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#### Original article

## Dating the mosaics of the Durres amphitheatre through interdisciplinary analysis

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#### ABSTRACT

This article presents the results of an interdisciplinary investigation of the mosaics in the main chapel of the Durres amphitheatre, the interpretation and chronological attribution of which have been the subject of debate. Art historical considerations about the mosaic's cultural and artistic affiliations are combined with in situ assessments of the mosaic techniques and physico-chemical analyses of 111 glass tesserae by means of scanning electron microscopy with an energy-dispersive detector (SEM-EDS) and laser ablation inductively coupled mass spectrometry (LA-ICP-MS). Our results show that the raw glass used for the mosaic tesserae derives from two primary production centres but with evidence of substantial recycling: Foy-2, possibly of Egyptian origin, and Levantine I from the Syro-Palestinian coast. While lead stannate, copper and manganese are colorants found commonly in tesserae from different Mediterranean contexts, cobalt correlated with nickel and lead-tin associated with arsenic and antimony have been attested in mosaic tesserae here for the first time. The chronological range of the raw glasses and colorants provides strong evidence for a sixth- to eight-century CE date for the tesserae. The stylistic and iconographic parallels of contemporary mosaic decorations and the mosaic techniques reflected in the plaster layers, preparatory paint and particular setting of tesserae corroborate this timeframe. In terms of the material provenance and artistic features, the mosaics of the Durres amphitheatre clearly reflect the merging of eastern and western elements, typical of the early medieval Adriatic, while visual references to Byzantine imperial iconography may have served to reassert a link with Constantinople and the Byzantine court. Taken together, the material, technical and artistic data reveal the cultural and economic connectivity that shaped the art of mosaic making in the late antique and early medieval period.

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#### 1. Introduction

A small chapel built inside the amphitheatre at Durres contains the only medieval mosaic that survives in Albania and the only medieval one in a Roman amphitheatre. The date and interpretation of the three figurative panels are highly controversial. The panel on the west wall presents a large central figure flanked by two angels and two haloed female figures against a white and green background that are identified by inscription as E(IRH)NH (Peace) on the left and  $CO\Phi IA$  (Wisdom) on the right (Fig. 1a). The possible remains of the  $A\Gamma IOC$  (Holy) epithet to the left of Sophia suggests that the two female figures represent divine attributes. The central figure is almost destroyed and its identification has thus proved

ambiguous. By now it is widely believed to depict the Virgin Mary [1,2]. A small female donor is visible to the right of the central figure.

Two panels decorate the southern wall of the chapel (Fig. 1b).

Two panels decorate the southern wall of the Chapel (Fig. 1b). A smaller rectangular panel represents the martyr saint Stephen, clearly labelled O A( $\Gamma$ IO)C CTEΦANOC. He is dressed in a white tunic with a red *clavus* and a white pallium with a *gammadion*, his golden hands are raised in prayer. The larger adjacent panel takes the form of a trapezoid, filling the wall segment prescribed by the architectural framework. It is dominated by a central figure between two angels, clad in imperial dress with jewelled *loros* and red shoes, a crown with *pendilia*, holding a staff in the right hand and a crowned globe in the left. Two donors about a third in size are inserted between the angels and the central figure. An inscription in the left-hand corner of the panel above the head of the angel reads +K(YPI)E BOHΘHCON TOY  $\Delta$ OY $\Lambda$ OY COY  $\Lambda$ ΛΕΞΑΝ $\Delta$ POY ('Lord preserve your servant Alexander'), presumably evoking the prayer of the donor shown below.

The iconography of the panels remains elusive. The main problem is the interpretation of the central figure in what has often

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**Fig. 1.** Mosaics in the main chapel of the Durres amphitheatre: a: panel on the west wall, showing a central figure flanked by angels and Hagia Eirene (left) and Hagia Sophia (right); b: mosaics on the south wall with the Hagios Stephanos panel on the left and a trapezoidal panel with a figure in imperial dress in the centre, flanked by angels and two donors in reduced size in-between.

been called the Virgin panel on the south wall. The figure in imperial dress (*chlamys*, *loros*, red shoes, crown) has been variously identified as different emperors [1–6], as Christ *Basileus* [7], as an unnamed empress [8,9] or more commonly as Maria Regina, the Queen of Heaven [10–12]. According to the different readings, the mosaic has been dated to either the sixth to seventh century or to as late as the tenth century. The imperial dress of the main figure [1] and stylistic and iconographic comparison favour a sixth- to seventh-century attribution [7]. In contrast, the mention of Alexander in the inscription, identified by some as the emperor Alexander (912–913 CE) [3,5,13], contextual evidence such as the frescoes underneath the mosaics and some archaeological finds outside the chapel suggest a post-ninth-century date [2].

Detailed technical observation of the mosaics *in situ* together with physico-chemical analyses of the glass tesserae can help to reconstruct the technical and historical processes involved in the making of the mosaic and in so doing shed light on the possible date of the decoration. The chronological and geographical resolution and chemical characterisation of glass production groups as well as the use of colorants and opacifiers during the time in question have been significantly refined over the last decade due to analytical techniques with high sensitivity and accuracy [14–16]. This paper thus presents major, minor and trace element data as well as the microstructures of crystalline inclusions of over one hundred glass mosaic tesserae from the main chapel at Durres alongside archaeological and art historical evidence to re-assess the

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