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Colour Experiments. The Harpy Monument: a Section of the West Side

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Abstract. Reconstructions of ancient polychromy on statuary are often the result of meticulous scientific research: pigments and barely visible remnants of decoration are identified. A pigment, however, does not provide evidence of the character of the paint layer, i.e. whether it was opaque or translucent, matte or glossy. As no intact, original paint layers remain, there are many uncertainties regarding paints and painting techniques. What can be seen on marble are faint traces of paint. In the present paper I will draw on my study of the so-called Harpy monument: the questions posed, the methods applied, the series of tests that were conducted and my suggestion of a possible polychromy. My starting point was the idea that monuments send messages to the viewer: the size of the object and the materials with which it was made indicate the commissioner's social and economic status. Figures and myths illustrate the cultural context, and they reflect values cherished by the commissioner. Colours and shades also transmit messages. The reconstructive part of the project was limited to one of the west side segments, a relief showing a woman enthroned, but in order to understand the monument as a whole its four sides were considered more broadly, taking into account its Anatolian context.

In the collections of the Historical Museum of Lund University there are plaster casts of marble reliefs that once adorned the so-called Harpy monument at Xanthos.¹ I was invited to create a hypothetical reconstruction of what the colours might have been in one of the sections. This raised many questions regarding the monument and the original context, which, at the time, were totally unknown to me. Another issue was the plaster copy, which showed that the original was quite weathered, and that most of the fine cut details had vanished. This complexity generated three main questions. Firstly, is it ever possible to correctly interpret the messages depicted on a complex monument created more than 2000 years ago in a very different culture? Secondly, was it possible to find information regarding paint in archaeological reports, and would these make it possible to reconstruct

¹ The monument was discovered by Charles Fellows in 1838 and the marble reliefs that adorned the burial chamber were soon after transferred to the British Museum in London.

Fig. 1 The Harpy Monument, Kybernis' tomb. Drawing by Agneta Freccero after a drawing by Rev. Edward Thomas Daniell, 1842.

the original colours? And finally, should one of the damaged sides be used for the experiment, or should a new copy be made, and if so, would it be possible to find a material that was more marble-like than plaster?

I also had the opportunity to see the original monument in London, looking for traces of paint. While conducting research into the original context of the monument, I read reports on modern reconstructions of ancient polychromy based on scientific analyses, and made a series of material tests, which led to the production of two new casts which were then painted. The project was developed based on these studies. Examination methods and test materials were chosen according to the possibilities that were enabled by the present project.²

The Harpy monument is the largest and most richly decorated of this distinctly Lycian type of funerary monument, the pillar tomb, which is a capped sarcophagus placed on top of monolithic pillars (*Fig. 1*).³ It is the only pillar tomb with marble decoration, named after the bird-women which adorn four cornerstones.⁴

The monument has been understood as the tomb of Kybernis, the king of Lycia, who commanded the Lycian fleet in the battle of Salamis in 480 BC, where he was either severely wounded or killed. The sarcophagus, made of coarse-grained white marble, is divided into eight segments: four cornerstones and

² My thanks go to all who contributed to the outcome of this project: to Kicki Eldh for suggesting this project and to the workshop team, Olle Andersson, Lovisa Dal, Kicki Eldh, and Bernd Gerlach, for making the silicone forms and the large casts; to Anne-Marie Leander Touati who read and commented on an early version of the report; and to Ian Jenkins at the British Museum in London for showing me the monument. I am most grateful to Lars Salviusföreningen and Syskonen Bothéns foundation for the financial support which made possible the practical part of this project, including making the large casts. The two casts are now in Lund University's Historical Museum.

³ Akurgal 1942, 107ff.

⁴ On the Lycian monuments, see e.g. Boardman 1995; Challis 2008; Demargne 1958; Jenkins 2006, 151-202; Pryce 1928, 117-130.

four square central sections with figural scenes in high relief, below which there was an egg-and-dart decoration connecting to the pillar.⁵

The common theme on the four sides is interactions between seated and standing figures such as audiences and processions, in tales which are shown by symbols such as thrones, weapons, jewellery, flowers, fruits and eggs.⁶ Male and female figures alike are heavy-set and their restricted composure and graceful gestures, combined with the many symbols depicted, indicate that they are representations of honourable persons. Three sides are reserved for the history of powerful males and their attendants. The west side, considered by F.N. Pryce to have been the most important, best preserved and superior in style, was reserved for female figures.⁷ On each cornerstone, framing the scene, is an enthroned figure facing the centre, where a procession of three korai walk from left to right, carrying gifts to the female seated at the extreme right-hand side (*Fig. 2*). The right-hand section with the smiling figure receiving gifts was chosen for this project.

Fig. 2 Kybernis monument, the right-hand section of the west side, prepared for making a silicone form.

⁵ The tomb is composed of a sarcophagus-shaped burial chamber resting on a square 5.5-metre-high grey-blue monolithic limestone pillar placed on a base. On the architecture, measurements and function of the monument, see Demargne 1958, 39; Pryce 1928, 123.

⁶ On interpretations of the rituals depicted, see e.g. Bryce & Zahle 1986; Pryce 1928; Richter 1949; Richter 1961; Rudolph 2003. On the Bird-women, see e.g. Buschor 1944; Challis 2008, 29; Draycott 2008; Jenkins 2006, 163; Rudolph 2003. On interpretations of the animals depicted see e.g. Jenkins 2006; Zahle 1975. On the chairs and thrones, see e.g. Baker 1966; Baughan 2013, 73ff; Kyrieleis 1969; Özgan 1973, 25ff.

⁷ Pryce 1928, 123.

Marble and polychromy

What ancient statuary may have originally looked like has been debated ever since it was accepted that Winckelmann's perception of white marble was an ideal that was not founded in reality. Patrik Reuterswärd's comprehensive study relays the debate that followed after the discovery that antique marble sculptures were painted.⁸ Some scholars thought that bright colours were used to cover statues and architectural elements, while others claimed that sculpture was only partially painted. Some favoured the idea of opaque paint layers covering the stone and others believed that paints were partially applied to details such as eyes and hair, and to highlight specific patterns, or perhaps to give a hue to the stone. John Beazley's fairly progressive idea was that paint was more discretely applied on marble than on limestone.⁹

A constant theme is the colour of the skin: was it painted or not? Some experts claim that naked skin on sculpture from the late archaic and classical periods was unpainted, although it may have been treated with wax to render the marble less white.¹⁰ Gisela Richter stated that areas of skin were always painted light pink or a brownish pink.¹¹ Valentina Manzelli found that some statues had remnants of red or pink on the cheek.¹² According to Elena Walter-Karydi, late archaic and classical statuary was mostly left unpainted.¹³ Vincent Brinkmann found that the skin of females was painted in a light ochre-brown or yellow-brown hue, and that hair was usually painted in two layers: red to begin with, followed by brown.¹⁴

There is a general consensus that painting methods successively changed from the Archaic to the Hellenistic and Roman periods. Sculpture and reliefs in the Archaic period were painted according to a distinct and simple scheme, without shading but pleasing to the eye, as seen, for example, in Egyptian and Near Eastern art. Shading began when there was a new, naturalistic perception of reality in painting and sculpture. An often-cited example is the account by Pliny, telling about the fourth-century BC Greek sculptor, Praxiteles, who was once asked which of his sculptures he liked best. He replied he preferred the works that had been painted by Nikias.¹⁵ As Nikias was known to be a master of the chiaroscuro technique, his art was compatible with Praxiteles' naturalistic

⁸ Reuterswärd 1960.

⁹ Beazley 1932, 15.

¹⁰ Berger 1904, 239; Reuterswärd 1960, 70.

¹¹ Richter 1929, 25, 30.

¹² Manzelli 1994, 110.

¹³ Walter-Karydi 2004, 227.

¹⁴ Brinkmann 2010, 26.

¹⁵ Pliny, *HN* 35.133. *'hic est Nicias, de quo dicebat Praxiteles interrogatus, quae maxime opera sua probaret in marmoribus: quibus Nicias manum admovisset; tantum circumlitioni eius tribuebat.'* In Rackhams translation: 'It is this Nicias of whom Praxiteles used to say, when asked which of his own works in marble he placed highest, "The ones to which Nicias has set his hand" – so much value did he assign to his colouring of surfaces.'

approach in sculpture. Pliny uses the word *circumlitio*, a treatment which can also be understood as coating with Punic wax.¹⁶

Most remnants of paint on statues are found in the hair, eyes, lips and garments. Hair was normally given a reddish brown or black hue, and the colour of the garments reflected the origin and status of the figure; those of heroes and deities were especially colourful, sometimes even covered in gold leaf.¹⁷ Jewellery was sometimes gilded, and important furniture might have been gilded, too.¹⁸

Colours were probably applied in different ways on marble and limestone because these stones have quite different characteristics. Limestone is an absorbent rock with a matte finish, while marble is a much harder stone, a metamorphic, crystalline rock, which can be highly polished. Some white marbles have imperfections, while others, such as Parian, is perfect for sculpting. Highly valued marbles were quite expensive in Antiquity, and would not have been painted in opaque layers. As Paolo Liverani points out, opaque colours would conceal the cherished marble with the result that people might assume the stone was of an inferior quality.¹⁹ Michael Price, who is an artist, explains how the different binding media, such as casein and egg tempera, affect the characteristics of the resulting colour, and advises avoiding tempera paints on marble, which may become dull.²⁰ He points out that several thin paint layers are better than a few saturated ones. An insensitive application of paint can make the sculpted marble lose its plasticity and make it seem rather flat. The preciousness of different marbles is attested in ancient texts and repeatedly evidenced in modern research. Analyses regarding the Mausoleum at Halikarnassos show that Pentelic and Parian marbles had been employed for free-standing sculpture and portraits, while other types were used for reliefs and architectural elements.²¹ Unpainted white marble was often combined with red, blue and gilded details.²²

Ancient sculpture was not completed until it had been at least partially painted, but what kind of paint was used on marble and how was it applied? According to Ulderico Santamaria, lime casein, which is a mixture of casein glue and lime water, was probably used during the Roman period.²³ Valentina Manzelli considers tempera to have been one of the paints; another medium was wax.²⁴ Tempera indicates paint that was soluble in water, and its binder could be, for example, animal glue, casein, egg or a mixture of several products. The properties of tempera paints, such as resistance to humidity and weathering, depend on the binder. Punic wax, which is an emulsion made of natural beeswax, can also

¹⁶ Pliny, *HN* 33,40,122.

¹⁷ Brinkmann 2010, 28.

¹⁸ Berger 1904, 242.

¹⁹ Liverani 2004, 240.

²⁰ Price 2010, 63–66.

²¹ Walker & Matthews 1997, 50, 53, 55, 56.

²² Jenkins et alii 1997, 39.

²³ Santamaria & Morresi 2004, 251

²⁴ Manzelli 1994, 99.

be described as a kind of tempera.²⁵ It was used to protect some pigments such as cinnabar when used on wall decorations made *al fresco*, and was applied in the same way as when used on marble.²⁶ Vitruvius refers to the coating process in a similar manner, explaining that it is used the same way ‘...as nude marble statues are treated. This process is called *ganosis* by the Greek’.²⁷ Brigitte Bourgeois’ studies of a portrait head with remnants of gilding, paint and coating showed that the wax coating was an example of the *ganosis* treatment.²⁸ She further pointed out that *ganosis* had a double function of protecting and giving lustre to the marble.²⁹ The first treatment of this kind to be mentioned was applied to the cult statue of Aphrodite at Delos in 304/3 BC. Beeswax in its various forms has been identified on many works of art from the Hellenistic and Roman periods, including portrait paintings from Roman Egypt.³⁰

Reconstructions are generally made on plaster casts.³¹ The Alexander Sarcophagus from Sidon is one such example.³² The sarcophagus’ polychromy is extremely well preserved.³³ This corresponds with earlier studies by von Graeve, who found that Macedonian clothing was monochrome and that the Persian garments and shoes were painted in bright colours against a blue background.³⁴ von Graeve’s observations were confirmed by Houser, who identified scarlets, reds, lavenders, purples, violets, blues and yellows.³⁵ All these colours are still clearly visible as soft, bright hues, while the reconstruction shows opaque and bright colours combined with unpainted white. Examples of this kind are shown in many museums, which brings me to the crucial question: how can we claim to know what the monuments originally looked like? The pigments are identified by scientific analysis, a binder is chosen, and the copy is painted according to choice. Analyses of paint reveal the nature of a pigment but the pigment in itself cannot be used to establish the density of the pigment in the original paint layer. Whether covering or just a tint, the pigment is the same, but the impression of the colour changes.

²⁵ Freccero 2000c, 180ff; Freccero 2002, 72ff; Freccero 2011, 47; Freccero 2012, 29f, 109f.

²⁶ Pliny, *HN* 33.40, 122. In Rackham’s translation: ‘A surface painted with cinnabar is damaged by the action of sunlight and moonlight. The way to prevent this is to let the wall dry and then coat it with Punic wax melted with olive oil and applied by means of brushes of bristles while it is still hot, and then this coating must be again heated by bringing near to it burning charcoal made of plant-galls, till it exudes drops of perspiration, and afterwards smoothed down with waxed rollers and then with clean linen cloths, in the way which marble is given a shine’.

²⁷ Vitruvius, *De Arch* 7. 9.3.

²⁸ Bourgeois 2016 65ff.

²⁹ Bourgeois 2016, 75f.

³⁰ Freccero 2000a, 120f; Freccero, 2000b.

³¹ Østergaard 2011, 24ff. On recent reconstructions see e.g. Liverani 2004, Spada 2004. Computerized methods exist too, but these are not within the limits of this paper.

³² Østergaard & Nielsen 2014, 114-115.

³³ Brinkmann 2014, 114.

³⁴ von Graeve 1970, 95ff.

³⁵ Houser 1998, 284.

Colours are markers of status and hierarchy. Purple was the most expensive colour in ancient times. The purple mantle, cloak or toga was an established symbol of power and royalty in art.³⁶ It was chosen by kings and rulers, and it was often combined with crowns or wreaths in gold.³⁷ Pigments such as cinnabar, scarlet and some kinds of blue, were rare and costly, too, while earth pigments, ashes and coal were easy to find at hardly any cost at all.³⁸ Therefore, the choice of colour was a marker of the commissioner's cultural affiliation, his or her economic and social power and even religious belief. Christopher Jones found that purple and white were the main colours used in processions, where groups of people were dressed in white, and important individuals, such as priests, wore purple.³⁹ Gold was a sign of luxury, and like expensive and vivid colours such as purple, it may have been used for final touches on the Harpy monument.

The colour project

At the time of the discovery, Charles Fellows recorded some traces of red on the Harpy monument and observed that the background was blue. In Pryce's catalogue from 1928, the background is noted as blue, and there were traces of scarlet, red, yellow, black and blue.⁴⁰ When I looked at the monument in London, there were still some very small remnants of the blue background on all sides.⁴¹ On the north side were faint traces of black or dark brown in one harpy's hair, and on the east side were black stains in the hair of the standing figure and traces of yellow on the lower part of the frame. On the south side, I found only traces of blue. On the west side there were small stains of dark brown in the hair of one of the korai, and faint traces of red were connected to the female on the right, in the cavity between the pomegranate and her hand. There were also scattered areas with stains of brownish red which may have been residues of some surface protective, or just discoloration. I further noticed that the tiaras had a smooth and uniform surface, possibly due to former gilding.

Based on these results and the studies mentioned above, I decided to use blue for the background, red for the mantle, fruit and flower, green for the flower's stem, and yellow for the bracelet.⁴² It would have been possible to paint directly on the gypsum copy, but I preferred to make a new copy in a more marble-like material. Therefore, experiments were made to test different materials in order to find the most convenient material for a

³⁶ Baughan 2010, 25; Jones 1999, 247ff; Torelli 1999, 148.

³⁷ On pigments and ancient paints, see Ashok 1993, Augusti 1967, Forbes 1065, Gettens & alii 1993.

³⁸ Jones 1999, 252. Purple was laboriously extracted from the murex shellfish, of which large deposits have been found at Miletus in Karia, one of the major centres of production.

³⁹ Jones 1999, 250f.

⁴⁰ Pryce 1928, 127; Reuterswärd 1960, 48.

⁴¹ I have not received permission from the Museum to publish my photographs, and no museum photographs of this kind are available.

⁴² Blue has been observed as the most frequently used colour for the background on reliefs after the Archaic period; red was a distinct symbol for nobility; yellow indicated gold.

large-size replica. After the basic sequences of material test, alabaster gypsum was chosen as the material for the copy. Before making a silicone form of the relief, a small form was made of a detail, a hand holding a flower, so that further material and paint tests could be undertaken (*Fig. 3*). A summary of the project is presented below. The experiments and tests were described in full in a project report.⁴³

Material tests

Initial tests were made to establish the better casting material and to check different combinations of preparations, pigments and binders. The basic questions posed were:

- a) How does marble stucco function compared to plaster of Paris or alabaster gypsum?
- b) Which material provides the most accurate copy?
- c) How do these materials function as preparations for painting?
- d) Which combination of preparation and paint is the better one?

Forty-two small plywood pieces were prepared and used to make thin plates for testing different preparations such as stucco, plaster of Paris (gypsum) and alabaster gypsum, and some paints. The materials for preparations were also used to test their utility for relief casts. Crushed marble was part of each mixture with the objective of trying to make a marble-like material. After these initial tests, it was time to try the materials on twelve casts of the hand only. Below is a brief summary of my observations regarding casting materials and paint.

Stucco

Sixteen plates were prepared with marble stucco in two or three strata, beginning with a layer of coarse-grained stucco followed by a finer one, the same way as used for Roman wall decoration. Stucco was a satisfactory material for the flat plates. The surfaces could be prepared to resemble marble or to receive the characteristic smooth shell-like surface of a well-prepared Roman wall, depending on the selected grain sizes of the crushed marble and the smoothing treatment. It was easy to cast small blocks of stucco, too; they were *c.* 2.5 cm thick and there were no shrinkages. When the same material was used for a copy of the hand, it proved to be quite difficult. In fact, the first cast was a total disaster; it broke into several pieces, due to the shifting thickness in a high relief. Therefore, a metal net was used to reinforce the following copies in stucco. Some of the later casts became pleasant to look at, but as all of them got fissures during the setting process, this technique could not be used for a large copy. Another negative factor was the long setting and drying period, which took 48–72 hours. There was no problem applying colour on stucco surfaces, which were equally well suited for any of the pre-selected paints (*Figs. 4–6*).

⁴³ Färgprojektet. Inledning, projektbeskrivning, historik. Tester, gjutning, bemålning. Unpublished report. Workshop 1–11, 2013.

Fig. 3 Making a copy of the hand holding a flower.

Fig. 4 Hand no. 1, stucco. The hand was frail and broke into many pieces.

Fig. 5 Hand no. 1, retouched with alabaster gypsum.

Fig. 6 Hand no. 2 stucco, reinforced with a metal net. The cast had minor fissures which were retouched.

Fig. 7 Hand no. 8, plaster of Paris. The first cast without shrinkage fissures.

Fig. 8 Hand no. 12, alabaster gypsum. The better result. No fissures, rapid drying, pleasant and hard surface.

Fig. 9 Paint tests. Stucco plates in the two top rows, and plaster of Paris in row three and four. The pigments tested were raw terra, burnt terra, yellow ochre, golden ochre, bone black and carbon black. Lime-water was tested as the binder for the top row, Punic wax in the second, lime-water in the third, and distemper in the bottom row. All paints were made fluid, and they were applied in 1-4 layers on each plate.

Plaster of Paris

Another sixteen plates were prepared with plaster of Paris (gypsum) with or without the addition of some crushed marble. Casting with gypsum is a traditional process. It has the advantage of a short burning and drying period, and there is no risk of shrinkages. The downside is the dull surface. The setting time for the hand was roughly one hour. There were no fissures, and the result was good. Painting on gypsum surfaces was quite difficult, and the result was not satisfactory using any of the painting methods or any kind of paint (*Fig. 7*).

Alabaster gypsum

Ten plates received a layer of alabaster gypsum, which turned out to be an excellent alternative. It slightly resembles stucco, but has the advantages of being rapid-drying and having no problem with shrinkage. This material becomes harder than plaster of Paris or stucco. The hard and less absorptive surface was rather easy to paint. The setting time for the casts of the hand was roughly two hours (*Fig. 8*). It was decided to use a mixture of alabaster gypsum and crushed marble for the large cast.

Paints

Paints were prepared with materials known since Antiquity and tested *al fresco* and *a secco* (Fig. 9). The binders were casein, lime-casein, rabbit glue (distemper) and Punic wax, which is a saponified beeswax. Casein paint was the least stable. Lime-casein was satisfactory when applied on a humid surface. Distemper and Punic wax were my favourite binders on these surfaces. Some of the objects representing the different paints were treated with Punic wax after a drying period of roughly two weeks. The emulsion was left to dry, after which the surfaces were heated and polished with rags, to receive a shiny and water repellent surface. Finally, the bracelet on a few test-hands was gilded.

Painting

The common problem on all casts was the worn surface. Paint tends to fill the pores and cavities, which makes an uneven paint layer. One hand, the most damaged broken number 1, was reused. It was assembled, and cracks, fissures and cavities were retouched with alabaster gypsum, aiming at creating a more level, unweathered surface (Fig. 10). This does not mean the hand is truer to the original – it just has a smoother surface.

Tempera made of pigments and rabbit glue (distemper) was easy to use on stucco, and so was Punic wax. Casein and lime/casein were not well suited for painting on alabaster gypsum. Therefore, the choice for the large cast was distemper and Punic wax. These two paints are compatible; each of them can be applied on top of the other, and each has a pleasant appearance by itself. Egyptian blue is difficult to spread due to the large crystals, but if the pigment is very finely ground it becomes less brilliant. Further, as the large crystals tend to fall when the surface is rubbed, they easily provoke scratches in the paint. Treatment with Punic wax seems to imbed the crystals, thereby reducing the problem. A similar colour is achieved using cobalt and ultramarine (Figs. 11–14).

Two casts of the large relief were made with the mixture of alabaster gypsum and crushed marble (Figs. 15–18). A fairly liquid paint was used for the background on cast

Fig. 10 Hand no. 1, painted with distemper. The bracelet was gilded. Background in an opaque colour consisting of cobalt, ultramarine and zinc white. Yellow ochre used for the skin and bracelet, cinnabar for the flower and dress.

Fig. 11 Hand no. 2, painted with distemper. Cobalt/ultramarine, cinnabar, and ochre. The bracelet was gilded.

Fig. 12 Hand no. 8, painted with distemper and Punic wax. Egyptian blue, alizarin scarlet lake and golden ochre.

Fig. 13 Hand no. 10, painted with distemper. Cobalt/ultramarine, golden ochre and burnt terra. Surface treated with Punic wax.

Fig. 14 Hand no. 12, painted with lime-casein and Punic wax. Egyptian blue, golden ochre, burnt terra and cinnabar.

number one, after which the figure's skin was tinted with unpigmented Punic wax. Raw *terra di Siena* was applied on the hair. The mantle was painted with crimson lake and some iron oxide used in the deep folds. As the slightly opaque colour reduced the effect of three-dimensionality, a thin layer of violet (crimson and blue) was added into the folds to mark the relief. My original idea was to leave the chiton white, but after having read that these chitons were often in pale ochre, I applied a thin ochre layer. The shoes received a neutral colour of leather, and the bracelet and the diadem got a warm yellow ochre hue to bring gold to mind. The pomegranate and the flower were painted in different reds. Green was used for the flower's stem. The cushion was painted ochre and blue, and finally, a yellow ochre hue was given to the throne in order to integrate it into the totality of the picture. I was not satisfied with the result and decided to paint the next copy in a much lighter way (Fig. 19).

Fig. 15 Copy no. 1, unpainted.

Cast number two was painted in even more diluted paint, since it is easier to increase the intensity of a colour rather than reduce it. In this case I kept the chiton white (Fig. 20). The hair, the flower, fruit, jewellery and cushion were painted with the same pigments as used for the first copy. Cinnabar was used for the first layer on the mantle, after which crimson lake and some blue were applied in the folds. The throne was treated with a dark variety of Punic wax.

Fig. 16 Detail, showing the weathered surface.

Fig. 17 Detail, geometric pattern on the throne

Fig. 18 Detail, palmetto pattern on the throne.

Discussion

The Harpy Monument was erected in an important area of the town close to the acropolis of Xanthos. The location of the monument, its size, materials and decoration indicate that the owners belonged to the top strata of society. The reliefs show seated persons who are the principal participants in the reception, procession and offering scenes. Sceptres, spears and military equipment indicate the males as kings and warriors, and the handsomely dressed females wear jewellery. There are two main ways to read the seated figures: either these are gods receiving gifts, or they are representations of members of the ruling family. My choice was to explain the monument as a marker of a leading family, who wanted to demonstrate their power by choosing what was regarded as exclusive, striking and regal.

White marble is such a marker, and this was the first marble monument erected at Xanthos. Remnants of paint reported at the time of discovery show that expensive pigments such as blue, scarlet and red had been used. It most probably was partially painted with cinnabar and purple red, and it possibly had gildings as well. The memorial

was aimed at glorifying the owners and to impress the people, and maybe to celebrate a shared history.

On the west side, which was the focus of this study, the female figures hold objects related to life, death and rebirth. The pomegranate is associated with death and rebirth, and the egg represents new life. Several figures hold a flower, often interpreted to be a poppy, a symbol of fertility, attributed to Demeter. Alternatively, it may be a lotus flower, reminiscent of ancient Hittite culture, where the flower was a symbol of royal dignity. My choice was poppy, and therefore the colour red was chosen for the flower.

Egyptian blue was an obvious choice for the background, because all available information shows that the background was blue. The large size of the crystals in this pigment makes it difficult to work with, so it was further crushed to become slightly better as paint. Scarlet red was chosen for the mantle because such a red had been identified on the monument, and it was the colour used for prominent persons in Antiquity. For the jewellery, I chose a golden yellow hue, because it would have been a suitable material on this monument. Brownish red ochre was used for the hair, and the pomegranate was painted red. The throne on copy number one received an ochre hue.

I was not satisfied with the first copy, but prefer copy number two because it is not painted, but only suggests some hues. However, neither can be said to look exactly like the original. It is impossible to recreate the artistic impression and expression of an undamaged original in marble on a copy in a different material. It is equally impossible to recreate the impression of original colours on a weathered surface, and in particular on a plaster copy of a weathered marble surface. Paint behaves differently on smooth, flat and hard surfaces such a marble, and on a surface covered with bruises and cavities. Paint tends to fill the hollows independently if it is applied as a wash or as an opaque layer. As a consequence, a hypothetical reconstruction on a damaged surface is not a reflection of the original, but just a suggestion of how the object may have appeared.

When the Harpy monument was new and the marble shining, smooth and fresh, it would not have been difficult to apply a tint to the stone. When the marble's surface is badly weathered and some parts are missing, it is difficult to see the exact shape of finely cut details. The eye of the female in the present study is clearly visible, but one can only guess where the iris and the pupil were carved. It is difficult to see where one finger ends and the next begins, or where the bun of the hair ends and the diadem begins. The forms of the lips are not visible at all. Looking at the clothing, it is not clear whether all the heavy folds belong to the mantle or if some are part of the chiton, which obviously makes a difference when paint is applied. Similar problems exist regarding the cushion and its extended parts, which might be tassels.

Conclusion

The Harpy monument is a distinctly Lycian monument created within a multicultural tradition. The composition and representations of figures belong to a long tradition in Anatolia, to which new conceptions and Greek innovations were added. My interpretation of the complex context in the distant past is subjective. It is based on the assumptions that

Fig. 19 Copy no. 1, painted.

Fig. 20 Copy no. 2, painted.

a ruling family of any time chooses what is regarded as high-class, beautiful and regal. White marble, gold, purple, cinnabar and other costly pigments were highly valued, and were chosen by those who could afford them. As far as polychromy is concerned, I agree with scholars who do not believe that paint was applied in opaque layers on precious marble, but that contrasting colours were set against the white, sometimes just to give a hue. My fundamental point of view is that all reconstructions are hypothetical; it does not matter if the most advanced techniques are used to determine pigments and paints; applying them on a form is necessarily a subjective act. Give a copy of a statue and the same set of colours to five persons and you will have five different results. My two reconstructions are based on values that are current today, and possibly in the past as well. I prefer one of them, but it is impossible to say which one is most like the original. The reconstructions are based on the information available, as mentioned above, and any discussion of the results is welcome.

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Bibliography

- Akurgal, E. 1942: *Griechische Reliefs aus VI Jahrhundert aus Lykien*, Berlin: Archäol. Inst. des Deutsch. Reiches.
- Ashok, R. 1993. (ed.): *Artist's Pigments. A Handbook of Their History and Characteristics*, vols. 2, Oxford: Oxford University Press.
- Augusti, S. 1967: *I colori Pompeiani*, Rome: De Luca Editore.
- Baker, H.B. 1966: *Furniture in the Ancient World. Origins and Evolution. 3100–475 BC*, London: Macmillan.
- Baughan, E. 2013: *Couched in Death. Klinai and Identity in Anatolia and Beyond*, Wisconsin: University of Wisconsin Press.
- Beazley, J.D. 1932: *Greek Sculpture and Painting*, Cambridge: Cambridge University Press.
- Berger, E. 1904: *Die Maltechnik des Altertums nach den Quellen, Funden, chemischen Analysen und eigenen Versuchen*, Munich: Georg D.W. Callwey.
- Boardman, J. 1995: *Greek Sculpture. The Late Classical Period*, London: Thames & Hudson.
- Bourgeois, B. 2016: 'Ganosis et réflexions antiques de polychromie. Enquête sur le portrait en marbre de Bérénice II au Musée royal de Mariemont', *Cabiers de Mariemont (Trésors hellénistiques de Mariemont)* 40: 65-81.
- Brinkmann, V. 2010: 'Färgläggningen av arkaiska och tidiga klassiska skulpturer', in G. Beijer (ed.). *Vita lögner*, Malmö: Arena, 19-30.

Brinkmann, V. 2014: 'The Polychromy of Archaic and Classical Greek Sculpture', in J.S. Østergaard & A.M. Nielsen (ed.). *Transformations. Classical Sculpture in Colour*, Copenhagen: Ny Carlsberg Glyptotek, 80-115.

Buschor, E. 1944: *Die Musen des Jenseits*, Munich: F. Bruckmann.

Bryce, T.R. & J. Zahle, 1986: *The Lycians – volume I. The Lycians in Literary and Epigraphic Sources*, Copenhagen: Museum Tusculanum Press.

Challis, D. 2008: *From the Harpy Tomb to the Wonders of Ephesus. British Archaeology in the Ottoman Empire 1840–1880*, London: Bristol Classical Press.

Demargne, P. 1958: *Fouilles de Xanthos. Tome I. Les piliers funéraires*, Paris: Klincksieck.

Draycott, C. 2008: 'Bird-women on the Harpy Monument from Xanthos, Lycia: sirens or Harpies?', in D.C. Kurtz, H.C. Meyer & E. Hatzivassiliou (ed.). *Essays in Classical Archaeology for Eleni Hatzivassiliou 1977–2007*, Oxford: Archaeopress, 145-153.

Forbes, R.J. 1965: *Studies in Ancient Technology*, vols. 3, Leiden: Brill.

Freccero, A. 1996: *Enkaustik. Experiment med puniskt vax. Rapport 4.96*. Gothenburg: Forskningsstiftelsen för Samhällsplanering, Byggnadsplanering och Projektering.

Freccero, A. 2000a: *Roman Painting. Wall Paintings, Fayum Portraits and Polychrome Statuary. Conservation, Materials and Context*, Gothenburg: University of Gothenburg (PhD thesis).

Freccero, A. 2000b: *Fayum Portraits. Documentation and Scientific Analyses of Portraits belonging to Nationalmuseum in Stockholm*. Gothenburg: Acta Universitatis Gothoburgensis.

Freccero, A. 2000c: *Mumieporträtt. En konstabok från Nationalmuseum*. Stockholm: Nationalmusei.

Freccero, A. 2002: *Encausto and Ganosis. Beeswax as Paint and Coating during the Roman Era and its Applicability in Modern Art, Craft, and Conservation*, Gothenburg: Acta Universitatis Gothoburgensis.

Freccero, A. 2011: 'Ancient Paints: pigments and Binders', *Focus on the Mediterranean* 6: 41-54.

Freccero, A. 2012: 'Wax Paint and Punic Wax – Research and Experiments', in S. Omarini (ed.). *Encausto. Storia, tecniche e ricerche/Encaustic. History, Technique and Research*, Florence: Nardini Editore, 24-32, 105-113.

- Gettens, R.J., R.L. Feller. & W.T. Chase, 1993: 'Vermilion and Cinnabar', in R. Ashok (ed.). *Artist's Pigments. A Handbook of Their History and Characteristics*, vols. 2, Oxford: Oxford University Press, 159-182.
- Houser, C. 1998: 'The Alexander Sarcophagus of Abdalonymus', in O. Palagia & W.L. Coulson (ed.). *Regional Schools in Hellenistic Sculpture*, Oxford: Oxbow Books, 281-291.
- Jenkins, I. 2006: *Greek Architecture and its Sculpture in the British Museum*, London: British Museum Press.
- Jenkins, I, C. Gratzia. & A. Middleton, 1997: 'The Polychromy of the Mausoleum', in I. Jenkins & G.B. Waywell (ed.). *Sculptors and Sculptures of Caria and the Dodecanese*, London: British Museum Press, 35-41.
- Jones, C. 1999: 'Processional Colours', in B. Bergmann & C. Kondoleon (ed.). *The Art of Ancient Spectacle*, New Haven & London: Yale University Press, 247-258.
- Kyrieleis, H. 1969: *Throne und Kline: Studien zur Formgeschichte altorientalischen und griechischer Zeit und Liegemöbel Vorhellenistische Zeit*, Berlin: Walter de Gruyter.
- Liverani, P. 2004: 'L'Augusto di Prima Porta', in P. Liverani (ed.). *Il colore del Bianco. Policromia nella scultura antica*, Rome: De Luca, 235-242.
- Manzelli, V. 1994: *La policromia nella statuaria greca arcaica*, Rome: L'Erma di Bretschneider.
- Plinius, *Natural History*, translated by H. Rackham, Cambridge, Loeb Classical Library, 1952.
- Price, M. 2010: 'Beredning och applicering av färgpigment', in G. Beijer (ed.). *Vita lögner*, Malmö: Arena, 63-66.
- Pryce, F.N. 1928: *Catalogue of Sculpture in the Department of Greek and Roman Antiquities of the British Museum, vol. I, part I. Prehellenic and early Greek*, London: Oxford University Press.
- Reuterswärd, P. 1960: *Studien zur Polychromie der Plastik, Griechenland und Rom*, Stockholm: Bonniers.
- Richter, G.M.A. 1929: 'Were the Nude Parts in Greek Marble Sculpture Painted?', *Metrop. Mus. Stud* 1 (1): 25-31.
- Richter, G.M.A. 1949: *Archaic Greek Art against its Historical Background*, New York & London: Oxford University Press.

- Rudolph, C. 2003: *Das "Harpyien-Monument" von Xanthos. Seine Bedeutung innerhalb der spätarchaischen Plastik*, Oxford: British Archaeological Reports.
- Santamaria, U. & F. Morresi. 2004: 'Le indagine scientifiche per lo studio della cromia dell'Augusto di Prima Porta', in P. Liverani (ed.). *Il colore del Bianco. Policromia nella scultura antica*, Rome: De Luca, 243-248.
- Torelli, M. 1999: 'Funera Tusca: Reality and Representation in archaic Tarquinian Painting', *Studies in the History of Art* 56: 147-162.
- Vitruvius, *Ten books of Architecture*, translated by I.D. Rowland, Cambridge, Cambridge University Press, 1999.
- von Graeve, V. 1970: *Der Alexandersarkophag und seine Werkstatt*, Berlin: Gebb Mann.
- Walker, S. & K.J. Matthews, 1997: 'The Marbles of the Mausoleum', in I. Jenkins & G.B. Waywell (eds) *Sculptors and Sculptures of Caria and the Dodecanese*, London: British Museum Press, 49–67.
- Walter-Karydi, E. 2004: 'Il colore dello sfondo nei rilievi nella scultura greca arcaica e Classica', in P. Liverani (ed.). *Il colore del Bianco. Policromia nella scultura antica*, Rome: De Luca, 225-235.
- Zahle, J. 1975: *Harpyiemonumentet i Xanthos. En lykisk pilleggrav*, Copenhagen: Gads Forlag.
- Østergaard, J.S. 2011: 'The Copenhagen Polychrome Network: Aims, Organization and Activities', *Focus on the Mediterranean* 6: 23-30.
- Østergaard, J.S. & A.M Nielsen. (ed.) 2014: *Transformations. Classical Sculpture in Colour*, Copenhagen: Ny Carlsberg Glyptotek.
- Özgan, R. 1978: *Untersuchungen zur Archaischen Plastik Ioniens*, Bonn: Rheinische Friedrich-Wilhelms-Universität (PhD thesis).