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Color and Light: A Hellenistic Terracotta Figurine of a Maenad from Myrina

Brigitte Bourgeois [1,*], Giovanni Verri [2,*] and Violaine Jeammet [3]

[1] Centre de Recherche et de Restauration des Musées de France (C2RMF), 14 quai François Mitterrand, 75001 Paris, France
[2] Art Institute of Chicago, 111 S Michigan Ave, Chicago, IL 60603, USA
[3] Département des Antiquités Grecques, Étrusques et Romaines, Musée du Louvre, CEDEX 01, 75058 Paris, France
* Correspondence: brigitte.bourgeois@culture.gouv.fr (B.B.); gverri@artic.edu (G.V.)

Abstract: During the Hellenistic period and under the growing influence of the art of painting, the polychromy of Greek terracotta figurines focused not only on an elaborate rendering of color, but also on the interplay of light and shadow. Some of the best-preserved examples clearly show the subtlety of such pictorial effects. Among them is a statuette of a standing Maenad, held in the collections of the National Archaeological Museum in Athens (inv. 5000). Dating back to 150–100 BCE, it is a high-quality testament to the sculptural, as well as pictorial, coroplastic production in the workshops of Myrina (Eolide, Turkey). Combining multi-scale examination, multi-spectral imaging and non-invasive spectroscopic investigations (XRF, FTIR, FORS), a scientific study of the artefact was carried out within the framework of the Pilina project, a collaborative research program between the Louvre, the C2RMF, the National Archaeological Museum and the French School in Athens. This article presents the main results of the study by discussing the color scheme, identification of some pigments and colorants (clays of the kaolinite group, ochres, cinnabar, Egyptian blue, an anthraquinone of plant origin, likely madder, gold leaf), and painting techniques aiming at achieving chiaroscuro effects.

Keywords: Greece; polychromy; coroplastic studies; imaging; XRF; FTIR; FORS; pigments; colorant; gilding

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1. Introduction

Among the most remarkable representations of women in ancient Greek art are the Maenads (or Bacchants). These worshippers of the god Dionysos are known for their wild conduct. In some rituals they can become possessed by divine ecstasy, and in their frenzy, they can tear animals and humans apart [1]. Although quite frequently represented in vase-painting of the Archaic and Classical period, figures of Maenads made their appearance in coroplastic production in ancient Greece (i.e., production of terracotta figurines) only during the course of the 4th c BCE. The growing importance of Dionysiac cults and of theater certainly contributed to the spreading popularity of the theme. Euripides' play *The Bacchae* premiered in Athens in 405 and famous sculptors of the 4th century, such as Praxiteles and Scopas, included the type among their creations. If little is known of Praxiteles' Maenads, attested in Rome by the time of Pliny the Elder [2], the fame of Scopas' *Dancing Maenad*, created around 350 BCE, is believed to have come to us as a marble replica in Dresden (inv. Albertinum 133) [3,4]. It is likely that these masterpieces of large-scale sculpture had quite an impact on the field of small-scale terracotta sculpture.

Among the first specimens produced in clay is a figurine of a standing Maenad holding a *tympanon*, now in the Louvre museum (inv. CA 3462) (See Supplementary Material Figure S1a). It was part of the Pozzi collection—hence its denomination as "Lady Pozzi" [5]—before it was donated to the Louvre by Marcel Durand in 1954. An attribution to a Tanagra workshop and a date around 330–300 BCE have been suggested for this

work, based on technical and stylistic criteria as well as clay composition, characterized via ion-beam analysis carried out at the Aglae facilities at C2RMF [6]. The polychromy of the dress, which is fairly well preserved, is composed of an austere grey tunic contrasted with a bright pink shawl. From an Attic workshop of roughly the same period (late 4th–early 3rd c. BCE), as suggested stylistically and from the clay analysis, comes another figurine of a standing Maenad wearing a fawn skin (or *nebris* in ancient Greek); the so-called "Lady Baillehache" is named after its previous owner, who bequeathed it to the Louvre museum in 1922 (Louvre, inv. CA 2552) [5]. The statuette is quite remarkable considering its fairly large size (height 27.5 cm), sculptural pose and refined modeling (see Supplementary Material Figure S1b).

The quality of the piece may explain why, among other parameters, the "Lady Baillehache" was repainted twice in antiquity. Its tunic, originally blue, was repainted in a light grey, and the shawl worn around the shoulders, originally red, was repainted first in pale pink and then a second time in vivid madder pink [7,8]. Scientific imaging, microscopic examination and multi-technique analyses (including SEM-EDS on a cross section) provide sound data on the intriguing history of its polychromy. In the third and last phase, the chromatic scheme of the dress was thus identical to the one of the "Lady Pozzi". It remains unclear whether this choice was a matter of fashion change or a deliberate reference to an original model (painting or sculpture) perhaps quite famous at the time.

A different coloristic approach was chosen during the height of the Hellenistic period for the standing Maenad which is the subject of this article.

2. Materials and Methods

2.1. Presentation of the Maenad from Myrina (Athens, National Archaeological Museum, inv. 5000)

Previously part of the Misthos collection in Smyrna, the statuette was donated to the National Archaeological Museum of Athens by the collector in 1889 and is recorded as having come from Myrina (Misthos catalogue no. 432)—although no precise find spot is mentioned [9,10].

In Myrina, once a rich city on the coast of Eolia (Turkey), craftsmen developed high-quality coroplastic production under a strong influence of Pergamene art, (e.g., the finds from the excavations carried out by E. Pottier and S. Reinach in the necropolis of the town in the early 1880s [11,12]). Tomb 98 for instance, also known as Tomb B and dating back to 150–100 BCE, yielded 15 figurines; some of these are of an outstanding quality such as the so-called Victory *phainomeride* ("with a naked thigh") held in the Louvre (inv. Myr 163) [13,14], which is very close stylistically to the Maenad in Athens. In Tomb B, there were also found some metallic objects among which a coin of the city of Myrina of the so-called "autonomous" type was found. Based on this archaeological context, researches carried out first by Simone Besques and later on by Dominique Kassab helped establish the date of the figurines; their conclusions also relied on technical criteria, based on archaeometric studies carried out in the 1980s, as well as on close comparison with pieces of large-scale sculpture (particularly from the Pergamon school) fairly well-dated. A tentative chronology of successive workshops active in Myrina between the years 200 and 100 BCE has thus been suggested by these scholars. It is hoped that in the near future, further scientific analyses will provide additional criteria to confirm this chronology [15,16].

Hellenistic female figurines from Myrina have a distinctive character that includes their sensuous full-shaped bodies being seen under elaborate garments, small heads and long necks with so-called "fat folds", and quite often emphatic gestures. They also convey a specific chromatic flavor with a predilection for pinks, whites and gilding.

Dated to the years 150–100 BCE via comparison with the figurines from Tomb 98 (as unfortunately no archaeological record exists for the figurines that were part of the Misthos' collection), the Maenad in Athens museum (Figure 1) follows the same trend. It is a large statuette (height 35.2 cm, max. width 15.5, max. depth 9.5 cm) made of a red-orange clay with a roughly triangular vent hole in the back. The figurine was molded in several

pieces whilst most of its accessory ornaments (bay fruit, earrings, locks of hair etc.) were hand-made and luted to the main body before firing. The figure stands with her left leg bent forward, the weight of the body resting on the right leg. The head is turned to the right, and the privileged viewpoint to fully appreciate the powerful modeling is from the $\frac{3}{4}$ right. Her attitude is dynamic, with the left arm uplifted, her right arm down, in a pose similar to a number of figurines of Erotes and Nikes from Myrina. To judge from these iconographic features, she might have originally held *crotales* or cymbals, ready to play music and dance.

Figure 1. Figurine of Maenad (front and back), Myrina, c. 150–100 BCE, painted and gilded terracotta, ht. 35.2 cm, National Archaeological Museum, Athens, inv. 5000. Photo Efa/E. Miari © Hellenic Ministry of Culture and Sports/Hellenic Organization of Cultural Resources Development.

Her identification as a Maenad is quite clear at first sight as she is wearing an elaborate headband with a crown of ivy leaves and an animal skin across the bust. The legs of the animal are partly missing but the head survives so that it is certain that the pelt represented a fawn-type animal and corresponded to a *nebris*. Since Archaic vase-painting, the *nebris* has been a characteristic feature of the figuration of Maenads. In the present case, there is, however, an unusual element: on the woman's forehead, a rectangular area delineated by slightly extruding lines in the clay is evocative of the representation of a wide fillet. Some traces of yellow paint over a white preparation layer survive in this area, perhaps as an imitation of gold or ground for gilding (Figure 2).

Figure 2. Head of the Maenad with traces of a wide fillet (*mitra*) on the forehead. Photo Efa/E. Miari © Hellenic Ministry of Culture and Sports/Hellenic Organization of Cultural Resources Development.

Such a motif, corresponding to the *mitra* usually worn by the god Dionysos, is also a recurrent element in marble sculpture. Among known examples are the "South Slope Head" from Athens, an original work of the 4th century BCE [17], and its later replicas that have been interpreted either as Ariadne or Dionysos. One of these replicas of the Roman period, held in the collections of the Metropolitan Museum of Art, New York, still holds remnants of a rich polychromy including gilding, as clearly evidenced by Mark Abbe [18]. In the case of the clay statuette in Athens, the presence of this attribute conveys a special meaning to the figure and seems to point out to a representation of Ariadne rather than of a simple Maenad. However as Ariadne does not usually wear a *nebris*, the identity of the figure remains somewhat ambiguous or polysemic, quite in line with the taste of Hellenistic period.

Condition of the Figurine

The condition of the statuette is good in spite of quite a number of breaks that have been mended in the past with shellac, as evidenced through visual examination and ultra-violet-induced luminescence imaging, which showed a strong orange luminescence. In some areas, particularly on the face, the preservation of surface layers has suffered from a past mechanical cleaning treatment. More recently, some infilling and inpainting work has been carried out. The polychrome surface has been largely consolidated with a modern resin (Paraloid B-72®), as known through oral testimony (Conservation Laboratory, Vases and Small Objects, Athens National Museum) and analytical evidence (see *infra*); as a result, this coating can change the aspect and brilliance of the ancient paint work in some areas.

2.2. Scientific Study of the Polychromy: Methodology

Scientific study of the Maenad has been carried out within the framework of the *Pilina* research project, dedicated to the study of Greek coroplastic polychromy [19].

An iterative and incremental approach was used for this study, starting from imaging techniques, to inform where to undertake further non-invasive investigations in situ as no micro-sampling could take place. The main aim of the study was thus to thoroughly document the color scheme and focus on the paint application rather than on an in-depth

characterization of pigments and colorants used by the ancient artist. A careful examination of the entire surface with a digital microscope revealed many traces of previously unnoticed polychromy as well as significant details of the painting techniques. It also recorded the location of micro-areas that were analyzed with the following techniques:

2.2.1. Imaging

A Nikon D7000 camera, equipped with Nikon SB-80DX xenon flashtubes, was used for this study to capture visible reflected, infrared- and ultraviolet-reflected, ultraviolet-induced luminescence (UIL) and visible-induced luminescence (VIL) images. For the filters used, see Verri 2014.

2.2.2. Digital Microscopy

A digital microscope (Hirox model VCR 800) was used for the examination of the polychrome surface of the figurine. This compact, portable apparatus was equipped with a zoom lens (magnification from 20 to 160×), a LED axial and co-axial lighting and a 2.1 Mega pixel video CCD camera. It allowed for the capture of 2D images in more or less raking light.

2.2.3. X-ray Fluorescence Spectroscopy (XRF)

An XG-Lab Elio spectrometer with a Rh tube and silicon drift detector was used with the following settings: 50 kV, 40 μA and 200 s integration time.

2.2.4. Fourier-Transform Infrared Spectroscopy (FTIR)

A Bruker Alpha spectrometer with a reflectance interface was used with a 4 cm^{-1} resolution in the 400–7400 cm^{-1} range.

2.2.5. Fibre Optics Reflectance and Fluorescence Spectroscopy

Reflectance spectra in the 400–1000 nm range were acquired using an Ocean Optics Jaz spectrometer and a HL2000 radiation source (100 scans, 0.1 ms integration time). Fluorescence spectra were acquired with the same spectrometer and a 365 nm LED as the excitation source.

3. Results

3.1. Preparation Layer

The back of the molded figurine was left unpainted, which indicates that it was not intended to be seen (Figure 1). After firing, a white preparation layer, composed of clays of the kaolinite group and calcite, was applied on the clay support, as identified via FTIR spectroscopy (Figures 3 and 4). For the clays of the kaolinite group, FTIR vibration modes observed in the spectrum are intense Si-O antisymmetric modes in the 1100–800 cm^{-1} region in *restrahlen*, with OH stretching at 3626 and 3700 cm^{-1} and the $\nu + \delta$(OH) combination band at c. 4530 cm^{-1}. FTIR vibrational modes observed in the spectrum for CO_3^{2-} are ν_3 antisymmetric stretching at c. 1410 cm^{-1} in *resthrahlen*, ν_2 out-of-plane bending at c. 875 cm^{-1} and a very small ν_4 in-plane bending at c. 710 cm^{-1}. In addition, $\nu_1 + \nu_4$ at 1795 cm^{-1} and $\nu_1 + \nu_3$ at 2512 and 2594 cm^{-1} are also visible [20]. It should be noted that all FTIR spectra showed peaks likely related to Paraloid B-72®, the modern synthetic consolidant used on the figurines as orally confirmed by the Museum Conservation Laboratory (e.g., CH and CO vibrational modes around 3000–2800 cm^{-1} and 1750 cm^{-1}, respectively).

Figure 3. The skin is painted in a pale pink hue on the right arm. The brilliance of the surface is due to a modern consolidant. Photo Efa/E. Miari © Hellenic Ministry of Culture and Sports/Hellenic Organization of Cultural Resources Development.

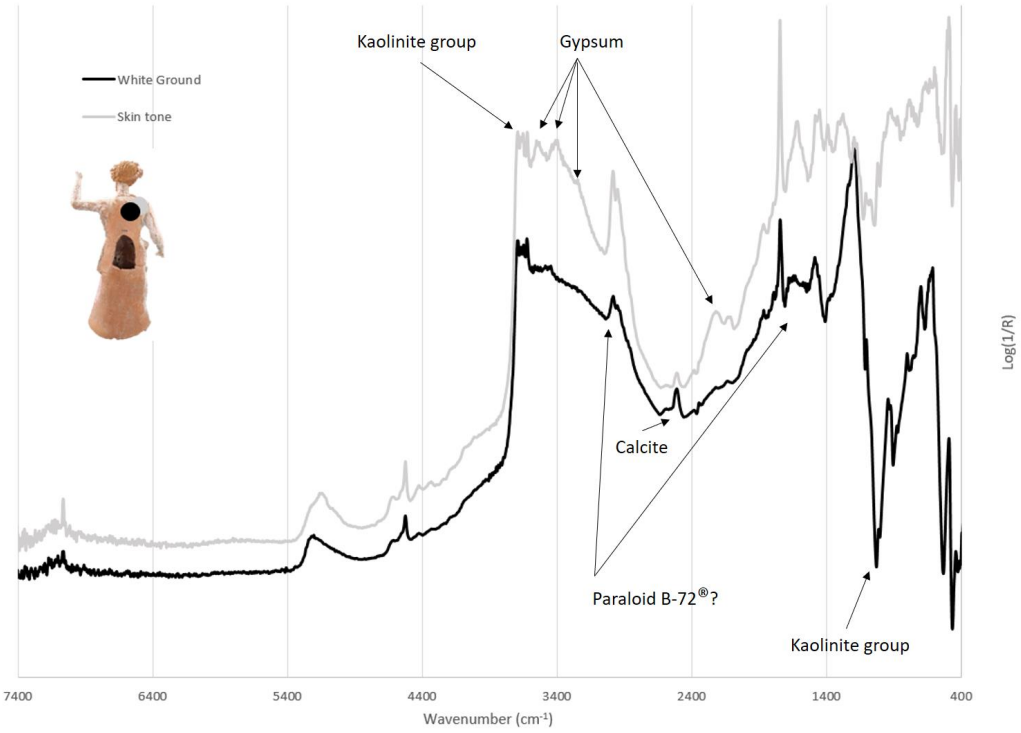

Figure 4. FTIR spectra of the white ground and skin tone.

3.2. Flesh Tones and Facial Features

The flesh tone was then applied atop the white preparation layer. The original flesh tones are mostly lost, with the exception of some protected areas where a pale-pink hue can be seen. For instance, the area of the neck along the border of the dress, both at the front and at the back, and the arms still preserve remnants of a pale-pink skin tone (Figure 3). The skin tone is composed of clays of the kaolinite group (antisymmetric modes and OH stretchings as discussed above for the kaolinite group), calcite (combination bands as discussed above for calcite) and gypsum. This last compound might be related to a secondary deposition due to burial, rather than to the painter's voluntary choice. Several objects coming from Myrina have been sampled and analyzed at the Louvre as part of the *Pilina* project. Superficial burial incrustations containing gypsum were found

in some instances. In addition, redeposited gypsum crystals were found within the paint layers, but never as an original component (forthcoming publication of the *Pilina* project). FTIR vibrational modes observed in the spectrum for SO_4^{2-} are a small antisymmetric ν_3 stretching at c. 1128 cm^{-1} in *restrahlen*, a $\nu_1 + \nu_3$ at c. 2215 and 2135 cm^{-1} and a $2\nu_3$ and $\nu_2 + n_L(H_2O)$ at c. 2230 cm^{-1} [21]. The assignments of the OH stretchings, also visible in the spectrum at c. 3257, 3415 and 3551 cm^{-1}, are discussed in Rosi 2010, 959 [21]. Although very diluted, the colouring matter is possibly assigned to the presence of hematite (Figure 4). The presence of hematite is tentatively inferred here from an inflection point at c. 575 nm in the apparent absorption spectrum. The apparent absorption maximum at c. 875 nm is extremely small [22,23].

Traces of Egyptian blue are found in the proper right eye of the figure, as observed in the VIL image in Figure 5. Identification of Egyptian blue here is inferred only from the high luminescence properties in the 800–1000 nm range [24]. A small amount of pink, too small and recessed for the available analytical instrumentation to access, was also recorded on the upper lid of the same eye. Microscopic traces of an intense red also survive on the lips (Figure 6); this red paint is mostly composed of mercuric sulfide, likely cinnabar, the identification of which is inferred from the presence of Hg in the XRF spectrum (see Supplementary Material: Spectrum: Lips).

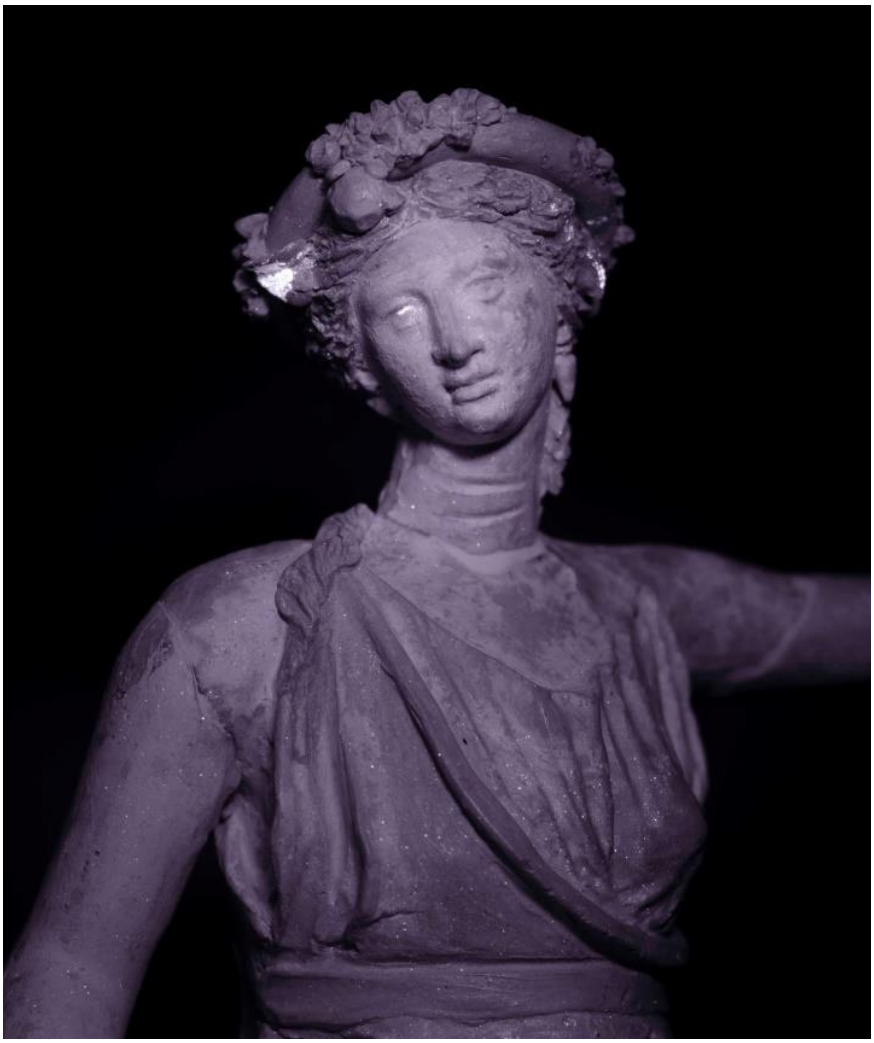

Figure 5. VIL image showing traces of Egyptian blue in the proper right eye and on the ivy leaves. © G. Verri.

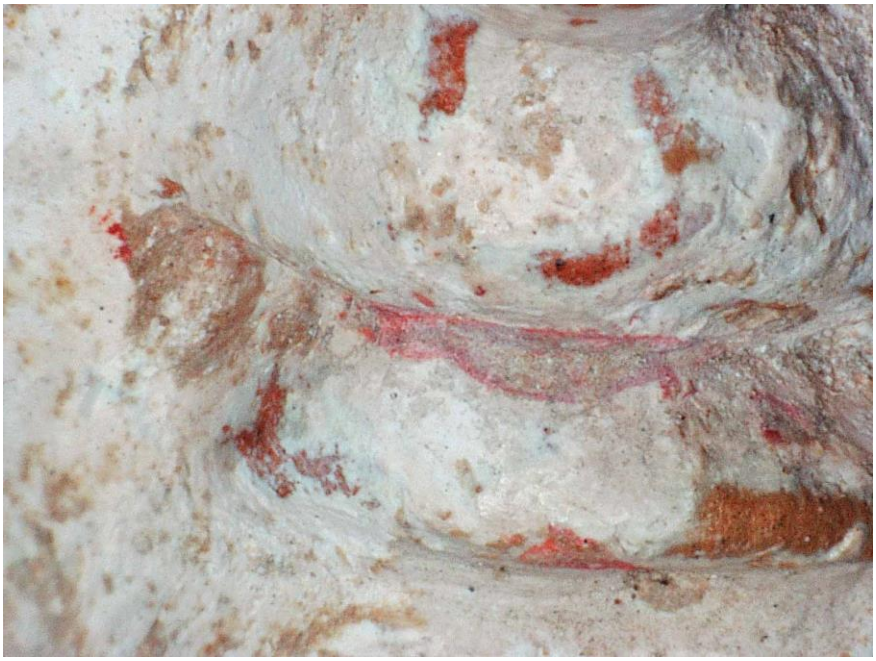

Figure 6. On the lips, microphotograph (×40) of an intense red paint containing probably cinnabar (mercury detected in XRF measurement). © C2RMF/B. Bourgeois.

3.3. Hair and Headdress

The painter contrasted the delicacy of the light pink flesh tone with vivid colors for the hair and headdress. The hair with long locks falling down the shoulders is blond (Figure 7), likely painted with yellow ochre (see the discussion of the *nebris* below). On some fruits, traces of an intense red paint survive (See Supplementary Material Figure S2). It might correspond to cinnabar, based on its similarity with the red paint used for the lips. The ivy leaves were painted with Egyptian blue, the presence of which was inferred from the strong infrared emission in the VIL image (Figure 5).

Figure 7. Microphotograph (×80) of the lock of blond hair on the right shoulder, painted with yellow ochre atop the white preparation layer. © C2RMF/B. Bourgeois.

3.4. Dress

The Maenad appears to be wearing a *peplos*, possibly as in the case of the Victory *Phainomeride* at the Louvre museum (inv. Myr 163) [25], synced at the waist by the *nebris*.

On the dress too, intense colors play with the powerful modeling of the figure. The color scheme of the clothing becomes more apparent in the combined UIL and VIL images (Figures 8 and 9).

Figure 8. Visible (**a**), UIL (**b**) and VIL (**c**) images. © G. Verri.

Figure 9. Combined UIL and VIL images. © G. Verri.

In the UIL image, a strong orange luminescence, characteristic of an anthraquinone of plant origin, can be seen in the large rectangular pink field on the middle and lower parts of the dress (Figures 8b and 10).

Figure 10. Detail of the dress in visible light and UIL. © G. Verri.

The use of an anthraquinone, likely from the *Rubia* L. *genus*, was also inferred from the presence of two inflection points, one at c. 490 nm and one at 524 nm [26], absorption maxima at c. 510 and 540 nm [27] and an emission maximum at c. 600 nm [28] (Figures 11 and 12).

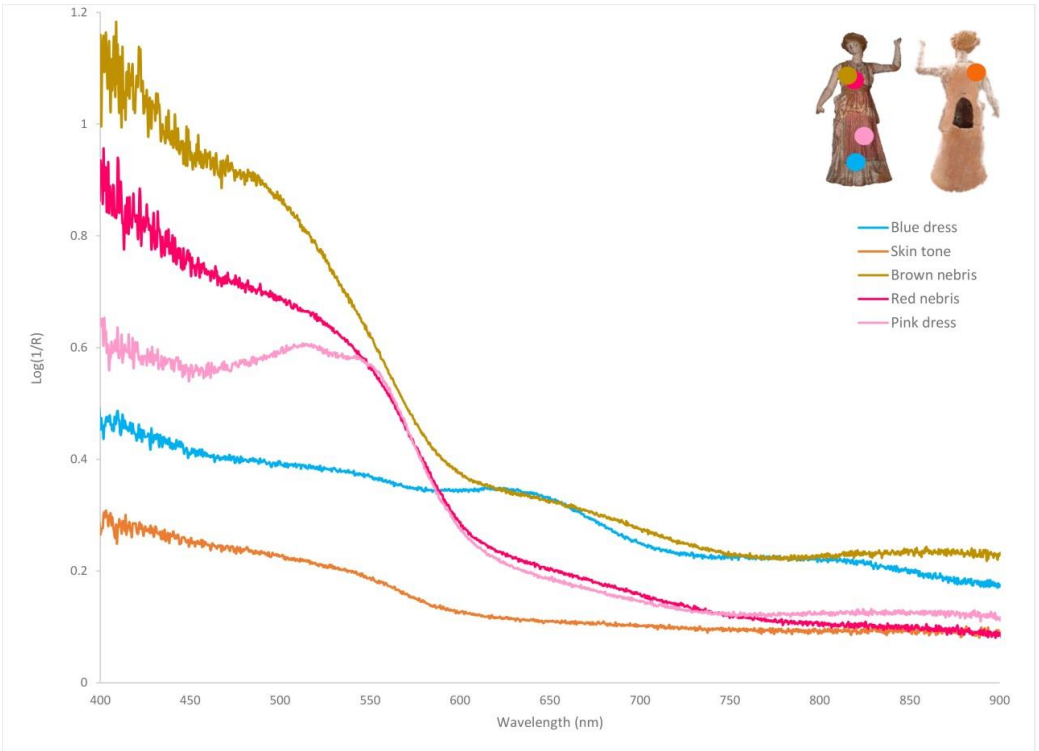

Figure 11. FORS spectra.

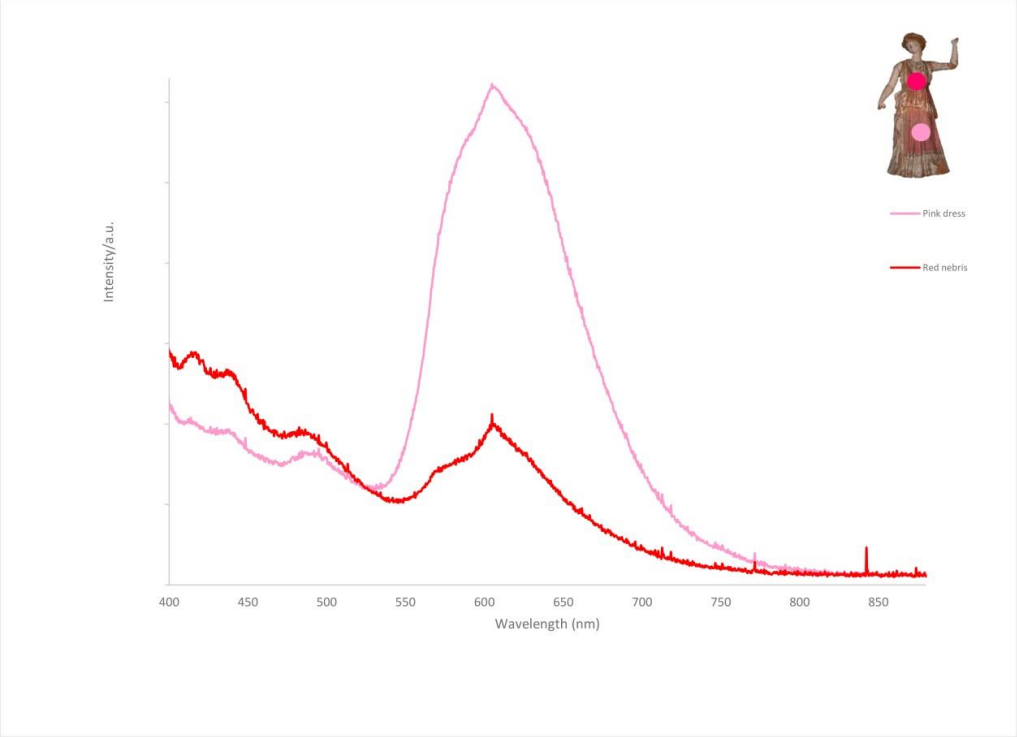

Figure 12. Luminescence emission spectra.

The apparent structured emission at c. 600 is due to the detector and does not correspond to a real emission. The use of madder in the Hellenistic period and beyond has been extensively discussed in the literature [29–32]. VIL imaging reveals the presence of some Egyptian blue within the madder layer. Absorption maxima corresponding to hematite were also observed where madder is present. The signal of hematite might be related to the presence, under the madder layer, of an orange-salmon underlayer, as already observed on samples analyzed at the Louvre on Hellenistic female statuettes from Myrina (forthcoming publication of the Pilina project).

In the same UIL images (Figures 9 and 10), the presence of two pink bands along the neckline, the overfold, the opening of the proper right side of the dress and above the feet are observed. These two bands show two levels of intensity (one stronger than the other), therefore likely corresponding to a light and a darker pink band (Figure 13). An additional band, containing Egyptian blue can be seen framing the rectangular pink fields (Figure 9). The presence of Egyptian blue in the dress was inferred from a strong luminescence in the 800–1000 nm range [24] and apparent absorption maxima at c. 535, 635 and 790 nm [33].

Figure 13. On the flapping fold of the dress, double band painted with dark and light pink madder in visible light (**left**) and UIL (**right**). Photo Efa/E. Miari © Hellenic Ministry of Culture and Sports/Hellenic Organization of Cultural Resources Development (macrophotograph). © G. Verri (UIL).

3.5. Nebris

The areas of the *nebris* representing the fur of the fawn on the outer side of the pelt are mostly rendered with tones of brown over yellow (Figure 14). Whilst it was not possible to fully distinguish the two, they appear to contain a yellow ochre, as well as umbers (Fe_2O_3/MnO_2) (Figure 11). The presence of a yellow iron oxide is inferred here from the high amounts of iron in the XRF spectrum (See Supplementary Material: Spectrum: Yellow *Nebris*), an inflection point at c. 545 nm and an apparent absorption maximum at c. 650 nm [22] in the apparent absorption spectrum. The presence of umbers is suggested by the higher amounts of manganese than those recorded on the white preparation in the XRF spectrum (See Supplementary Material: Spectrum: White Preparation).

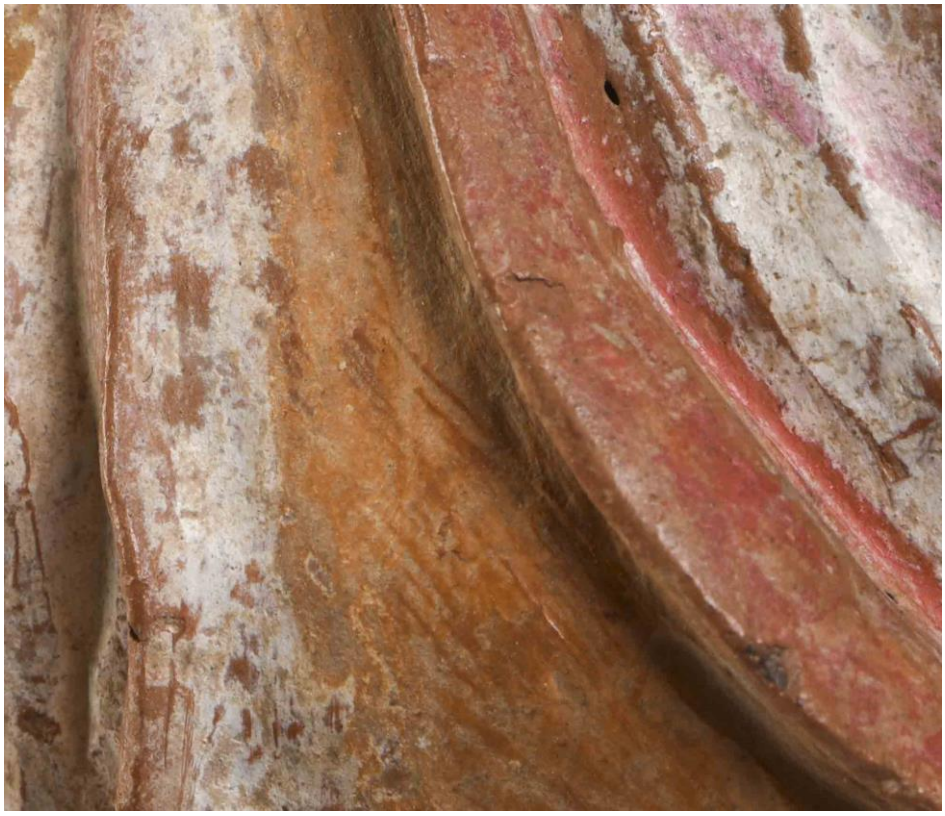

Figure 14. The fawn skin (*nebris*) on the bust. Detail of the outer side of the pelt, painted in white and brown atop yellow, and of the red overfold. Photo Efa/E. Miari © Hellenic Ministry of Culture and Sports/Hellenic Organization of Cultural Resources Development.

The inner part of the pelt is red, likely representing the bloodied interior of a recently skinned animal. This part is painted with cinnabar, probably below a very thin layer of madder (Figure 15). The presence of cinnabar in the *nebris* is inferred from the presence of mercury in the XRF spectrum (See Supplementary Material: Spectrum: Red *Nebris*) and an inflection point at c. 590 nm in the apparent absorption spectrum [22]. The presence of madder on cinnabar is inferred from the presence of a relatively intense orange luminescence emission, cantered at c. 600 nm, as discussed above for the dress of the figure (Figures 11 and 12). If madder was mixed with cinnabar, instead of being superimposed, the emission would likely be quenched; however, we cannot completely exclude this hypothesis. The effect of an organic colorant such as madder atop cinnabar is likely to create a glazing with an intense luminous quality, reminiscent of fresh, liquid blood. A similar use of the two pigments was observed in 15th century paintings to create the effect of red gems [34].

Figure 15. UIL image and microphotograph (×60) of the vivid red paint on the overfold: madder atop (or mixed with) cinnabar © G. Verri (UIL) and C2RMF/B. Bourgeois(microphotograph).

3.6. Gilded Highlights

Alongside the vibrant colors described above, the polychromy of the figurine included the use of precious metal. Tiny remnants of gold leaf were detected under the microscope in various locations: on the central bay of the headband, on both earrings and on the belt surrounding the *nebris* (Figures 16 and 17).

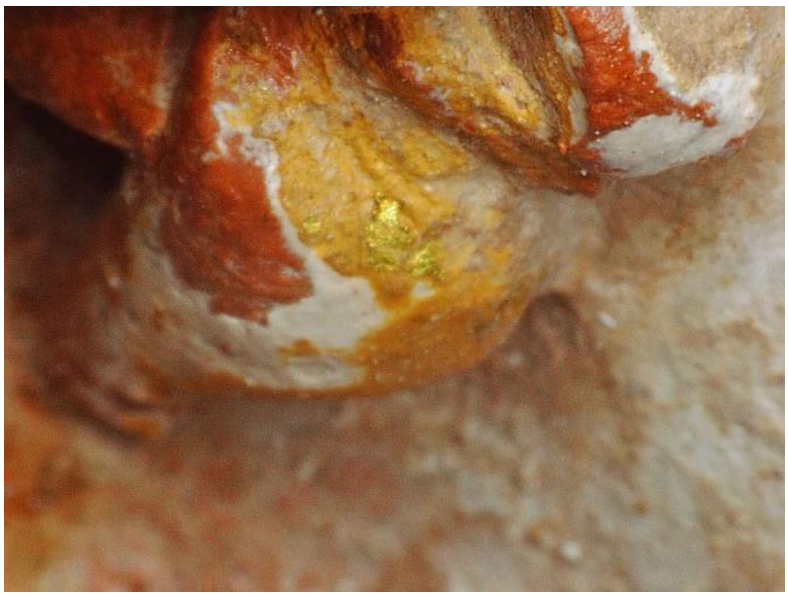

Figure 16. The earrings (here, the right one) were gilded. Microphotograph (×40) of traces of gold leaf atop a yellow ground on the white preparation layer. © C2RMF/B. Bourgeois.

Figure 17. The belt was also gilded on a yellow ground, here directly on the clay support. © C2RMF/B. Bourgeois (microphotograph (×100)).

Au and Fe were found in the XRF spectrum (not reported here). In all of these areas, the gilding technique seems identical and shows the metal leaf applied on a thin yellow ground; underneath, the white preparation layer is present (earrings) or not (bay, belt). The presence of iron suggests the use of yellow ochre in the ground, in accordance with the standard "bolus technique" used on marble and clay sculpture in ancient Greece [35,36]. Previous research on gilded terracotta figurines showed that during the Classical and Hellenistic periods, craftsmen used an iron-based yellow ground, whereas in later Roman periods, a red-coloured ground (containing hematite) was preferred. Such is the case for the numerous gilded terracotta statuettes produced in Smyrna, which copied famous bronze sculptures in miniature [37,38].

On the tip of the left breast, a yellow triangle can be seen (Figure 18). Whilst no traces of gold leaf were detected either under the microscope or in XRF, the presence of an iron-based yellow layer hints at a similar stratigraphy. It remains speculative to ascertain whether this area was gilded as well. If so, the Maenad would be a good parallel to a seated Ariadne or Maenad from Myrina now in the Louvre (inv. Myr 184); this Hellenistic figurine wears a chiton decorated with gilded triangles on the breasts [13].

Figure 18. *Cont.*

Figure 18. Yellow triangle on the left breast of the Maenad. Photo Efa/E. Miari © Hellenic Ministry of Culture and Sports/Hellenic Organization of Cultural Resources Development (detail, **left**), and C2RMF/B. Bourgeois (microphotograph (×60), **right**).

4. Discussion: Modeling with Color and Light

The sculptural quality of the figure speaks for itself with the firm modeling of the body and the elaborate workmanship of the rich drapery. What is perhaps less obvious at first sight is the pictorial art of modeling with color, which reinforces the illusion of a figure that is moving in space.

As already commented by Agnès Rouveret and Hariclia Brecoulaki, the criteria of the art of painting as defined by artists and first "art historians" of the early Hellenistic period involved the science of mixing pigments and of superimposing paint layers as well as the rendering of light and shadow in subtle transition [39,40]. In sculptural polychromy, signs of such pictorial research are often lost in the case of marble sculpture. Fortunately, they are better preserved on clay support. In this respect, the Maenad, or Ariadne, from Myrina holds an exceptional interest. Even if damaged to some extent (particularly on the face, which has suffered from a past cleaning treatment), its condition is sufficiently good to allow us to grasp some of the original refinement of its painting work.

The anonymous painter who performed the *kosmèsis* (in Greek "embellishment") of the figurine not only chose an array of bright pigments and colorants such as cinnabar, Egyptian blue and pink madder, but also knew how to create subtle chromatic nuances.

Pink madder for instance was applied in different ways on the dress. In the rectangular areas below the waist, the strong pink coloration comes from applying the organic colorant, in some places, directly onto the clay body and, in most others, over the orange-salmon underlayer already discussed—a kind of "clay color" of a lighter hue (Figure 19). In the Louvre collection, contemporary Myrina figurines, painted in the same fashion, have been sampled. SEM-EDS analysis confirmed that iron-based pigments form part of the composition of this underlayer (forthcoming publication of the Pilina project).

Figure 19. Pink madder on dress: directly on clay (upper right) or atop an orange-salmon underlayer (lower right). © C2RMF/B. Bourgeois (microphotographs (×60)).

In contrast, a different painting technique aiming at highlighting the luminosity of pink madder was used on the flapping fold located at the waist level, on the proper right side of the Maenad (Figure 13). There, the pink band that underlines the opening of the *peplos* along the leg is applied over a white layer, whiter than the white preparation itself (Figure 20). No traces of lead were found in this "super white". Thus, painters made the distinction between various hues of white—hues that may have been available to them or prepared on purpose. In addition, as already mentioned, madder was diluted here in various concentrations in order to achieve tonal variations and create a subtle play of dark and light pink.

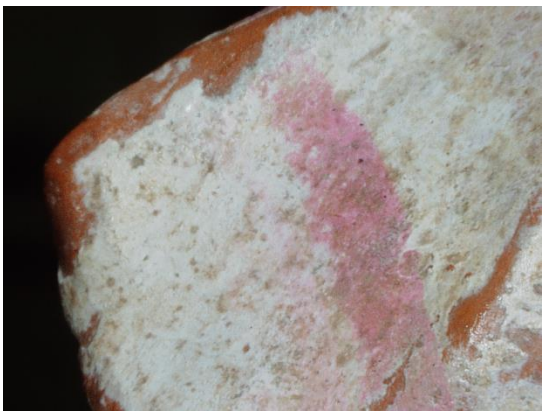

Figure 20. On the flapping fold of the *peplos*, double band of dark and light pink atop a very white layer that has been applied on the white preparation layer. © C2RMF/B. Bourgeois (microphotograph (×40)).

Animating the figure and reinforcing its three-dimensionality with the interplay of color and light was certainly part of the painter's intention (See Supplementary Material Figure S3). There are several signs of it, even if we can now obtain only a glimpse of the original overall effect.

On the dress, for instance, the blue band that frames the pink rectangle under the waist is painted mostly with Egyptian blue; however, in some areas, the painter has added small touches of yellow in order to lighten up the color in the folds (Figure 21).

Figure 21. On the overfold of the *peplos*, chromatic nuances (yellow and blue) in the band framing the pink field. © G. Verri (detail, **left**) and C2RMF/B. Bourgeois (microphotograph (×100), **right**).

By far the most explicit traces of *chiaroscuro*, however, are found on the *nebris*. A first feature is the juxtaposition of white and yellow areas on the outer side of the pelt, as a way of suggesting a color modulation under a ray of light. It is clearly visible on the bust of the Maenad: here, the furry animal skin is painted with brush strokes of brown paint atop an iron-based yellow layer, except for a white band that has been reserved in the preparation layer and runs vertically along the plastic right edge of the *nebris* (Figure 14). Microscopic examination confirms that we are dealing with the original surface and not with a by-product of modern cleaning that would have scraped away an ancient paint layer and exposed the preparation. A similar vertical partition in two colors (white and yellow) of the animal anatomy is observed on the legs and on the neck of the fawn skin (Figure 22). The repetition of the motif on these various parts and the straight delimitation of the white and yellow areas reveal an intentional effect that aims at suggesting a directional light coming from the proper right side of the figure.

Figure 22. Microphotograph (×30) of the *nebris*. The neck of the fawn pelt is vertically divided in white and yellow in order to suggest a directional light coming from the proper right side of the Maenad. © C2RMF/B. Bourgeois.

A second element of *chiaroscuro* has been located during the microscopic observation on the lower part of the overfold of the pelt, right above the belt. In this area, an extremely thin brown wash (or glaze?) seems to have been applied over the intense red paint of the pelt as a way to suggest a shadow (Figure 23).

Figure 23. Microphotograph (×40) of brown wash (or glaze?) on the red overfold of the pelt. © C2RMF/B. Bourgeois.

5. Conclusions

Compared to the simpler chromatic compositions of earlier Attic and Boeotian figurines of Maenads, dating back to the late 4th century BCE, such as the "Lady Baillehache" and the "Lady Pozzi" in the Louvre Museum, the Maenad produced in a Myrina workshop in the years 150–100 BCE denotes an evolution towards a more sophisticated ornamentation of the clothing and a three-dimensional modeling of the figure with shading effects. Thanks to advances in combined UIL and VIL imaging [41] and a careful microscopic examination of the surface, details of the chromatic scheme have been revealed. The refined interplay of bright pigments and colorants (red, yellow and brown ochre, cinnabar, Egyptian blue, pink madder), gilding and rendering of shadow must have created a striking effect of *poikilia* (or mesmerizing variety) combined with the expressive modeling of the figure. Such a splendor is befitting of a representation of Ariadne; however, the presence of the bloodied animal skin worn across the bust is more in keeping with an image of a Maenad.

Technical details have been exceptionally well-preserved on this object. Undoubtedly, the most striking one is the use of an organic colorant such as madder atop (or mixed with) cinnabar in order to create an intense luminous effect, reminiscent of liquid blood, on the inner side of the animal skin.

It is also worth noting that both the sculptor who created the prototype of the figure and the painter who carried out the final stages of polychrome embellishment worked, if not hand in hand, at least in keeping with an identical privileged viewpoint of the figure ($\frac{3}{4}$ front right). Whoever the anonymous painter was, skill and invention were at work—or, using Empedocles' words, there was a painter, who did the coloring of the votive offering, "well taught by wisdom in his art" [42].

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/heritage6030160/s1, Figure S1: (a). Figurine of Maenad holding a tympanon, so-called «Lady Pozzi», Tanagra, c. 330–300 BCE, painted terracotta, ht. 21.7 cm, Louvre museum, inv. CA 3462. © C2RMF/A. Chauvet. (b). Figurine of Maenad with a *nebris*, so-called «Lady Baillehache», Attica, c. 330–300 BCE, painted and gilded terracotta, ht. 27.5 cm, Louvre museum, inv.

CA 2552. © C2RMF/A. Chauvet. Figure S2: Fruit on the headdress. Microphotograph (×60) of an intense red paint, likely cinnabar, and yellow ground for gilding. © C2RMF/B. Bourgeois.

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Data Availability Statement: The datasets used and/or analyzed during the current study are available from the corresponding authors on reasonable request.

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