

REFLECTIONS ON THE PAINTING TECHNIQUE ON PHILIP'S TOMB AT VERGINA.
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PROLOGUE

When a great number of broken painted grave stelae were revealed in the fill of the Great Tumulus at Vergina¹, Volkmar von Graeve had already shown new ways in re-approaching ancient Greek painting techniques. His precious response to my appeal to come and help me evaluate the new material evidence from Macedonia was vital to their understanding. Since then, Prof. V. Graeve and his team, especially Dr. U. Koch-Brinkmann and Dr. V. Brinkmann were always ready to contribute to my studies concerning ancient Greek painting. This short presentation of the results concerning the technique applied on the hunt frieze of Philip's Tomb at Vergina² may thus be considered as the written expression of my gratitude for a long-lasting, truly inspiring and most creative scholarly exchange of ideas.

INTRODUCTION

As soon as it was discovered in 1977 that the facade of Tomb II at Vergina bore coloured decoration, the clearing of the wall-painting, its consolidation and conservation were undertaken by a team of specialists, who decided on the methods, techniques and materials to be used in the intervention³. The limited number of samples from the coloured decoration yielded one year later the first data on the chemical composition of the pigments that had been used in the painting and the architectural decoration⁴.

Throughout the course of the excavation, and up to 1993 -when the impressive shelter was constructed and an immense glass-wall isolated the monument from the visiting area⁵- the tomb remained buried in the earth and was enclosed within insulating materials, which maintained the temperature at a constantly low level. The wall painting decorating its façade was permanently concealed behind a black cloth screen in order to prevent any, even indirect, contact with sunlight, and the daily-measured humidity was preserved at a very high level, with beneficial effects on the preservation of the colours.

After the construction of the shelter a fresh series of conservation measures was undertaken⁶, and the final results may be useful to any future interventions that may need to be carried out on the painting surface⁷. It is hoped that the modern shelter's advanced air conditioning system, the permanent isolation of the monument from the public and the suitable lighting conditions⁸ will arrest the effects of time and that the wall

painting will preserve for future generations the image which started emerging in front of our eyes in the autumn of 1977.

I. THE GROUND AND THE PIGMENTS

The small patches or deeper scars, extending at some points as far as the surface of the limestone wall are all due to the small stones in the fill, which covered the tomb and its dromos in the antiquity; although they still prevent the viewer from gaining a clear idea of the impressive details and the extraordinary quality of the painting, they enabled us to examine the texture of the ground and the composition of the pigments. Visual observation, chemical analyses along with the scanty information provided by the literary evidence, and the knowledge deriving from Renaissance and Byzantine painting methods permit useful conclusions about the stages of the procedure that the painter followed in transferring his demanding inspiration onto the limestone wall.

A. THE GROUND

The entire stone facade of the tomb was concealed under a white plaster of exceptional quality that lent the limestone wall both the appearance and the texture of marble. The thickness of the plaster and the number of its constituent layers are not the same at all points of the façade.

Up to the level of the architrave, the plaster (8 mm- 1.5mm) consists of three successive layers: a greyish inner one, of lime and sand, a coarse-grained layer, and a third, fine-grained, pinkish outer layer, on which a very thin coat of whitewash was added. On the triglyphs, metopes, taeniae, mouldings and the two cornices that border the painted Ionic frieze, the ground (5 -7 mm thick) consists of two layers: a coarse-grained layer 3-4 mm thick and a finer-grained, pink layer 2-3 mm thick. On the smooth surface of the same very fine whitewash the colour decoration was then applied.

The ground for the hunt frieze consists of two layers: the deeper (10 mm thick) is similar in texture to the inner, greyish layer of the first group; the outer (3-4 mm thick) is of pinkish coarse-grained plaster and probably contains powdered marble. A very fine coat of whitewash, extremely smooth and solid over it bears the painted representation. The number of layers and their composition is consistent with what we know from similar observations in contemporary⁹ or later monuments¹⁰ and corresponds with terms attested in ancient Greek texts¹¹: the thicker inner layer with the greyish hue and probable sand content ought to be identified with the *αλοιφή*¹²; the finer pink layer must correspond to the process known as *κονίασις*¹³ and the extremely fine whitewash coating might be related to the term *λεύκωσις*.¹⁴

B. THE PIGMENTS

Detached fragments of plaster bearing traces of colour together with flakes of colour paint were collected at an early stage of the investigation. Although their exact original positions on the wall-painting is unknown or not recorded, their chemical analysis, published in brief in 1979¹⁵, produced useful conclusions about the

nature of the pigments used in the architectural features on the facade of the tomb and the Ionic frieze with the hunting episodes which adorns it¹⁶.

All samples of red were identified as cinnabar¹⁷; all samples of blue are of the well-known Egyptian blue, the cyan of ancient sources¹⁸; mixing Egyptian blue and calcite produced the green colour; the shades of grey (grey-blue and blue-grey from the cyma reversa moulding above the wall-painting) were produced by mixing Egyptian blue with black particles; the grey (which was used extensively in the wall-painting) was produced by mixing kaolinite, calcite and black particles¹⁹.

The white is pure calcite; it was detected in all samples apart from two cases of Egyptian blue, which probably come from the colouring of the triglyphs. This general presence of white, recalls the passage in Ph. Kondoglou's book on Byzantine painting²⁰ which probable echoes an old traditional practice²¹: »white is the basis of all colours, since every colour is mixed with white in order to produce the whole range of that colour from its darkest to its lightest hue«²².

The presence of calcite in the samples of pigments from Philip's tomb throws no light on the problem of the technique. It indicates, either that the colours were mixed with pure lime in powder form, before the use of some organic substance (milk, casein, glue), or that limewater was used to dilute them, a method associated with fresco *ajutato*²³. The use of cinnabar, however, – a pigment which is not recommended for *buon fresco*²⁴ – suggests that the red colour at least, which was used in the wall-painting of the hunt principally to render the blood on the wounded dogs and quarries, must have been applied when the ground had almost dried. Macroscopic observation showed that none of the colours has »seeped« into the plaster ground: they were spread over the very fine coat of whitewash and overlap each other in very thin layers; in areas where colour has flaked off one can see the underlying layer(s) of colour or the very fine layer of whitewash, or the deeper layers of the plaster ground.

The absence from the hunt frieze of any trace of the so-called *giornata* or »day piece«, a vital stage of preparation for fresco painting²⁵ suggests that moistness was not an essential factor in all stages related to the completion of the painted composition on Philip's Tomb.

2. THE DRAWING PROCESS: COMPARING TWO CONTEMPORARY WALL-PAINTINGS

The understanding of the drawing process which was followed for the creation of the hunting episodes on the façade of Philip's tomb is strongly depending on the comparison of its features with the ones detected on the wall paintings in the neighbouring »Tomb of Persephone« at Vergina²⁶; the work of a great master of the mid-fourth century whom Manolis Andronikos identified with Nicomachus from Thebes²⁷.

A. INCISIONS

One of the most revealing features of the wall-paintings which decorate the interior walls of this large cist grave is the use of an incised preliminary design: with a sharp instrument the painter drew on the wet plaster ground the most important elements of the design; he, then rendered in colour the outlines of his figures, without following faithfully his preliminary incisions. Being equivalent to a »study«, the incised design in

the ›Tomb of Persephone‹, records the artist's first creative contact with the painting surface, reflects the high quality of the execution and confirms the originality of the work²⁸.

Incised lines of this sort are not present in the wall painting on Philip's Tomb. The few that are visible at various points of the painting surface, as have been drawn by G. Miltsakakis after close examination of the wall with the aid of lateral lighting, are very thin and shallow. Furthermore, they are particularly well drawn, without corrections of any kind, which shows that they were incised carefully and not in the free, creative manner that characterizes those in Nicomachus' work. They are thicker in the javelins and spears of the hunters and thinner at certain other points of the painting surface, where they coincide with the outlines of the figures or other pictorial elements. Finally, in contrast to the incisions in the ›Tomb of Persephone‹, which, having served their purpose as a preliminary design, were practically ignored in the next phase, the very fine incisions in the wall-painting of the hunt lie on the boundaries between the figures and the background against which they are set: in other words, wherever they have been detected, they function as precise outlines²⁹ and not as preliminary design.

The absence of an incised preliminary design, in the sense of a ›study‹, from the wall painting on Philip's Tomb suggests that the painter of the hunt chose a method of transferring his multi-figure composition onto the painting surface quite distinct to that used by the painter of the abduction: in contrast to the directness of Nicomachus' creation, in which the main elements of the representation were incised on the still moist plaster in a free, creative manner, the painter of the hunt laid out the final result of a carefully planned composition, without any traces of the very first stage in the creative process, the ›study‹.

B. OUTLINES

Outlines are most clearly visible in the ›Tomb of Persephone‹: flowing, continuous reddish-brown brushstrokes are used to delineate the limits of the figures and render their anatomical details. The freehand sketch thus stands out as the principal means for the artistic expression, which was subsequently completed by the rather limited addition of colour to the hair and, above all, to the large surfaces of the chariot and the garments³⁰.

In the hunt frieze the use of outlines is limited. They are most clearly visible in the painting's secondary features: the head of the antelope, the mouldings at the top of the rectangular pillar and at a few shaded points on some of the figures. Everywhere else the outlines of the figures are not rendered by lines but are created or denoted by the borders between two different areas of colour. Every single figure and pictorial element in the representation has its own individual shade of colour, which stands out against the background³¹.

The absence in the hunt frieze of an incised preliminary design, in the sense of a ›study‹, as well as an incised or painted sketch, in the sense of an outline for the final picture, shows that the composition which adorns the facade of Philip's Tomb was not drawn directly onto the painting surface, as in the ›Tomb of Persephone‹. The demands of the multi-figure composition, coupled with the absence of mistakes or corrections and combined with the absence of any traces on the plaster that could be related to a giornata show that the work, with most of its pictorial elements already laid out, was transferred onto the painting surface in the form of a full-scale drawing, and then later completed by painting in with colour. The limited evidence of a coloured sketch, in the secondary elements of the painting, shows that only these were painted freely on the picture surface.

From the foregoing observations we may conclude that, unlike the painter of the Persephone Tomb, the creator of the wall-painting of the hunt did not convey his inspiration in the form of a ›study‹ (with an incised preliminary design) and a sketch (with the ease of his brush); he used a different method of transferring what was, in terms of size and multi-figural composition, a demanding representation, one which must have taken him a considerable amount of time to create in his workshop. The immaculate design of the figures and other pictorial elements, the absence of mistakes or corrections, and the use, instead of flowing coloured outlines, of the colours to differentiate the figures from the background, lend themselves to only one interpretation: that an already complete composition, executed in a different medium and on a different material, was faithfully transferred onto the plastered wall.

3. THE METHOD

Particularly illuminating in this respect is the method found to have been used in the wall-paintings of the Sistine Chapel: for the large figures Michelangelo used cartoons which were transferred onto the painting surface either through perforated outlines (*spolvero*) or indirect incisions (*incisione indiretta*)³². The smaller figures, especially those depicted on a deeper plane, were drawn freehand³³.

Despite the lack of any detailed literary evidence contemporary to the hunt frieze, we can learn a lot about the method that the painter of the hunt followed from the advice that Kondoglou gives to trainee icon painters about transferring the design of a painting to the surface of a wall³⁴: »Draw the design on paper, to the appropriate size, as we do with icons. Then find a way of setting it up in a well-lit position – in a window, for example – where the light will show up the design, and then trace it on the back, that is on the other side, with burnt sienna paste, without any glue or egg at all, and leave it to dry. Then put a cross on the front and draw a similar cross on the wall, exactly where the design should be laid out. Then cut a little bit off the sides of the drawing with scissors, so that it is shorter than the cross you have drawn on the wall and you can see where to place it, so that the edges of the cross on the drawing will line up with the edges of the cross drawn on the plaster – get your colleagues to help you – and press the paper down well with a ball of cloth until the design is imprinted on the wet plaster and then remove the paper. After you have made corrections to the design, filling it in wherever it hasn't come out or wherever you forgot to hold it, take the trowel and press down firmly on the area, which you want to work, or simply to paint, such as the sky. In the old days this pressing action was called ›polishing‹. Once you have polished the area, you incise the design upon it, taking care not to drag the strands of flax with the stylus and spoil the polished surface«.

The application in the Vergina wall-painting of a method similar to that used by Michelangelo and that recommended by Kondoglou suggests that the fine incisions in the outlines of the figures and other pictorial elements might correspond to the filling-in of those parts of the design that had not been imprinted by *spolvero* on the fresh surface of the whitewash. If this is the case, then we should look for the ›guidelines‹ - the marks, that is, which enabled the painter to position his figures correctly as he transferred the multi-figure composition onto the painting surface. No such marks exist in the wall painting of the hunt. Nevertheless, their use was essential, if we bear in mind the particular demands imposed by the multi-figure composition. We must, therefore, either assume that they took a different form, which is neither visible nor identifiable on the painting surface today, or suppose that some of the pictorial details, such as the javelins and spears, for example, may have served as ›guidelines‹.

CONCLUSIONS

Unlike Nicomachus, whose work on the walls of the »Tomb of Persephone« suggests a masterly but lonely creation wholly depending upon his hand, the great painter who composed the hunt frieze on the façade of Philip's tomb³⁵ must have worked in a more complicated way: on the smooth and moist surface of the plastered wall, the painter of the hunt frieze positioned the main figures of a preconceived and well prepared composition with cartoons, carefully imprinting the outlines, or, wherever necessary, completing them with fine incisions. He then proceeded to fill the figures in with colour and complete the minor features of the painting freehand. From this point of view, his method did not differ much from the one, which Michelangelo applied in the Sistine Chapel³⁶.

If this is the case then the evidence deriving from a fourth century monumental painting does not only compete in artistic quality with its Renaissance counterparts, but it sheds light on our scanty knowledge concerning ancient painting techniques, to the investigation of which Prof. Dr. Volkmar von Graeve has devoted a long and creative part of his academic career.

- 1 C. Saatsoglou-Paliadeli, Τα επιτάφια μνημεία από τη Μεγάλη Τούμπα της Βεργίνας (Θεσσαλονίκη 1984).
- 2 A more extensive approach to the same issue is part of the forthcoming publication of the wall painting by the author of this article: see C. Saatsoglou-Paliadeli, Βεργίνα Ο τάφος του Φιλίππου. Η τοιχογραφία με το κυνήγι, Βιβλιοθήκη της εν Αθήναις Αρχαιολογικής Εταιρείας, παράρτημα αρ. 231 (2004)
- 3 M. Andronikos, Vergina. The royal tombs and the ancient city (Athens 1984)
- 4 S. E. Filippakis – B. Perdikatsis – K. Assimenos, X-Ray Analysis of Pigments from Vergina, Greece (Second Tomb), Studies in Conservation 24, 1979, 54-58
- 5 J. E. Demakopoulos, Κέλυψη προστασίας εν είδει τύμβου. Ένας υπόγειος αρχαιολογικός και μουσειακός χώρος στον τύπο της κρύπτης (Athens 1993)
- 6 The findings of the two-year endeavour have been published as a thesis by the conservator who undertook the work: E. Papadopoulou, Μέθοδοι τεκμηρίωσης τοιχογραφιών. Εφαρμογή των μεθόδων σε μακεδονικούς τάφους (Athens 1994)
- 7 The overall supervision of the program is in the hands of the Director of Conservation at the Ministry of Culture, Mr. N. Minos. It is hoped that the findings of this coordinated effort will be made known to the public in the way that the restoration of the wall-paintings in the Sistine Chapel has been through the publication of the collective work The Sistine Chapel: A Glorious Restoration (Tokio 1992 – New York 1994)
- 8 Dimakopoulos, op.cit. (n.5) 8ff.
- 9 E. A. Mirtsou – M. D. Kesisoglou – K. Michailidis, Ανάλυση χρωμάτων και κονιαμάτων μακεδονικού τάφου της περιοχής Λευκαδωων, Ανθρωπολογικά 8, 1985, 47-51 (The Palmettes' Tomb at Leukadia); E. A. Mirtsou – M. D. Kesisoglou, Ανάλυση με παράθλαση ακτίνων-X των χρωμάτων μακεδονικού τάφου της Αγίας Παρασκευής Θεσσαλονίκης, Technical Periodical Edition of the Greek Ministry of Culture 1, 1984, 475-477.; K. Rhomiopoulou – H. Brekoulaki, Style and Painting Techniques on the Wall Paintings of the «Tomb of the Palmettes» at Lefkadia, in: Color in Ancient Greece, (M. A. Tiverios – D. S. Tsifakakis eds.) Proceedings of the Conference held in Thessaloniki, 12-16 April, 2000 (Thessaloniki 2002) 107ff.; M. Tsimbidou-Avloniti – H. Brekoulaki, Χρώμα και χρωστικές ουσίες, ύλη και εικόνα σε δύο ταφικά μνημεία της Μακεδονίας, ibid. 117ff.
- 10 For a similar number of layers in the houses of Pompeii see R. Meyer-Graft, Technique des peintures murales romaines, in La Peinture de Pompeii II (1993) 273ff. For the layers used in the Last Judgment and the Ceiling of the Sistine Chapel see F. Mancinelli – G. Colalucci – N. Gabrielli, The Last Judgment: Notes on its Conservation History, Technique and Restoration, and G. Colalucci, The Technique of the Sistine Ceiling Frescoes in The Sistine Chapel: A Glorious Restoration, 236ff, esp. 246ff. and 26ff, esp. 29, respectively.
- 11 A. Orlandos, Τα Υλικά Δομής των αρχαίων Ελλήνων (Athens 1966) 45ff.
- 12 Ibid. 53, nn. 3-5. This layer must correspond to the arriccio, which in the Sistine Chapel is 7 mm thick: see Mancinelli et al. op.cit. (n.10) 247 and Colalucci, op.cit. (n.10) 30

- 13 Orlandos, op.cit. 53ff. This layer must correspond to the intonaco, which in the Sistine Chapel is 4 mm thick. See Colalucci, op.cit. (n.10) 30
- 14 Orlandos, op.cit. 55
- 15 Above n. 4.-
- 16 For a similar test to diagnose the pigments used in the painted gravestones from the Great Tumulus at Vergina see V. Perdikatsis – Y. Maniatis – C. Saatsoglou-Paliadeli, Identification of the Technique of Painting of the Vergina Tombstones, in: *Praktika of the 25th International Symposium on Archaeometry*, Athens 1986, 147; id. Characterization of the Pigments and the Painting Technique used on the Vergina Stelae, in: *Color in Ancient Greece* (above n. 9) 245ff. -For a preliminary evaluation of the results of the archaeometric tests see C. Saatsoglou-Paliadeli, Νέα στοιχεία για την τεχνική των γραπτών στηλών της Βεργίνας, *AEMTh* 2, 1988, 137-146.; For the results of similar tests applied to the painted stelae from Demetrias see V.v. Graeve, Zum Zeugniswert der bemalten Grabstelen von Demetrias für die griechische Malerei, in: *La Thessalie, Actes de la Table Ronde 21-24 Juillet 1975* (1979).; F. Preusser – V. v. Graeve – C. Wolters, Malerei auf griechischen Grabsteinen, *Maltechnik-Restauro* 87,1981,11ff.; V. v. Graeve – F. Preusser, Zur Technik griechischer Malerei auf Marmor, *JdI* 96,1981,120-156.; For similar applications on painted funerary monuments from Chersonesos see J. Twilley, Pigment Analyses from the Grave Stelae and Architectural Fragments from Chersonesos, in: *Color in Ancient Greece* 171ff.
- 17 Plin. NH 35,50. H. Bluemner, *Technologie und Terminologie der Gewerbe und Kuenste bei Griechen und Roemern IV* (1887) 488ff.; R. J. Forbes, *Studies in Ancient Technology III* (1965), 215ff, esp. 218.; R. J. Gettens et al., Vermillion and Cinnabar, *Studies in Conservation* 17, 1972, 45-69.; The use of cinnabar has not been encountered in other monuments of this type. It has neither been detected on the painted gravestones from the Great Tumulus from Vergina or Demetrias (see previous note). However the use of this costly material has recently been detected on the painted marble throne in »Eurydice’s Tomb« at Vergina. See I. Kakouli, Scientific Examination of the painted decoration of the pre-Hellenistic marble throne in the »Tomb of Eurydice« (c. 340 BC) Conservation of Wall Painting Department, Courtauld Institute of Art (London 1995)
- 18 Bluemner, op.cit. (n. 17) 499ff.; Forbes, op.cit. (n.17) 222ff.; Saatsoglou-Paliadeli, op.cit. (n.16) 141 nn. 26-27
- 19 For a comparative approach to the issue see H. Brekoulaki – V. Perdikatsis, Ancient Painting on Macedonian Funerary Monuments, IV-III c. BC.: A Comparative Study on the use of Color, in: *Color in Ancient Greece* 147ff.
- 20 Ph. Kontoglou, *Εκφρασις της Ορθοδόξου Αγιογραφίας* (Athens 1960)
- 21 Dioskurides 1.1: (white) χρησιμεύει δε και ζωγράφους προς πλείονα παραμονήν χρωμάτων. Bluemner op.cit. (n.17) 469 n.2; Theophrastus, *Περί Λίθων*, 62
- 22 Kontoglou, op. cit. 12
- 23 Colaluci, op.cit. (n. 10) 34: »... a technique that even though executed according to the rules of buon fresco, allows the painting to be finished with a colour to which a small amount of binder – animal milk or, more rarely, vegetable latex – has been added or which has been diluted with lime water or lime milk with which the process of carbonization is facilitated«.
- 24 Plin. NH 35, 49: Ex omnibus coloribus cretulam amant udoque ilini recusant purpurisum, indicum, caerulleum, melinum auripigmentum, appianum, cerussa
- 25 K. L. Dasser, Pretreatment Examination and Documentation: the Wall Paintings of Schloss Seehof, Bamberg, in: *The Conservation of Wall Paintings. Proceedings of a Symposium organized by the Courtauld Institute of Art and the Getty Conservation Institute*, London, July 13-16, 1987 (Sh.Cather, ed., Singapore 1991) 21-27 esp. 25 figs.8 and 9a-b.; F. Mancinelli, The Frescoes of Michelangelo on the Vault of the Sistine Chapel: Conservation, Methodology, Problems and Results, *ibid.* 57ff, esp. 59ff, figs 4-5.; G. Colalucci, The Frescoes of Michelangelo on the Vault of the Sistine Chapel: Original Technique and Conservation, *ibid.* 67ff. fig.5.
- 26 M. Andronikos, Vergina II. The »Tomb of Persephone«, (Athens 1994) 129ff.
- 27 Andronikos, op.cit. 135ff.- The attribution has been questioned by E.Thomas, Nicomachos in Vergina?, *AA* 1989, 210-216 and J. J. Pollitt, *Art in the Hellenistic Age* (1986) 248, who states that »it seems unlikely that a painter of Nicomachus’s standing would have come to Macedonia on relatively short notice to paint the walls of a relatively small tomb«. However, the cist grave is actually one of the biggest of its kind and the tomb was not necessarily built in the exceptional hurry detected in the construction of the neighbouring Tomb II.
- 28 Andronikos, *Persephone*, 117ff.; C. Saatsoglou-Paliadeli, *Linear and Painterly: Colour and Drawing in Ancient Greek Painting*, in: *Color in Ancient Greece*, 97ff.
- 29 Similar careful incisions, consistently used as accurate outlines for the figures have been detected in the painting which decorates the marble throne in the so-called »Eurydice’s »Tomb at Vergina. See Kakouli (above n.17)

- 30 Saatsoglou-Paliadeli, *ibid.* 101ff.
- 31 Saatsoglou-Paliadeli, *ibid.* 101ff.
- 32 Colalucci (above n.25) 67ff.
- 33 *id.* 69 fig. 6.
- 34 Kontoglou (above n. 22)
- 35 In the forthcoming publication of the hunt frieze by the author of this article (above n.2) it is suggested that the painter could be identified with Aristeides II, son of Nicomachus
- 36 Colalucci (above n.10) 34: »Michelangelo's use of fresco was so precise that he avoided, with only a few exceptions of a limited and imperceptible scale, those intermediate techniques-affresco ajutato- which are frequently found even in murals that are commonly defined as buon fresco«. In the case of the hunt frieze, however, one should not exclude a wider combination of buon fresco and affresco ajutato with a limited use of secco, as well.