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Archaeology of Colour

Technical Art History Studies in Greek and Roman Painting and Polychromy

ΜΕΛΕΤΗΜΑΤΑ 87

ΕΘΝΙΚΟ ΙΔΡΥΜΑ ΕΡΕΥΝΩΝ / ΙΝΣΤΙΤΟΥΤΟ ΙΣΤΟΡΙΚΩΝ ΕΡΕΥΝΩΝ
NATIONAL HELLENIC RESEARCH FOUNDATION / INSTITUTE OF HISTORICAL RESEARCH

ATHENS 2023

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Introduction

A grain of colour matters…

Ancient polychromy speaks a language of "the visible" and "the invisible", through signs of pigments, brushstrokes and forms. Another reminder of our classical past, colour is an inherent component of artistic creation, inspiration and imagination. Random patches of colour preserved on the worn surfaces of architectural members, precious grains of pigments hidden within the folds of a statue's drapery, damaged paint layers on plastered walls and stone, invite us to recover the missing evidence, to reconstruct the fragmentary surface, to revive the history of their creation, their meaning and use. Non-visible traces of polychromy that have lost their original appearance and integrity, and have been lying sealed beneath thick incrustations for centuries, await their revelation and inspection by our conscious eyes.

New sophisticated technologies, as well as the development of interdisciplinary studies over these past decades, have stimulated the collection and evaluation of numerous scientific data from in-situ investigation of polychrome and painted documents, and have challenged our understanding of the complexity and function of ancient painting materials and techniques. On poorly-preserved artefacts, video microscopy, elemental analysis and multi-spectral imaging techniques, allow us to track and analyse remnants of coloured surfaces, otherwise invisible to the naked eye[1]. When it comes to dealing with ancient painting, elemental mapping and multi-spectral imaging have made it possible to reveal "lost" iconographies and retrieve significant details in figured compositions[2]. Details are crucial. A grain of colour matters. A mixture or a layering of paints may reveal an intention to produce variation of hues and tones, the selection of specific pigments for specific purposes may unfold unfamiliar "ways of seeing", and, furthermore, may prompt us to look again at the value and possible meaning with which colours were endowed, so enhancing our appreciation of ancient visual aesthetics.

What we are able to "see" today from the remains of ancient colour, thanks to the use of new technologies, is obviously far more accurate and comprehensive than what scholars saw in the previous centuries, when struggling to reconstruct the history of Greek painting through Pliny's 35th book on minerals… Nonetheless, seminal works of scholars who painstakingly tracked all the visible remains of colour on all kinds of painted surfaces, and dared to produce reconstructions by using only their eyes and their imagination, still stand as a very precious repository of experience and reflection[3]. The same applies to the meticulous studies of ancient

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1. On the various methods and applications of non-invasive investigation see for example Karydas *et al.* 2009; Piening 2010; Dyer, Verri and Cupitt 2013; Bourgeois 2014; Vandenabeele and Donais 2016; Delaney *et al.* 2017; Romano *et al.* 2017; Alfeld *et al.* 2018; Kogou *et al.* 2020; Yu Li *et al.* 2021.

2. Brecoulaki *et al.* 2019.

3. See for example Semper 1834; Raoul-Rochette 1836; Hittroff 1846; Lermann 1907; for recent overviews on ancient polychromy

textual sources by classical archaeologists and philologists, including erudite translations and commentaries on texts referring to colour, painting and polychrome artefacts, which offer a solid background for a more meaningful contextual interpretation of our scientific data[4].

Technical art history studies in ancient polychromy and painting can be defined today as a "new" discipline, forged through the merging of many different academic and scientific fields of expertise which complement and enrich one another[5]. Scientific results and their interpretation can only be achieved through a systematic collaboration and interaction between the members of each research team. Every single link in the chain – in-situ autopsy of the monuments, awareness of past and modern restoration interventions, non-invasive examination and analytical investigation of micro-samples in the laboratory, cross-checking of the results obtained by different techniques, evaluation of possible physico-chemical alterations of colour, art historical and historical interpretation of the results within the specific contexts of the monuments under study – is essential in order to reach trustworthy conclusions.

However, despite the robust, "objective" scientific data gained by means of sophisticated methods of investigation, modern reconstructions of ancient polychromy and painting still remain "subjective" and raise controversy, both with regard to the adopted methodology and to their presumed fidelity vis à vis the original appearance of the fragmentary archaeological evidence we possess[6]. In fact, our ways of capturing and reconstructing antiquity's "lost polychromy" are determined by the choices we make and the questions we ask: Which monuments do we decide to examine? Which approach do we choose and which scientific techniques do we apply? To what extent is our investigation complete by relying solely on non-invasive examination? Should sampling be excluded on ethical grounds or not? Should we use ancient materials and casts for modern reconstructions or try to simulate their aesthetic effect by means of digital technology and 3D virtual models? Are we trying to complete and recreate the "whole" or only parts of the evidence where colour is still fairly-well preserved? Do we opt for a single reconstruction of for multiple versions? Do we, in any way, consider the original viewing and sensing conditions of the artefacts, the ancient spectator's experience?

with bibliography see Abbe 2015; Kiilerich 2016; Stager 2022. On ancient painting reconstructions see Bruno 1977; Papadopoulos and Camp 2007; Lehmann and Löhr forthcoming.

4. Such as the seminal works discussing ancient texts on the materiality and function of polychromy and painting, by Blümner 1884 and 1887; Berger 1904; Reinach 1921; and more recently on painting and sculpture see Rouveret 1989; Primavesi 2003; Henke 2020.

5. Cardinali 2017.

6. Østergaard 2017.

To whom are our reconstructions primarily addressed; to scholars or the wider public? What matters most, to convince or to suggest?[7]

The more current scholarly research allows us to delve deeper and deeper into the investigation of ancient painting materials, to track a single grain of pigment and analyse its composition and provenance, to reach the non-visible, the more confident we feel that we are getting to know how ancient craftsmen and artists used colour, for which purposes, to what ends. It is true that we know a lot about a little, but at the same time a little about a lot...When evidence abounds, as with materials that we constantly identify in multiple Greek and Roman artefacts, such as Egyptian blue, it is possible to securely determine their uses and functions and to try to recover their original appearance even when they are poorly preserved[8]. But we still miss a lot of the original evidence and, despite the scientific instrumentation we are using, we do not always obtain the expected information. To mention an example, we are still unable to identify the composition of an organic purple colourant that ancient painters used to produce pinkish, purple and mauve hues, in pictorial layers from artefacts made of wood, marble, terracotta and figural paintings dating from the Late Bronze Age to the Hellenistic period[9].

Although non-invasive investigation with transportable instrumentation is certainly the most appropriate methodology to be adopted today for the examination of ancient polychromy and painting, sampling may be exceptionally considered necessary, in order to determine the stratigraphy of complex pictorial layers and to identify organic substances – such as egg, glue and gums – used as binding media[10]. Experimental archaeology and replication of ancient techniques can elucidate the complexity of pictorial processes and the different stages of the preparation of ancient pigments. However, if these experiments are not complemented with scientific analysis, the resulting conclusions may be misleading and controversial. The conviction, for instance, that Minoan and Mycenaean wall-paintings were true frescoes, largely supported by modern experiments with painting on wet lime-based plaster, was called into question by recent scientific investigation of numerous paint samples from the Late Bronze Age, which confirmed that secco and tempera techniques were very common in the prehistoric Aegean[11].

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7. On different approaches to reconstruction see for example Brinkmann 2010; Verri, Opper, and Lazzarini 2014; Østergaard and Nielsen 2014; Brinkmann and Koch-Brinkmann 2018; Descamps Lequime 2019; Brinkmann and Koch-Brinkmann 2020.

8. Brecoulaki *et al.* in this volume.

9. See Bourgeois *et al.* in this volume and Verri *et al.* forthcoming.

10. Andreotti *et al.* 2014.

11. Brysbaert 2008; Brecoulaki *et al.* 2012; Linn 2018; Casoli 2021.