ] Steps
- [ ] Cistern/Basin
- [ ] Pavement
- [ ] Other: Portal

### CONSTRUCTION MATERIALS
- [ ] Dry Stone
- [ ] Stone and lime mortar
- [ ] Stone and earthen mortar
- [ ] Brick
- [ ] Earth
- [ ] Other:

### TYPE OF SURFACE DECORATION
- [ ] Wall Plaster
- [ ] Painted Wall Plaster
- [ ] Crushed Ceramic Mor.
- [ ] Marble Plaque
- [ ] Stone Slabs
- [ ] Tile/Zellij
- [ ] Stucco/gyps. plaster
- [ ] Other:

### PREVIOUS INTERVENTIONS
- graphic documentation map attached

### CONDITION ASSESSMENT
- graphic documentation map attached
- [ ] Loss of stones or mortar of the structure
- [ ] Cracks
- [ ] Detached stones of the structure
- [ ] Deformations (bulge or depression)
- [ ] Vegetation
- [ ] Loss of surface decoration of wall or pavement
- [ ] Micro-organisms
- [ ] Detachment of surface decoration of wall or pavement
- [ ] Incrustations
- [ ] Deteriorated surface decoration
- [ ] Efflorescences
- [ ] Deteriorated previous interventions

### CURRENT INTERVENTIONS
- graphic documentation map attached
- [ ] Vegetation removal
- [ ] Cleaning
- [ ] Removal of modern repair mortars
- Repair of the structure with mortar and/or stones
- Resetting in place of detached stones
- Other interventions on the structure:

#### Mortar compositions:

- [ ] Repair of the surface decoration with mortar (in-filling/edging repair)
- [ ] Grouting voids below the surface decoration
- [ ] Removal and resetting in place of parts of the surface decoration
- [ ] Reintegration of area of loss with:
- Other treatment of the surface decoration:

#### Mortar compositions:
MOSAIKON is a partnership of four institutions: the Getty Conservation Institute, the Getty Foundation, ICCROM, and ICCM. The aims of the project are to strengthen the network of professionals concerned with the conservation, restoration, maintenance, and management of mosaic heritage in the southern and eastern Mediterranean region; provide training to a variety of individuals involved in mosaics conservation and, more generally, with the management of archaeological sites and museums with mosaics; work with national and international bodies to provide a more favorable legislative, regulatory, and economic environment for the conservation of mosaics in the Mediterranean; and promote the dissemination and exchange of information.