

# Virtual and material. An integrated approach

## The reconstruction of a mosaic damaged by bombing during World War II

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### The Mosaic n. 2 of the „Fabbricotti Collection“

The Mosaic n. 2 of the former Fabbricotti collection, now housed in the Archaeological Museum - Museo del Castello San Giorgio in La Spezia, Italy, was a Roman polychrome tessellated pavement measuring 2,43 m x 2,53 m (fig. 1). The mosaic suffered heavily from the deterioration of its conservation premise in the wake of World War II bombings, which caused it to break into hundreds of fragments and ultimately resulted in the loss of about 60% of its original surface.

### The reconstruction of the surviving fragments

A conservation treatment was undertaken on the fragments with the aim of reassembling the surviving part of the mosaic, which extent was unknown at the beginning of the intervention. The intervention was carried out in two main phases, both of which required the combination of virtual technologies with a manual approach on the actual fragments:

- Phase 1: identification of the fragments belonging to the Mosaic n. 2 through analytical filing and virtual reconstruction of their 3D models.
- Phase 2: actual restoration and reassembling of the fragments on a new support.



Fig. 1 Historical photograph of the Mosaic n. 2 prior to its deterioration (published in 1931).

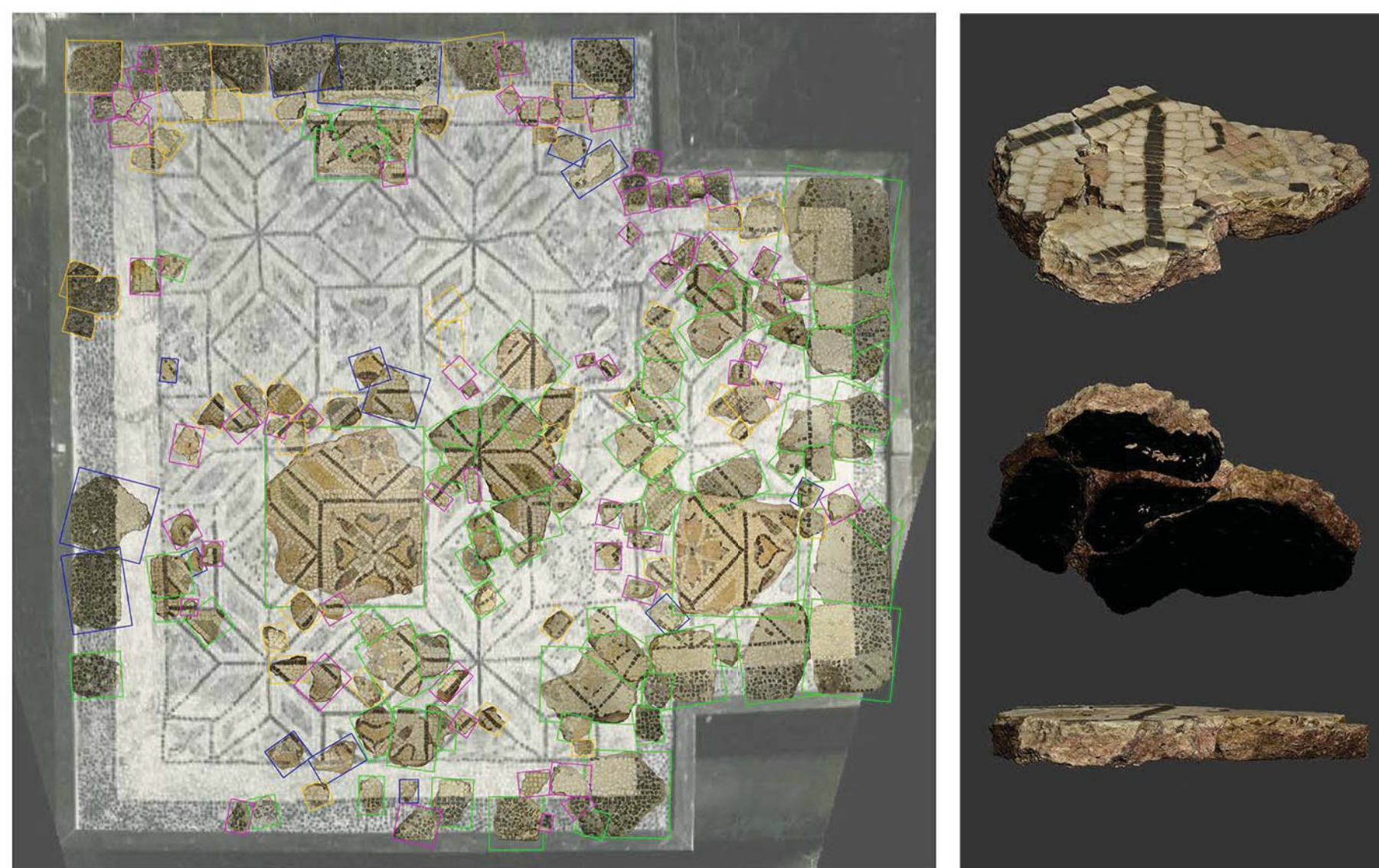


Fig. 2 2D virtual reconstruction of the Mosaic n. 2 (left), 3D models of some fragments (right).

### The Mosaic as ruin: methodological issues in its conservation and presentation

The virtual reconstruction of the fragments provided a clear image of the current condition of the mosaic, which can be considered to be a ruin in view of the entity and visual relevance of the lost surface. This assessment on the mosaic's status entailed significant consequences in the methodological approach to its conservation, as it required the surviving fragments to be reassembled and eventually presented to the public without being properly restored.

During the 2nd part of the intervention, this issue was solved by using the digital representation developed during the previous virtual phase to design an exhibition device that would give a context back to the fragments without properly reintegrating the original artwork. The representation of the missing surface was printed on an aluminum composite sheet (fig. 3), that fills the gaps and recreates a visual context of the whole.

### The physical reconstruction of the mosaic

Ultimately, during the physical reconstruction of the actual fragments, these were placed onto a new support reproducing the original shape and dimensions of the mosaic. Each fragment was backed with a small stand and fixed on the support using re-closable fasteners, to allow possible rearrangements of those whose position was not positively identified.

As a ruin, the object is preserved as a historical document and also efficiently presented to the public, without competing with the original matter.

### The virtual reconstruction of the mosaic

In the virtual part of the intervention the 3D models of all the fragments and the orthophotos of their tessellated surfaces were obtained through a high-resolution stereoscopic photogrammetry survey and processing of structure from motion. The orthophotos of the fragments (and subsequently their 3D models) were then overlaid on the undistorted historical photograph of the artifact (fig. 2). Through this process, the exact original position of 75 fragments was determined, as well as a suitable position for another 113 fragments.

In this phase, the digital tools provided the operational means to implement a most accurate virtual reconstruction of the surviving part of the mosaic, which accuracy would have hardly been achieved through an exclusively manual approach.

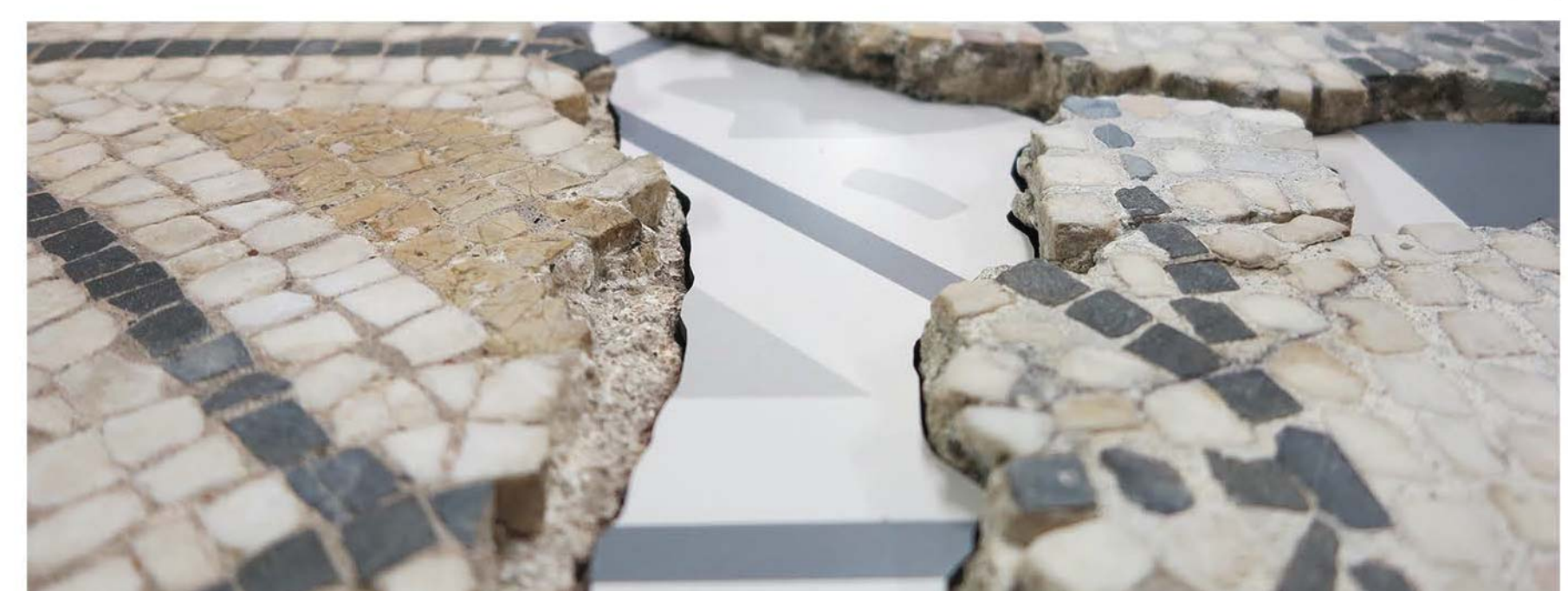


Fig. 3 Detail of the reconstruction of the actual fragments (top), detail of the assembled fragments (bottom).

### Acknowledgments

This intervention was carried out in the frame of a graduation degree project at the School of Higher Education of the Opificio delle Pietre Dure in Florence, supervised by Francesca Toso, Marco Ciatti, Anna Patera, Andrea Cagnini and Fabio Fratini.



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