Roman wall paintings in the Pafos theatre

Diana Wood Conroy

University of Wollongong, dconroy@uow.edu.au
Roman wall paintings in the Pafos theatre

Archeological and architectural context

The fragments of painted plaster were first found in the 1996 and 1997 Pafos Theatre seasons in trenches IR and 1J on the south side of Wall 108 (the analemma), where the parados provides an entrance to the orchestra on the western side of the theatre. Encrusted plaster with faint indications of colour and pattern still adhered to Wall 108. Other coarser fragments of red on cream were found in 1999 in the IR-IJ extension to the west. The extensive excavation of the western parados area in 2001 (Trench 1FF) revealed many more painted plaster fragments, some on curved sandstone blocks that had formed a vaulted ceiling, and some loose in the stone tumble that seemed to have fallen from the south against the face of the painted Wall 108. It is not certain if the parados was covered to its full length by the barrel vault.1

The soil around the stone tumble included not only fragments of painted wall plaster, but also plaster that once covered the seats of the cavea, and another kind of coarser plaster, unpainted, which may possibly be medieval. The excavation of the vaulted, painted entrance into the theatre from the western side was a significant discovery of the 2001 season.

Substantial fragments of painted plaster were found on the analemma wall, and partially conserved in 1997. Although the encrustation and crystallisation of the surface was advanced, distinct areas of colour and form could still be discerned. Fragments of painted plaster on this wall extend for a length of 13m. (Fig.1). The width of the parados passage is 3.2m., and the remaining height of the wall is approximately 2.2m. The parados floor is a hard plaster laid on bedrock, cut with grooves to simulate paving, with a marble threshold leading to the orchestra.

In 2004 the eastern analemma wall had been partially uncovered for a length of 9 metres, with plaster attached to the topmost layer of blocks. Traces of yellow colour appear. Because of the lack of stratigraphy in the deposits excavated from this area, there is no certain date that can be associated with the plaster decoration. The deposits on the floor of the parados date from the destruction phase (post fourth century) and have no connection to the wall decoration. The theatre was substantially rebuilt and repaired several times during its long history (c. 300 B.C. to c. 360 A.D.). The enclosure of the entrance with a vaulted roof, and the painted decoration of the parados may have occurred after the great earthquake of 70 A.D. The adding of a covered entrance would then be contemporary with the construction of the complex of public buildings around the agora of the city, possibly in the first half of the second century A.D., in the time of Hadrian (117-138 A.D.) (Mlynarczyk 63, 163). Such major renovations to the theatre may have taken place after the earthquake in the early second century which destroyed the House of

1. I would like to thank Dr Sophocles Hadjisavvas, Department of Antiquities, and Dr Enstathios Raptou of the Pafos Museum for great help and assistance. Professor Demetrios Michailidis provided me with valuable insights and gave me access to unpublished material. Dr Norbert Zimmerman from the Austrian excavation in Ephesus was very generous in showing me the complex layers of painting in the 'Hanging Houses' of Ephesus. Most appreciation is due to Professor Richard Green, the Director of the Pafos Theatre Excavation since 1995, for his expert comments in reviewing this article, and to my colleagues on the team. My presence on the excavation has been made possible by grants from the Australian Research Council, and Study Leave Grants from the University of Wollongong, Australia.
Dionysos (Nicolaou 1967, 107-8). The style of the marble architectural blocks found throughout the theatre is Antonine (96-192 A.D.), a time of great prosperity throughout the eastern Mediterranean. The discovery of an inscription in 2002 records the dedication and rebuilding of the theatre by emperors Antoninus Pius and Marcus Aurelius (Green and Stennett, RDAC 2002, 188).

Stylistic comparisons suggest that the painted decoration could have been later, even third or fourth century, with some evidence of layers of repainting over existing wall painting. It is clear, too, that the parodos had a continuing life after the destruction of the theatre in the late fourth century, for some purpose that is as yet uncertain. A makeshift blocking wall built across the parodos incorporating fragments of seats from the quarrying of the theatre stones, may have preserved the frescoes until the final abandonment of the theatre after 650 A.D.

Barrel vaults joining the stage building to the analemma, the wall supporting the seats of the cavea, were typical of the open parodoi of Greek theatres re-modelled to Roman needs, when these vaulted entrances became the main entrance into the orchestra and the lower part of the seating. Vitruvius gives as measurement for the most practical construction of these vaulted passageways one sixth of the diameter, or one third the radius of the orchestra (Bieber 187). This means that the parodoi were low in height. The Pafos parodoi is less than three metres high in the section of vaulting recovered, though like many ancient theatres such as Aspendus, the vault may have risen in height towards the orchestra. There is as yet no clear

2. J.R. Green and G. Stennett, RDAC 2002, note 9 refers to an inscription commemorating additions to the 'approaches', which may indeed refer to the renovation of the vaulted, painted parodoi.
Evidence in Pafos for the extension of seating at the top of the vaulted entrance, where boxes for important officials were usually positioned. Examples of remodelled parodoi are found in the theatre at Corinth, at Aphrodisias, and in the theatres of Termessos, Perge, Hierapolis and Side in South Turkey, north west of Pafos.

Wall painting in Greek and Roman theatres

Once excavated, painted plaster is very vulnerable to weathering and disintegration and for this reason, the wall paintings of many theatres excavated in the nineteenth and early twentieth century have not survived. For example, 'fragments representing vine leaves' were found by the American excavators of the theatre at Eretria in Greece c.1896, which are now lost (ArchReports 1998-99, 61). Of particular interest for the Pafos paintings is the theatre at Corinth, excavated in the 1920s, which produced paintings (now lost) from the colonnade above the cavea (Williams 1987) After the Roman conquest of Greece, the theatre was remodelled in the first century B.C. and again in the first century A.D. Recent work in Corinth has categorised the many fragments of wall painting within a stratigraphic context, in order to clarify the role of Greek painting within the Roman world. The painting style, like that of Pafos, has no architectural vistas or perspective, and emphasises ornament and colour within defined zones (Gadbery 52). The Corinth theatre was renovated again in 211-217 as a hunting theatre, with now vanished paintings of the hunt in the upper colonnade, to please the emperor Caracalla (Bieber 216, and fig. 839).

The theatre of Aphrodisias in Caria is an intriguing parallel to the Pafos theatre. The brick corridors and rooms behind the stage building were substantially plastered in the third century and fragments of painting have been discovered. It is significant for an understanding of the function of the parados to note that a remarkable archive wall, inscribed with records of the city and its citizens, was constructed on the south wall of the enclosed north parados, despite the dimness of the light (Reynolds 33).

As in Corinth, the theatre of Aphrodisias was renovated for wild beast spectacles, and the later theatre had considerable painted decoration in the area of the stage building (Roueché 1993, 1-2). The theatre continued in partial use until the sixth century, when a painting of the archangel Michael gives evidence for a Christian chapel constructed in the stage building (Smith and Erin 1991).

Although no painted theatres are documented from Britain, Joan Liversidge (1982) discusses abundant examples of painted plaster from Late Roman forts. These wall paintings are characterised by architectural divisions and imitation marble panelling. The enthusiastic use of painted plaster was a ubiquitous characteristic, a 'koine' or common language of Roman architecture across both eastern and western provinces of the empire.

The remarkable theatre of Aspendus near Antalya (Attaleia) in South Turkey was constructed during the time of Marcus Aurelius, 161-180 A.D., by the architect Zeno. The theatre is partially built into the side of a hill, and the cavea is semi circular with an almost intact stage building. Like Pafos, the theatre is built of a conglomerate stone that needed smoothing with plaster, and extensive areas of plaster remain in the upper colonnade, with faint traces of paint. Although the plastered section with painted zigzags on the skene wall to the left of the stage belongs to the eleventh century Selçuk period when the still intact theatre was used as a caravanserai for travelling merchants, it may indicate a longer tradition of painted decoration. The theatre of Ephesus, I was told by Austrian archaeologists on the site, did once contain fragments of painted plaster, which were not available for study. The Greco-Roman theatres of Termessos, Myra, Olympos, Perge, Selge, Side, Hierapolis and Sagalassos in South Turkey (ancient Pamphilia, Pisidia, Lycia and Caria) were also visited in 1999 to discover any plastered surfaces, particularly in the area of the parados and stage building. Only
Fig. 2. Hypothetical reconstruction of painting on Wall 108, showing fragments remaining. Gouache drawing (Photographer Michael Young).
Aspendus had any traces of plaster, with no clear evidence of painting.

The decorative programme of the Pafos theatre

How do we understand the style and content of the painted entrance to the Pafos theatre? I have divided the hundreds of painted plaster fragments (approximately 530 fragments), some attached to sandstone blocks from the walls and the vault, into several main groupings. At this point a complete reconstruction of the composition of the walls and the ceiling is hypothetical. A catalogue of the principal plaster fragments forms an appendix to this report.

An analysis of the composition of the vivid pigments of the fresco was made by Ms Josephine Atkinson, conservator at the University of Sydney and on the Pafos site, and accompanies this article. At the University's Centre for Microscopy, four analytical techniques were applied to fragments of plaster: light microscopy, x-ray fluorescence, x-ray diffraction, and scanning electron microscopy.

Painted plaster on Wall 108 (Fig. 1)

The main area of plaster on the wall is very encrusted with crystallised particles. Some of this encrustation was removed by conservators in 1997, and the wall stabilised. However, the fragile surface is exposed to all weathers on the site, and has shown deterioration since that time. Evidence of painted plaster extends for nearly 13 metres, with the greatest concentration of fragments found at the western end.

A close scrutiny of the traces of colour on the wall reveals a pattern of two groups of vertical red and black bands, with a concave curve of grey-indigo swung between them. Above the curve the field is yellow cream, with traces of terracotta red, which may indicate fillets or flowers. At the western end of the wall strong indications of blue-green are obscured by encrustations. Above the blue-green area, yellow and red predominate, with no discernible motifs. There is some evidence of over-painting here, in a coarser red on white. A hypothetical restoration (Fig. 2a, b) tries to account for the variety of motifs excavated.

The style indicates a deeply coloured wall divided into vibrant panels but without any perspective or chiaroscuro, or any evidence of figures. A close parallel to this 'patchwork' schema is found in the Severan 'Inn of the Peacock' from Ostia (193-235 A.D.) described by John R. Clarke (figs 213, 215).

Some motifs of the fragments found in the stone tumble that fell against wall 108 relate to its schema, but others may come from the vaulted ceiling, or the opposite wall of the entrance, of which there are few stones in evidence. Seven main motifs include:

1. Blue circles on green, inv. 2234 (Fig. 5: 1)

Some of the first fragments excavated in 1996 close to Wall 108, were the 14 joined painted plaster fragments that show dark blue circles on green-grey over a yellow ground. Touches of brilliant blue occur on the circles, which are 2.5 to 3cm. in diameter. As with all these fragments they are painted with verve, with an understanding of the possibilities of the brush and colour.

I observed similar overlaid circles in vertical bands in Ephesus ('Hanging Houses' Room 38B). Circles also appear on the 'swag' motif, and are consistently associated with a grey-blue, or a grey-green ground with 'drapery' brush marks.

2. Fillet or tie, inv. nos 2235, 2236, 2315, 3765 (Fig. 5: 2, 3) and 3. Floral ornament, Inv. nos 2237, 3756 (Fig. 5: 4).

The terracotta red fillet or tie, with its looped folds, appears most clearly on the sandstone block Inv. 3765 (Fig. 5: 3). The

3. The curator at the Museum of Antalya, Mr Edip Osgur, who has excavated at Perga, had no evidence of painted'walls from the theatres of the region.
irregular twining green tendril with leaves, red-budded flowers, in a field with coiled red fillets is painted on a creamy yellow background on the vaulted ceiling of the parodos. Many fragments of these motifs were found, from the ceiling and possibly wall panels. Possibly, the field of floral ornament and fillets was contained by the deep red band shown on the sandstone blocks Inv. Nos 3757 (Fig. 5: 8) and 3814. A different kind of red fillet or tie appears on the important keystone sandstone block from the barrel vault above the parodos (Inv. 3758, Fig. 8). This block has painted plaster decoration on two surfaces. The curved red ribbon on the grey-cream background must have formed a central motif of the vaulted ceiling.

The red fillet was an intrinsic motif in classical funerary painting since the fifth century B.C. White painted lekythoi. Painted marble grave stele with a tied red fillet from fourth century B.C. Vergina commemorated the dead Xenokrates and Drykalos Pierionis (Andronicos 84). The fillet is the 'filum', the thread, tie, or ribbon that binds or wraps the garland, the wreath, or the crown. Fillets and wreaths are part of a group of decorative motifs that often appear together. The decorative motifs in the theatre parodos are foreshadowed in the distinctive painted decoration on the exquisite Hellenistic painted tomb in Pafos (Tomb 1, Ammok locality), half a kilometre from the theatre, where garlands hang from the floating red ribbons (Fig. 3, Karageorghis 1975, Michaelides 2002).

Fillets and wreaths were the crowning ornament of those taking part in Dionysian mysteries, as seen in the narrative drama of the Villa of the Mysteries in Pompeii, where the priestess and her helpers, a woman carrying a tray and the Silenus all wear leafy crowns. In another mosaic emblem from the House of the Tragic Poet in Pompeii a rehearsal for a Greek satyr play is represented. Between the columns, behind the group of actors, festoons of garlands hang, with 'taeniae' or fillets twined around and hanging from the garlands (Grant, 59-63 and 68-9).

Wreaths and garlands were a double symbol of death and victories achieved in life (Chaisemartin, 243). The wretched crowns and fillets indicated the success of the athlete, and the actor. At the theatre of Aphrodisias in Caria, where extensive inscriptions and funerary reliefs have been brought to light, there is evidence for the honouring of Agon, the young divinity who personified contests. The 'agonistic' themes are found in two funerary sarcophagi that record the victories of athletes with rows of sculpted garlands, bound with fillets (Chaisemartin, 240-1). The highest award in the dramatic festivals was the 'crown', the wreath, when the acclaimed actor was 'stefanites', garlanded (Rouechê, 3).

It is significant that the iconography of the theatre painting is paralleled in tomb and sarcophagus imagery. The connection is through Dionysos, god of theatre and vegetation, whose attributes signified happiness, good fortune and fertility, the perpetuation of the seasons and the continuation of life, hopefully after death. Already in Gnathia pottery of the fourth century B.C. trailing vines and masks delicately celebrated Dionysos and the theatre (Green 1989, and 1995 fig. 43). Wreaths, also in association with masks, are emblematic of the theatre and the symposium room, which may mimic the sanctuary of Dionysos (Green 1989).

In a wide discussion of classical garlands, floral crowns, ribbons and festoons, Robert Turcan makes the point that the broad decorative function of garlands and fillets rests solidly on an ancient tradition of feast days and cult. The utilisation of foliage probably lies with seasonal rituals and with early cults of Dionysos as a god of vegetation, with his wild following of Bacchantes and satyrs who carry the fruits of the earth. The apotropaic function of garlands, festoons and fillets becomes almost unconscious, a necessary accessory for later funerary ceremony, as well as Dionysian festivals and cults (Turcan, 95-6).

The association of fillets and flowers with theatre is demonstrated in the wall paintings of the 'Hanghauser' of Ephesus. Here the red fillet
Fig. 3. Detail of painted decoration, Tomb 1, Ammolo, Pafos.

Fig. 4. Detail of imitation alabaster, Tomb 1, Ammolo, Pafos.
motif floats on a cream ground, with ties extended among flower sprigs, within a field that includes birds. In colour, style, proportion and brushwork there is a close parallel to the Pafos motifs. The field of flowers and floating fillets completely cover the walls of a small 'cubiculum' or bedroom (Strocka fig. 237 H2/14d Ostwand), opening out on to a larger room which is decorated with masks and theatrical scenes from plays (figs 416-419 H2/14d). The dating of these palatial Roman houses is complex because of so many levels of occupation, and Strocka's stylistic analysis placed these paintings with fillets to a date in the fourth century (Strocka 1977). This date is being questioned by recent archaeological evidence from the 'Hanghauser' that suggests an earlier date, late second century or Severan (193-235 AD).4

This same relationship of fillets floating in a field of flowers on a cream ground is clearly shown in an example of a painted tomb excavated in Sardis in Anatolia in 1992/3 by the American School of Oriental Research. The Late Roman hypogeum (after 250 AD.) or barrel vaulted tomb described by Greenewalt has a decorative vocabulary of motifs and colours which include baskets of fruit and flowers, garland swags, birds and scattered flowers. Dark blue, green and pink are the predominant colours (Greenewalt 1996, fig. 2 and 1-3) The iconography of this tomb has similarities to the decoration of the tomb excavated in Odos Ikarou, Pafos (close to the Pafos theatre) by Dr Raptou in 2001/2.5 There is a comparable painting of floral ornament on the vaulted ceiling of the tomb in Alexandria described by Venit in 1997. The second century (Hadrianic) painted tomb from Tigranes Pasha Street has a painted roof with floral decoration of a 'cursory' brushy style similar to that of Pafos. A red garland or fillet with fluttering ties is held by a winged disc above the mummy, and a draped cloth decorates the bier. Roses, leaves and stems are painted in red and green on cream on the ceiling (Venit 1997 fig. 8: 709, fig. 20; 717-718. Empereur, 37).6

The examples from Ephesus, Sardis and Alexandria are similar in style to the Pafos fragments in the 'free field' of loosely painted flower and fillet motifs. None of these examples is earlier than the second century A.D.

3. Geometric ornament, inv. nos 2311, 2318, 3734, 3814, 3757 (Figs 5: 5-7, 6: 1)

Bands, rectangles and diagonal shapes formed the geometric framing devices that linked panels and fields of ornament in the theatre wall painting. Such motifs are clearly shown in the painted plaster from the Late Roman 'House of Theseus' (Daszewski, 1972, Mlynarczyk fig. 77) and the 'House of Aion', also firmly dated to the fourth century (Papageorghiou, BCH, 114), less than a kilometre south west of the theatre. Associated with the renowned mosaics in what must have

4. The Roman paintings in the 'Hanghauser', the Hanging Houses at Ephesus are the only Anatolian example on this scale. The area of the lower 'Hanging houses' has been dug since 1983 and is only now being published by Professor Michael Strocka and associates. Strocka's dating of the 4th century is contested, as it is based on a stylistic approach which may not fit the archaeological evidence. A serious earthquake is dated by coins of Gallienus to 250 A.D., sensible to work back from this. The main body of painting likely to be Severan (193-211), not 410-450 A.D. as Strocka postulates.

5. A tomb from Odos Ikarou, near Pafos, less than 250 metres from the outer perimeter of the theatre, contains Roman painting amongst a rich collection of Medieval pottery (Cook and Green, RDAC 2002). The tomb, which had been re-used in Medieval times as a living area, was unearthed below the current level of the road. Possibly two periods of paintings exist in the tomb, a myrtle garland extending on the outside of the arched niche finely painted with berries, and a more erratic, if vigorous painting on the underside of the arched niche, facing the body. Here were birds with filling ornaments of leaves, flowers and fruit, including scattered heart shaped red flowers, and pomegranates. The pigments used are the same as the basic palette of the theatre, The lack of perspective or organisation into panels would suggest a Late Roman date. My thanks to Dr Eustathios Raptou and his staff at the Pafos Museum for this information.

6. "The floral decoration in the Tigranes tomb might well hearken the Rosalia, the Feast of Roses, which although not exclusively connected to the dead, afforded a specific occasion for scattering roses on tombs". Such flowers mimicked the offerings placed on graves, and emphasise the place of ritual in ancient life (Venit 1997, fig. 8: 709, fig. 26: 717-718. Empereur, 37).
been the ceremonial rooms of the houses, were many fragments of wall paintings. Painted figures of a Muse and Apollo of high quality from the “House of Aion” can be seen in the Pafos Museum. Rectangles and diamond panels are associated with panels of imitation marble. The ‘trapezoid fields filled with vegetative decoration — green leaves and fruits’ from the “House of Aion” described by Papageorghiou (1990, 114) may well parallel the fragmentary borders of wide red bands associated with floral ornament in the theatre (Inv. 3734, 3757, 3814 Figs 5: 5-7, 6:1).

Many fragments, sometimes curved in section, are associated with Inv. 2306 (Fig. 6: 2) where solid areas of indigo and terracotta red are juxtaposed along a straight line (Fig). Again, the painted ceiling of the Hellenistic tomb about 500m. to the southwest of the theatre has a red ceiling rectangle surrounded by a blue border, in the same pigments. Although this tomb is dated to the first century B.C. (Karageorghis 1978, fig. 75; Michaelides 2002) traditions of architectonic panels remained in place for centuries. The colour of Inv. 2306 also matches the grey-blue to be seen on the painted plaster of Wall 108, still in situ, and is identical to Inv. 2318, where plain indigo covers the narrow width of a sandstone block.

4. Red on cream, inv. 2312 (Fig. 6: 3)

The many red on cream plaster fragments are distinctive for a coarse surface, with irregular strokes of terracotta red and grey on a creamy white ground, similar to the rough plaster still adhering to the top of wall 108 (Fig. 2). This almost monochrome linear decoration may well form a later layer, painted over existing decoration. As the parados area was in use from the second to the fourth centuries, such over-paintings would be necessary to renovate the space.7

This red on cream motif is typical of Late Roman wall decoration, preserved clearly in catacomb paintings of the late third and fourth century, such as those of S. Sebastiano (Ling, 188-9) or the Via Latina in Rome (Ferrua, 158). Here, strong red lines and ornamental patterns follow the curves of the vaults, with panels of free-floating floral and garland motifs comparable to the Pafos examples. This ‘red on cream’ motif may reflect another later era in the life of the parados, showing the same expressive brushstroke over a white ground, which is documented from many Late Roman architectural paintings. Clarke describes the artist’s ‘freehand division of the wall surface into panels’ with red and green lines on a fresh white background (Clarke 358-9, fig. 225).

5. Swags, inv. nos 2239, 2240, 2241, 2316 (Fig. 6: 4, 9)

The outstanding example of this motif of curved drapery delineated by well-defined brushmarks is Inv. 2316, on a joined sandstone block. Purple-grey and turquoise-green are painted over a yellow-cream ground. Smaller fragments (Inv. nos 2239, 2240, 2241) continue this colour scheme, which may be related to the same purple-grey associated with blue circles.

Swags of drapery as a backdrop to theatrical presentations have been accepted in European performance art since earliest times. The marble Hellenistic relief in the British Museum of Dionysos visiting a drunken poet shows drapery swathed in folds above his couch (Green 1990, fig. 44). Similarly, a terracotta relief showing a scene from a comedy in the National Museum in Naples, has two swags of drapery hanging behind the comic actors (Grant, 42-3).

R. C. Beacham describes two types of curtains in the Roman theatre; the large aulaeum, and the smaller siparia used to conceal portions of the stage façade in a great many

7. Some of the rooms of the ‘Hanging Houses’ of Ephesus, such as Room 53B, have 8 layers of plaster. Sometimes the plaster is ‘picked out’ to take new layers, sometimes not. The many changes may be due to changing functions, and changing generations re-decorating. I viewed these in May 1999, under the guidance of Dr Norbert Zimmerman, of the Austrian Archaeological Institute working in Ephesus.
paintings, such as Room 15 in the ‘Villa of Oplontis’ (Beacham, fig. 20: 170-171). This concave curve of the smaller theatre curtain appears in the complex architectural paintings of the first century ‘Villa Boscoreale’ (P.W. Lehmann 1953, Grant, 34-5). In Ostia, in the ceiling of the third century ‘House of the Painted Vaults’, curved spandrels suggest a similar theme (Ling, 180-1, fig. 196). The concave panel on Wall 108 may relate to these examples.

6. Imitation marble, inv. 2308, 2309, 2310, 2314 (Fig. 6: 7, 8)

‘Facing with marble’ was one of the main characteristics of the First Style of Pompeian painting (first century B.C.) set out by August Mau in 1902. Walls were painted to look as if they were faced with rectangular blocks of marble — usually polychrome, as seen in the ‘House of the Vettii’ in Pompeii.

Imitating the rich surfaces of marble and alabaster was an essential motif in Greco-Roman wall painting, evident throughout the provinces, and is usually found on the lower sections of walls. The outstanding example from the theatre is that on the stone block Inv. 2314 (Fig. 6: 8) with scalloped lines and ovals in yellow orange and terracotta red on a cream ground, possibly imitating alabaster. Another kind of imitation marble (Inv. 2308, Fig. 6: 7) has grey waving lines and bands over cream-yellow ground, with traces of turquoise. Inv. nos 2309 and 2310 (Fig. 6: 5, 6) show irregularly drawn scalloped patterns in strong terracotta and dark indigo over a yellow cream ground. The spontaneous and dappled brushstrokes fit the patterns of imitation marble seen in the Roman painting in Ephesus, and in Ostia. Traces of turquoise are found in Inv. 2310, similar to the rich colours of the marble Africano Rosso, which was very popular in the prosperous second century (Strocka 1977, fig. 218 H2/21, fig. 401 H2/21 fig. 404 H2/25. Pensabene 1998, no. 35, no. 9 Clarke, fig. 215).

A very relevant example of these marble patterns is on the lower walls of the Hellenistic tomb referred to above. This tomb, dated tentatively to the first century B.C., is less than a kilometre to the northwest of the theatre near the ancient north gate of Pafos, and has vigorous scalloped ‘alabaster’ patterns (Fig. 4) on the lower sections of the walls (Karageorghis 1978, Michaelides 2002). A similar schema for painted marble on the lower walls of tombs is seen on the Hellenistic tomb of Lyson and Kallikles in Lefkadia, described by Agnes Rouweret in a discussion of the birth of illusion in Greek painting (187-198). Interestingly these much earlier examples deriving from Macedonia have a schema incorporating fillets and floral ornament above the panels of imitation marble, such as we see in the decorative motifs of the Pafos theatre. This composition is evident in the Hellenistic tomb in Pafos, with its imitation marble panels below the frieze with garlands.

Later parallels of imitation painted marble are found in the great Roman houses near the theatre. In the ‘House of Theseus’ Daszewski describes Room 38 with both geometric decoration and panels imitating stones such as marble and brown-yellow alabaster, with the wall divided into several bands of decoration. The date of this room is given as 4th century, through Late Roman pottery. In Room 44 near by, the lowest band of decoration is preserved despite constant exposure. In an alcove a row of rectangles is distributed horizontally, with green and black, white and yellow patterns, veined like marble. They are divided from the upper part of the wall by a moulding and a band of claret colour. The outstanding mosaics of this house, which include Achilles and the Fates, are dated to the fourth or early fifth century (Daszewski 1972, fig. 4: 217, 219).

The iconography and function of the theatre parodos

Roman architecture is characterised by space constructed by the language of decoration, and organised by a shell of colour formed of paintings, mosaics and marble facings.
The function of the *parados* was to be an entrance, a public space where people and actors entered the orchestra in procession. Particular kinds of painting are seen in such entrances in Pompeian houses, which were also semi-public spaces. In corridors or peristyle areas, as in the theatre entrance, the painting emphasises the division of space into architectonic panels, with garlands and ornament that do not include figurative scenes (Lehmann, 63-82). This description fits the iconography of the *parados*. In a sense, the passing crowd provided the narrative element, with the richly coloured ornamental panels forming a background to ritual and procession. The dimness of the arched corridor, as in the windowless rooms of villas or shadowed peristyles, was unremarked. Unlike contemporary art, the viewer must have been accustomed to look at paintings in a low level of light, as is still common in churches. Painted decoration in Roman architecture added to, and extended the sense of space and volume even in muted light.

As well as ornament, the presence of the concave curtain on the painted wall may relate to the *siparia*, small curtains used between acts to mark an interlude or change in décor (Beacham, 172). Could this motif signal that the *parados* was a transitional area, a processional area, leading into the theatre? There was a close connection between the function of the space and its decoration in Roman architecture (Clarke, 48). Dionysian pageants are recorded from Alexandria, in the time of Ptolemy Philadelphia where a procession of celebrants carrying baskets, offerings and wineskins, was accompanied by mythological ‘tableaux vivants’. The procession would end in the theatre, where special events took place before the plays began (Cole, 27-9).

 Guilds of actors were very strong in the Late Roman Empire, despite the fact that the profession of acting was of low status and condemned by Christianity. Actors' and performers' guilds, we know from inscriptions in Aphrodiasia, were given responsibility for using certain images by the Emperor (Roueché 1993, 143-7). Inscriptions show how vigorous the 'Guild of Dionysiac Artists' was in Hellenistic Pafos (Mlynarczyk, 138-42, Aneziri 1994). The Tigranes Tomb in Alexandria was possibly a meeting place for an Isis Dining Guild that conducted festivities in the tomb of a deceased member of the guild (Venit 1997, 223). Is it possible that the floral ornament, fillets and swags from the *parados* of the Pafos theatre could be associated with the procession of performers into the theatre, and a gathering place for the guild of actors?

The variety and intensity of the colour in the wall paintings, and the diversity of motifs within the relatively small area of the *parados* emphasises the importance of spectacle, suggesting a vibrant theatre at the political and social centre of Roman Pafos. The orator Libanius (3147-392 A.D.) wrote in 380 from Antioch, a city with a relationship to Pafos, that the reputation of a city was ruined without a theatre (Oration XXIII, 25-7).

The Pafos theatre orchestra was used for aquatic spectacles in its later phase (Green and Sterrett 2002). The *parados* gave a foretaste to the show, to the extravagant displays that we know took place with gladiatorial combats, pantomimes and acrobatic performances, so well documented by Cicero, Pliny, and Suetonius (Beacham, 157).

Conclusions

The theatre frescoes are part of a robust Pafos wall painting tradition from the second to fourth century, parallel to the flowering of mosaic and sculpture at this time. The conjunction of sophisticated painting and mosaics appear in the gymnasium in Salamis, dated by Karageorghis to the third century A.D. (1966, 215). This was a time of prosperity, as the lavish mosaics in the 'House of Dionysos' to the west of the theatre show so amply (Kondoleon 1995). The artistry of the 'House of Theseus' and the 'House of Aion' continued well into the fourth century. It is likely that the theatre
paintings come from the same cultural milieu illustrated in these great Roman buildings. Just as the Late Roman pottery from the Pafos theatre gives evidence for wide trading connections across the Mediterranean world, the painting fits well within a stylistic web of connections, from Italy, Greece, Asia Minor and Egypt from the second to fourth centuries A.D., the Antonine and Severan periods. The parodos wall painting is a distinctive element in the continual re-vitalisation and re-invention of theatrical culture over the long history of the Pafos theatre.

Description of plaster fragments

The plaster fragments come from the western parodos, beside Wall 108 (Trenches 1J, 1R, 1Q, 1FF) and were excavated 1996-2001. Although their state of conservation is somewhat worn and fragmentary, the vivid colour and motifs can be clearly discerned. All have a coarse sandy layer of plaster (10-20mm. approximately) underncath a finer lime plaster (3-8mm approximately).

Inv. 2234. Circle motif (Fig. 5: 1).
Dark blue-green circles (ca 2cm.) on turquoise-grey with touches of yellow-cream and cobalt blue, with a zone of grey to the left, the whole is painted over a yellow-cream base.
Size: 0.265x0.16m.
At least 20 affiliated frs.

Inv. 2235. Fillet motif (Fig. 5: 2).
Terracotta red fillet motif on yellow-cream ground with traces of a blue-green tie.
Size: 0.145x0.135m.
At least 50 affiliated frs.

Inv. 2236. Elaborate fillet motif.
Terracotta red multiple fillet motif of two wavy bands on yellow-cream ground with traces of a blue-green tie.
Size: 0.138x0.13m.
At least 20-40 affiliated frs.

Inv. 2237. Tendril and floral motif (Fig. 5: 4).
Terracotta red flower on green stem and within green tendril system on a yellow cream ground. Traces of red may indicate a flower repeat, or perhaps an adjacent fillet motif.
Size: 0.298x0.191m.
40-50 other fragments with the same motif.

Inv. 2238. Geometric motif (Fig. 5: 5).
Purple-grey and turquoise green on yellow cream ground, arranged as horizontal and diagonal bands.
Size: 0.135x0.132m.
Many frs may be associated with this pattern, done in solid colour. These frs, like 2237, also tend to have a curved and irregular section, suggesting a position on the ceiling of the parodos.

Inv. 2239. Swag motif
Solid turquoise and blue grey over a yellow cream ground.
Size: 0.165x0.12m.
May be part of eg 2237 or 2238. These frs are fairly straight in profile. Many associated frs in this general category.

Inv. 2240. Swag motif (Fig. 6: 4).
The swag is painted in purple-grey over a yellow cream ground. Brushmarks are clearly shown. Curved section.
Related to Inv. 2234, with blue circles.
Size: 0.135x0.10m.
Many associated frs.

Inv. 2241. Variant of swag motif.
Blue-grey and green on a yellow cream ground.
Size: 0.111x0.09m.
Many frs in this general category.

Inv. 2306. Red and indigo motif (Fig. 6: 2).
Solid areas of indigo and terra cotta red juxtaposed along a straight line. Unevenly curved section.
Size: 0.138x0.145m.
Ref. Note painted ceiling of the Hellenistic tomb to the west of the theatre. (Karageorghis, BCH 99 (1978), fig. 75) May be related to Inv. 2318, plain indigo on narrow
8. Ms Christie Waddington has studied the ceramics and small finds from this period on the Pafos theatre excavation, and her research will appear in the main Pafos theatre publication.
6. Inv. 2311. Rectangular motif (Photographer Bob Miller).


8. Inv. 3757. Diagonal red band on sandstone block.

9. Inv. 3758. Red filled or tie, 0.25x0.73m. Gouache Drawing

Fig. 5
width of sandstone block, suggesting that the curved section may be part of vaulting of parados.
About 30 related frr.

Inv. 2308. Imitation marble motif (Fig. 6: 7).
Grey irregular lines and bands over yellow-cream ground, with traces of turquoise.
Size: 0.056x0.084m.
About 22 associated fragments.

Inv. 2309. Frr of imitation marble (Fig. 6: 5).
Irregularly drawn scalloped pattern in a strong terracotta and a dark indigo over a yellow cream ground.
Size: 0.47x0.46m.
Ref. Similar motifs and styles from Ephesus. Strocka 1977, fig. 401 H2/21, which shows a panel of imitation marble of vigorous scalloped shapes on cream. Pensabene 1998 no. 9 Fior de Pesco, associated with the Severan period in Leptis Magna.
About 15 very small associated frr.

Inv. 2310. Imitation marble in four colours (Fig. 6: 6).
Irregularly spotted pattern in a strong terracotta, a dark indigo and turquoise over a yellow cream ground.
Size: 0.057x0.059m.
About 10 very small associated frr.

Inv. 2311. Frr of rectangular motif (Fig. 5: 6).
Turquoise and blue green in strong brushmarks over a yellow cream ground. May belong to the same sequence as inv. 2234 as colour virtually identical.
Size: 0.159x0.135m.
About 10 associated frr totalling c. 40 square cm.

Inv. 2312. Frr of coarse red on cream motif (Fig. 6: 3).
Irregular strokes of terracotta red and grey on a creamy white ground of a coarse and uneven texture.
Size: 0.219x0.192m, 0.452x0.516m. (11 joining frr).
17-20 substantial frr totalling more than 50 sq. m.

Inv. 2313. Frr of course plaster of uncertain motif. Scattered splashes of terracotta red and grey on a cream ground. Possibly related to imitation marble motif, but uncertain.
Size: 0.154x0.168m.
About 30 frr of all sizes totalling 25 square cm.

Inv. 2314. Frr with imitation marble motif (swirling) on sandstone block (Fig. 6: 8). Swirling lines in yellow orange, with scallops and circles in terracotta red; filling patterns in turquoise; all on a yellow cream ground.
Size: 0.22x0.27m. is the area of the painted surface, with further areas of plaster deeply encrusted. The painting is on the broad side of the sandstone block, which is fragmentary. Its present dimensions are 0.023x0.080x0.051m. which indicates that it was a similar size to other blocks with traces of painted plaster, found in this same area.
The painted plaster is on the broad surface of the block, unlike the other examples of plaster on sandstone, e.g. Inv. nos 2315, 2317, 2319 where the plaster is found on the narrowest side. This may indicate a position on the flat wall, rather than in the vault of the parados.

Inv. 2315. Frr of fillet motif attached to sandstone block in dark terracotta red with part of a turquoise tie, with some green, on yellow ground. Related to Inv. 2235.
Size of painted plaster: 0.142x0.103m.
Size of sandstone block to which it is attached: 0.26m high, 0.49m wide, 0.23m deep. The painting is on the narrowest side of the block, suggesting that it may have been part of a vaulted roof.
Refs. Ephesus: Strocka 1977, fig. 419 H2/14d.

Inv. 2316. Frr of swag motif on joining sandstone blocks, in purple-grey over yellow ground with some turquoise, and strong indications of brush lines (Fig. 6: 9). Size of painted plaster: 0.655x0.225m. The joining sandstone blocks: 0.24/24.5 high, 0.36/34 wide. The painted surface on the narrow width of block.

Inv. 2317. Frr of tendril and fillet motifs on sandstone block from vaulted ceiling of parados. Very fragmentary and worn, in terracotta red and turquoise on yellow. Size of painted plaster: 0.20x0.36m, on narrow width of block. Block is entire although corners have crumbled: 0.24m high, 1.09m wide, 0.49m deep. The painted plaster is on the narrowest surface, suggesting a position in the vault of the parados.
1. Inv. 3757. Diagonal red band with traces of green leaves, 0.22x0.51m. Gouache drawing.

2. Inv. 2306. Red on indigo motif (Photographer Bob Miller).

3. Inv. 2312. Red on cream motif (Photographer Bob Miller).

4. Inv. 2240. Swag motif (Photographer Bob Miller).

5. Inv. 2240. Imitation marble (4 frz) (Photographer Bob Miller).


7. Inv. 2308. Imitation marble (Photographer Bob Miller).

8. Inv. 2316. Swag motif, Gouache drawing.

9. Inv. 2316. Swag motif, Gouache drawing.
Inv. 2318. Fr of solid indigo on sandstone block from vaulted ceiling of parodos?
Size of painted plaster: 0.20x0.145m. on narrow width of block. Block is broken: 0.24m. high, 0.57m. wide, 0.39m. deep. Original length of block would have been 1 metre, as seen in block of same proportions, Inv. 2317.
Related possibly to Inv. 2306, red and indigo bands. Note painted plaster ceiling of the Hellenistic tomb less than 1km to the north of the theatre (Karageorghis, BCH 99 (1978), fig. 75).
Inv. 3734. Fr with red diagonal band along deep yellow diamond with grooved incisions at the edges of colours. Traces of blue-green (Fig. 5: 7).
Size: 0.283x0.215m.
Condition: worn surface but colour and form clear.
Three associated fr have evidence of re-plastering over a painted layer.
Inv. 3753. Fr of red and white with touches of yellow of uncertain motif on wedge-shaped sandstone block, from vaulted ceiling of parodos. Size of painted plaster: 0.27x0.18m.
Size of block: 0.265m. high, 0.555m. wide, 0.39m. deep.
Related to Inv. No. 2312.
Inv. 3756. Tendril and floral motif on sandstone block from vaulted ceiling of parodos. Plaster projects over edge of block. Three long green tendrils, with green leaves and traces of flowers and possibly a fillet in red, on a yellow cream ground.
Size of painted plaster: 0.265x0.68m.
Size of block: 0.265m. high, 0.556m. wide, 0.39m. deep.
Ref. Related to Inv. nos 2315, 2317, 2235, 2236, 2237 with same references.
Inv. 3758. Red fillet or tie on grey/cream on keystone sandstone block, from barrel vault above parodos. Painted plaster decoration on two surfaces. Block shows slight curve (Fig. 5: 9).
Size of painted surface: 0.25x0.73m.
Size of block: 0.265m. high, 0.765m. wide, 0.575m. deep.
Two plaster fr on adjacent surface with bands or strokes in dark red on cream, 0.105x0.95m. This painted surface may be the painted facing of the vaulted area.
Inv. 3762. Fillet and tendril/leaf on yellow cream ground, on fragmentary sandstone block from barrel vault above parodos. Fillet is nearly complete with 10 deeply curved loops, and traces of green leaves over cream yellow ground (Fig. 5: 3).
Size of painted plaster: 0.11x0.33m.
Size of block: 0.265m. high, 0.395m. wide, 0.41m. deep.
Ref. Related to Inv. nos 2315, 2317, 2235, 2236, 2237 with same references.
Inv. 3765. Fillet and leaf motif on fragmentary sandstone block, from barrel vault above parodos. Fillet is nearly complete with 10 deeply curved loops, and traces of green leaves over cream yellow ground.
Size of painted plaster: 0.11x0.33m.
Size of block: 0.265m. high, 0.395m. wide, 0.41m. deep.
Ref. Related to Inv. nos 2315, 2317, 2235, 2236, 2237 with same references.
Inv. 3814. Red band with traces of green over yellow cream ground on fragmentary sandstone block from barrel vault above parodos. The truncated block has a V shaped masonry mark.
Size of painted plaster: 0.21x0.23m.
Size of block: 0.265m. high, 0.57m. wide, 0.57m. deep.
Ref. Broad red bands for ceiling decoration on Tigrane tomb, Alexandria (Venit 1997) and widely used in Ostia to define geometry of wall and ceiling (Clarke 168, 177, 299).
Inv. 3815. Black and red bands on grey on cream ground, on sandstone block, from barrel vault above parodos. Surface very encrusted with salts, conserved.
Size of painted plaster: 0.215x0.455m.
Size of block: 0.265m. high, 0.455m. wide, 0.54m. deep.
Ref. May relate to Inv. nos 2306 and 3758.
REFERENCES

ANDRONICOS, MANOLIS; Vergina: the Royal Tombs and the Ancient City (Endotike Athenon, Athens 1984).


BARBET, ALEX (ed.): La peinture murale romaine dans les provinces de L'Empire (BAR International Series, 165, 1983).


CLARKE, JOHN R: The Houses of Roman Italy 100 BC-AD 250: Ritual, Space, and Decoration (University of California Press, Berkeley, 1991).


CHAISMARTIN, NATALIE de: "Agonistic Images on Aphrodisian Sarcophagi". Appendix IV in Charlotte Roueche, Performers and Partisans at Aphrodisias in the Roman and Late Roman periods (Society for the Promotion of Roman Studies, Journal of Roman Studies Monograph, No. 6 (1993), 240-8).


DAVEY, NORMAN and LING ROGER: Wallpainting in Roman Britain (Gloucester, Sutton 1982).


GADBERY, LAURA M.: "Roman wall painting in Corinth: new evidence from east of the Theater", Journal of Roman Archaeology (Supplementary Series Number 8, Ann Arbor, MI, 1993).

GREGORY, TIMOTHY E.: "The Corinthia in the Roman period", Journal of Roman Archaeology (Supplementary Series Number 8, Ann Arbor, MI, 1993).


GREEN, J. R.: "Motif-Symbolism and Gnathia Vases", Beitrage zur Ikonographie und Hermeneutik, Festshrift fur N. Him-


--- "Recent Discoveries at Salamis (Cyprus)", Archäologischer Anzeiger Heft 3 (1966), 211-255.


Liversidge, Joan: "Wall Painting from military sites in Roman Britain" in Alex Barbet (ed.), La peinture murale romaine dans les provinces de l'Empire (BAR International Series 165 (1983), 141-156).

Michaelides, Demetrios: Cypriot Painted Tombs and their ceilings (Unpublished manuscript, Nicosia 2002).


REYNOLDS, JOYCE: “Aphrodisias and Rome. Documents from the excavation of the theatre of Aphrodisias conducted by Professor T Erim, together with some related texts”, *Society for the Promotion of Roman studies* (Journal of Roman Studies monograph No. 1, 1982).


Experimental techniques

Thirteen samples of painted plaster were taken from the theatre at Pafos in 2001 and analysed by the Nicholson Museum at the University of Sydney. Four analytical techniques: light microscopy, X-ray fluorescence (XRF), X-ray diffraction (XRD), and scanning electron microscopy (SEM) with an energy dispersive spectrometer (SEM-EDS) were employed to attain a compositional analysis of both the pigments and plaster.

Light microscopy provided the initial characterisation of pigments based on their physical appearance. XRF analysis, using the Oxford ED2000 Energy Dispersive X-ray Fluorescence Spectrometer identified the principal elements present. XRD analysis, using an X-ray diffractometer (Siemens Diffraktometer D5000) determined in what form these elements were present. The use of a Philips 505 SEM enabled sections cut from each colour (embedded in resin and then coated with carbon) to be examined at very high magnifications. The addition of an SEM-EDS facilitated a compositional analysis of highlighted areas.

Plaster

The samples of plaster taken from the theatre of Pafos all appear very similar in section. Due to the state of preservation, it is not possible to examine the mode of attachment to the wall, or the thickness of the primary layer of plaster. However, from the samples available, it appears that the plaster was applied in at least two layers. The preliminary layer is fairly rough with a large amount of aggregate in the form of very small grains of sand and other minerals. The second layer, roughly 4mm. thick, appears to be somewhat finer and laden with the same aggregate material only in a smaller quantity.

XRF analysis of a selected number of the samples show that each contain large amounts of calcium, sulphur and silica and smaller amounts of aluminium, magnesium, iron and strontium. XRD analysis was able to characterise the first six of these elements into the minerals gypsum, calcite, quartz and various silicates. SEM-EDS analysis of sections of the plaster revealed a fairly homogeneous, albeit porous mass of a calcareous material, probably a mixture of calcite (CaCO₃) and gypsum (CaSO₄·2H₂O), these minerals being identified by XRD analysis. The gypsum, seen on the surface of many samples and occasionally between layers of plaster, is likely to have formed post burial through interaction of contaminating sulphur with the calcite.

The presence of both potassium and strontium in many of the samples is explained through the work of Sciuti et al. Investigating the plaster from a fresco of the second quarter of the first century A.D., found near Trajan’s Baths at Rome, Sciuti’s team discovered that the presence of strontium sulphate in conjunction with lime clays was quite typical (Sciuti et al. 2001:134) and that potassium was included as a neutralising agent to prevent the alkalinity of the lime plaster from attacking alkali-sensitive mineral pigments (Sciuti et al. 2001, 139).

The images provided by SEM show some aggregate material in the plaster matrix, represented by small brightly fluorescing particles and larger, smooth particles. SEM-EDS analy-
ses indicate that the smaller particles are silica (sand) and the larger ones are composed of aluminium and silica (clay). Traditionally, the final layer of plaster contained marble dust in place of the sand, to create a fine and smooth finish suitable for painting upon. However, it is known that clay was often substituted for marble dust to both facilitate polishing and slow down the drying of the plaster (Mora et al. 1984, 93). Also, crushed ceramic was sometimes used as an aggregate material, giving the plaster a semi-hydraulic property and making it less porous and stronger, better able to be used in a damp environment (Vitruvius 1960, 208-9; Pratt 1976, 224).

Red

Three samples of red-coloured pigments were taken from the theatre at Pafos. The first of these is an intense terracotta-coloured red resembling Munsell 10R 4/6. The other two samples are less intense in colour, resembling Munsell 10R 5/6. These two sit upon a layer of yellow-coloured pigment (close to Munsell 10YR 8/8), which probably accounts for the decrease in intensity of the red colour in these two samples.

Under magnification, the red pigment appears to be mostly very finely ground with numerous albeit scattered, slightly larger particles of a darker and more vivid red. XRD analysis identified the presence of iron, with the closest match, given the minerals on file, being ammonium iron sulphate (NH₄)₃Fe(SO₄)₂. The presence of iron was supported by both XRF and SEM-EDS analyses of the section.

The peaks produced by the XRD analysis do not correspond with any of the known spectra for the traditional red pigments haematite, goethite or limonite. It should however be noted that XRD analysis, being only able to detect crystalline materials, is unable to detect the amorphous limonite. Deterioration and/or oxidation, as well as the limited number of minerals available on file for comparison, could be the cause of the difficulty in identifying the mineral employed. However, it is clear that one of the natural iron-containing earth ochres was used to produce the red-coloured pigment used at Pafos.

Yellow

Apart from the patches of yellow visible underneath some of the red pigments, only one sample of yellow-coloured pigment was taken from the theatre of Pafos. It is a vivid yellow colour, close to Munsell 10YR 7/8. Under magnification, the pigment appears to be very finely ground, with some scattered, slightly larger particles visible. Of these slightly larger particles, some are intensely yellow, while the majority is dark brown to black in colour.

Analysis of the spectrum produced through XRD of the yellow pigment shows the presence of an iron-containing mineral. The closest match, given the profiles of minerals available on file, was either a form of goethite Fe₂O₃·H₂O, or ammonium iron sulphate hydrate (NH₄)₂Fe(SO₄)₂·6H₂O, or carphosiderite (H₂O)Fe₃(SO₄)₂{(OH)₂H₂O} or a mixture of all these minerals. SEM-EDS and XRF analyses supported the presence of iron.

Goethite, a traditional yellow pigment, was identified on wall paintings at Hellenistic Pella, Greece (Calamiotou 1983, 120). Carphosiderite has been identified as a yellow pigment used in antiquity (Wallert 1995, 182-3) and referred to by Pliny as 'misy'. Pliny writes that it was obtained by burning minerals of copper or iron and that "... the best kind is obtained in the copper factories of Cyprus" (Wallert 1995, 184). The identification of carphosiderite as the yellow pigment used in the wall paintings at Pafos theatre would have interesting implications, indicating local sourcing and alluding to the metal industry of Cyprus.

Maroon

Two samples of a maroon-coloured pigment were taken from the theatre at Pafos. The pigment is dark red in colour, with a slight purplish tinge. The Munsell charts used in this study could not provide a match for this colour.
Under magnification, the maroon pigment appears similar to the red, only slightly bluer and less finely ground. The scattered, slightly larger particles found in the red samples are present in a higher concentration. It is possible that the pigment used in both the red and maroon samples is similar, only in the case of the red samples, the pigment is more finely ground and sitting upon, or perhaps mixed with, a yellow-coloured pigment.

Analysis of the spectrum produced through XRD of the maroon pigment indicated the presence of an iron-containing mineral, the closest match, given the profiles on file, being for chalcopyrite CuFeS₂. It should be noted that, having only two peaks, this mineral could be fairly easily misread into a spectrum. XRF analysis of this sample appears to confirm the presence of these two elements, as well as lead and nickel.

Red lead or 'minium secondarium' is an oxide of lead Pb₃O₄ produced by heating white lead (West 1986, 109). Gettens and Stout describe red lead as bright scarlet in colour, with the propensity to darken over time, through exposure to light, to a chocolate brown colour (Gettens and Stout 1966, 152-3). It is possible that the maroon-coloured pigments found at Pafos contained some red lead, or perhaps chalcopyrite (although less likely) in addition to the iron-containing mineral. This may explain the darker colour of this sample.

Interestingly, Sciutì et al., examining the pigments of a Roman wall painting of the first century A.D. in Rome, identified a red-brown colour, which proved to be a combination of pigments containing copper, lead and iron (Sciutì et al. 2001, 137). It is possible that this pigment is very similar, if not the same, as that found at Pafos.

Purple

A single sample of the purple-coloured pigment used in the wall paintings in Pafos was retained. The colour is a rich, dark purple, not represented in the Munsell soil colour charts used in this study. Under magnification, it appears similar in nature to both the red and maroon-coloured pigments only slightly coarser with significantly more dark brown to black-coloured inclusions.

XRD analysis produced possible matches with the minerals cinnabar HgS, chalcopyrite CuFeS₂ and haematite Fe₂O₃. This possible mixture of different pigments was confirmed through XRF analysis, which identified large amounts of mercury and iron and smaller amounts of copper and lead.

Haematite was often applied as an undercoat to cinnabar which provided a richer-looking red than haematite, yet was more expensive (Wallert and Elston 1996, 99) and known to be unstable, turning black on exposure to light (Vitruvius 1960, 216). This could indicate that the colour may have originally been closer to red than it now appears.

Light blue

Three samples of a light-blue coloured pigment were taken from the theatre at Pafos. The colour is a pale sky blue, closest to Munsell GLEY 70G1. Under magnification, the pigment appears to be finely ground, with a great deal of scattered, larger particles, which are darker and bluer in colour.

XRD analysis produced a match for the mineral cuprorivaite CaCuSi₄O₁₀. SEM-EDS and XRF analyses confirmed the presence of calcium, silica and copper as well as some iron and lead. Cuprorivaite, or Egyptian blue is said to have been the most favoured pigment for mural paintings throughout the Greek and Roman periods (Lazzarini 1982, 84).

Glaucophane, a sodium magnesium (or aluminium) hydroxide silicate with the formula Na₂Mg₃Si₄O₁₂(OH)₂ is another traditional blue pigment. The magnesium and aluminium are sometimes replaced by Fe²⁺ (Profi 1976, 36) rendering the mineral a possible candidate for the source of the blue pigment at Pafos. Filippakis et al., commenting on the frequent use of both pigments together, surmise that the reason for this was that Egyptian blue, being im-
ported from Egypt, was more expensive than the locally obtained glaucophane (Filippakis et al. 1976, 149).

It is certain that a copper based mineral, probably cuprorivaite, was used to achieve the light blue colour in the wall paintings at Pafos. The presence of small amounts of iron and lead, as indicated by XRF analysis, suggests that the colour may have been produced through a mixture of pigments. It should be noted that iron can be present in cuprorivaite as a contaminant (Filippakis et al. 1976, 145). However, it is possible that some iron-based glaucophane and lead white were added to the pigment to produce the light blue colour, possibly due to the high cost of Egyptian blue. Indeed, Ling reports that Egyptian blue was sometimes mixed with or applied over white (Ling 1991, 208).

**Dark blue**

There is one sample of the dark blue-coloured pigment used in the wall paintings at Pafos. The colour is a very dark greyish blue, resembling Munsell GLEY 6/10G and sits on top of an area that appears to have been initially decorated with cream-coloured pigments. Under magnification, the pigment appears to be mostly very finely ground, with some scattered, larger particles of the same ultramarine colour as seen in the light blue samples. There are also the occasional ultramarine-coloured particles of a more vivid blue. It is not clear whether these particles belong to the dark blue itself, or to the cream-coloured pigments below.

The spectrum produced through XRD analysis showed a possible match with cuprorivaite CaCuSi₄O₁₀. The presence of calcium, silica and copper was confirmed through XRF analysis. In comparison to the spectrum produced through XRF of the light blue sample, the proportion of copper to iron seems to be inverted. There appears to be a good deal more iron than copper in the dark blue sample than seen in the light blue sample. This would seem to indicate that an iron-containing mineral, such as haematite, was mixed with the cuprorivaite to produce a darker blue. This would account for the scattered red and yellow particles observed under magnification of the sample.

**Green**

Two samples of a green-coloured pigment were taken from the theatre at Pafos. The green pigment is a pale aqua colour, close to Munsell GLEY 7/5G and appears to sit upon a layer of cream-coloured pigments.

Under magnification, the pigment is mostly finely ground, with numerous, scattered, larger particles of a more vivid green. There are also the occasional ultramarine-coloured particles as seen in the blue samples as well as a very few scattered, large red particles. It is not clear whether these particles belong to the green pigment or to the cream beneath.

XRD analysis indicated the presence of glauconite (K,Na)₃(Fe³⁺,Al,Mg)₂(Si,Al)₄O₁₀(OH)₂ and possibly copper tin Cu₃Sn. SEM-EDS analyses were unable to identify copper, but confirmed the presence of iron. XRF analysis identified all the components of glauconite with the exception of sodium and magnesium and also indicated that copper and lead were present, but only in very small quantities.

When mixed together, the ferrous silicates celadonite and glauconite form a pigment known as green earth. Gettens and Stout report that green earth contains the scattered blue-coloured particles that are visible under magnification (Gettens and Stout 1966, 117). They claim that the pigment has a poor hiding power (Gettens and Stout 1966, 117), which may explain the presence of cream-coloured pigment underneath. They also report that good quality celadonite is found in Cyprus (Gettens and Stout 1966, 117).

**Cream**

Apart from traces appearing beneath other pigments, a single sample of cream-coloured pigment was taken from the theatre at Pafos.
The colour is a pale, yellowish cream, resembling Munsell 10YR 8/2. Under magnification, the pigment appears to have been very thinly applied and very finely ground with many scattered larger particles that appear similar to those seen in the yellow-coloured sample.

XRD analysis indicated the possible presence of an ammonium iron sulphate mineral and chalcopyrite CuFeS₂, although as already mentioned, chalcopyrite could be misread into a spectrum. XRF analysis identified iron but no copper. The spectrum produced appeared very similar to the one produced for yellow, only with less iron.

These results would seem to indicate that the pigment used to produce the cream colour at Pafos was probably the same mineral used to produce yellow, only applied more thinly, and/or possibly diluted with additional plaster.

Black

The one sample of the black-coloured pigments taken from Pafos is in poor condition. The plaster substrate is very soft, with few inclusions. The black colour, although partially obscured by surface accretions, appears to be a cool black, resembling Munsell 2.5Y 2.5/1B. Under magnification, the pigment appears to have been generously applied. The particles are very fine, soot black in colour with a slight sheen.

XRD analysis identified an iron containing mineral, with the closest match being ammonium iron sulphate hydrate \((\text{NH}_4)_2\text{Fe(SO}_4\text{)}_2\cdot\text{H}_2\text{O}\). This mineral may be part of the plaster-clay matrix identified through SEM-EDS analyses of this sample. Carbon is a more feasible source of the black pigment, its non-crystalline quality rendering it invisible through XRD and easily confused with the carbon coating of the samples used for SEM-EDS.

Conclusion

This study has shown that the painters at Pafos had a good knowledge of the chemical behaviour of pigments and their aesthetic effects. They worked with an extensive palette which included the colours: red, yellow, orange, purple, light blue, dark blue, green, cream and black. Some colours were produced by mixing one or more pigments, or by layering one colour upon another. Pigments were sourced both locally and from afar. The more expensive, imported pigments were routinely mixed with cheaper, locally sourced pigments. The technology and choice of pigments is comparable to that of Pompeii and recently discovered second half of the first century A.D. wall paintings from an area near Trajan’s Baths in Rome.

Diagram of SEM-EDS analysis of Light Blue pigment.
REFERENCES


ΠΕΡΙΛΗΨΗ

Η εκσαλιάση σπαραγμάτων γάζου που δέχονται χρώμα στο χώρο της διακοσμητικής εισόδου του θεά
tου του Πάφου παρουσιάζει ιδιαίτερα ενδιαφέρον, λόγω του ότι οποιαδήποτε σειράς συγχε
tριώσεις σε θέατρα. Στο θέατρο της Πάφου βρέθηκε ζωγραφισμένος γάζος στα ανάλημμα (τον κεντρι
cό τοίχο που στηρίζει το καλών) και σε γωνιόδρομος της κυλινδρικής καμάρας της παράδοσης, ενώ
υπήρχαν εκπληκτικές σπαραγμάτες μέσα στα ερείπια. Σε παρόμοια θέσεις ζήσουν οι ίδιες ανάλημμα
σαφτοποιούντα βία που προέρχονται από τα κτήρια των σημείων, αλλά λίγες ενδείξεις υπάρχουν
για ζωγραφισμένους τοίχους.

Από την προκειμένης μελέτη της ζωγραφικής που προέρχεται από το θέατρο της Πάφου προ-
έκυψε ότι υπήρχε πολλά διακοσμητικά μοτίβα μέσα στην τούβλη είσοδα της παράδοσης. Παρέξτη
γεγονός ότι δεν υπάρχουν κατεξοχήν διακοσμητικές μαρτυρίες για τη χρονολογία του λιθοσκευαν
έκτισμα στην καμάρα του θεάτρου. Η περιοχή συγκεκριμένης μεταξύ των δείγματων ζωγραφι-
σμένος από την Ουσία, την Έφεσο, την Αλεξάνδρεια και τη Σάρδης θα μπορούσε να δώσει μια πα-
θινή χρονολογία μέσα στο θέατρο πιθανό τους 2ου μιλίο του μ.Χ. ή μετά. Θεωρείται ότι ένα
τελείως καθαρό και απολύτως σκότωμα φάσμα έρχεται βάρος της ισχυρότερης περιόδου θεατρικής,
ημέρα λιγά προσωπική ενημερωμένη λίστα έναντι της επι-
γονής μαραθίας, το οποίο θα αποτελούσε μια αρχική επιλογή.

Το ζωγραφισμένη απασχόληση γάζου από το θέατρο Πάφου είναι σημαντικό λόγω της ποικιλο-
τάτης των χρώματος και των διακοσμητικών μοτίβων που παρουσιάζονταν αλλά και λόγω της αντιπαλής
θέσης στην ενοριακή διακόσμηση του θεάτρου. Οι ευεξιοδοτικοί παντοπλοιοί της ζωγρα-
φιστή θεατρική κατακόρυφα που υπήρχε στην επικεντρωμένη ελληνορωματική περίοδο της Πάφου.