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130 Sculpture of Phrasikleia, ca. 540 BC, marble, from Merenda, Athens, National Archaeological Museum, inv. 4889

131 Phrasikleia and kouros during excavations in 1972, in place of discovery

132 Base of funerary figure with inscription on front, limestone

133 Base of funerary figure with artist signature on right side, limestone

Vinzenz Brinkmann, Ulrike Koch-Brinkmann, Heinrich Piening

The Funerary Monument to Phrasikleia

The sculpture of Phrasikleia provides us with an unusually complete impression of an archaic female funerary figure of the mid sixth century BC [FIG. 130]. It was excavated in Merenda, Attica in 1972.¹ The marble sculpture's astonishingly good state of preservation, complete with its polychromy, is presumably indebted to the fact that, at its original site in the burial complex, it was exposed to atmospheric conditions for only a brief span of time. Already in ancient times, this figure of a girl was buried in the ground along with a kouros. It accordingly exhibits only very few breaks and chips [FIG. 131].²

We can only speculate about the historical reason for this "second burial": the great tensions between two powerful families, the Alcmaeonidae and the Peisistratidae may be at the root of this occurrence. If we assume that Phrasikleia was a member of the Alcmaeonid family, her relatives would have had to reckon with revenge and the destruction of many of their possessions when Peisistratos and his sons returned from exile in the second half of the sixth century BC and seized power again. Yet it is equally possible that Phrasikleia was a Peisistratid. The erection of her tomb would have taken place in the third period of Peisistratid rule, which began in ca. 546 BC, and the removal of the figure would have been related to the end of the tyrannies in around 510 BC.³ The Persian military campaigns which ultimately led to the destruction of Athens in 480 BC could likewise have provided the occasion for hiding the figure in the ground of the necropolis.⁴ The fact that the statue was never re-erected would seem to support the assumption that Phrasikleia had her origins in the circle of Peisistratos. It was only the Peisistratidae who, banished from the land once and for all, would never return to power. A statuary base employed as spolia in the wall of the neighbouring Church of Panagia was already documented in the eighteenth century.⁵ This base was determined with certainty to have originally belonged to the figure, since the cast lead with which the figure's plinth was mounted in the base has survived. The lead corresponded perfectly to the traces of processing found on the side surfaces of the plinth.⁶ With the aid of X-ray fluorescence analysis, bronze was detected in the interior of the cast lead. Evidently a bronze ring was initially placed around the plinth before the lead was run in on all sides of the bronze ring for the purpose of positioning the figure precisely and securing it in the base, as shown by the traces of lead found in the depression in the base.⁷ When it became necessary to detach the figure from the base, as many as five centimetres of the entire surface of the base were chiselled off in order to expose the bronze ring with its coat of lead.⁸

The Inscription on the Base: The Identification of the Figure and the Sculptor

The inscription on the front was made illegible through the destruction of each individual letter, and a major proportion of the artist's inscription disappeared as a result of being chiselled off [FIGS. 132, 133]. Nevertheless, it has been possible to reconstruct the characters with all certainty:

The inscription on the limestone base identifies the deceased by name and describes her fate. Phrasikleia died before her marriage. The gods therefore gave her the eternal name "kore" (daughter, girl). Today, however, we not only know the name of the girl depicted, but also that of the sculptor who executed and signed the work "Aristion from the island of Paros made it" on the right side of the base.⁹

On Dating the Figure of Phrasikleia

Aristion of Paros executed other statues apart from that of Phrasikleia. We are informed of some of his other activities through artist signatures.¹⁰ Lilian H. Jeffery and Brunhilde S. Ridgway moreover proposed relating the artist signature on the Siphnian treasury in Delphi to Aristion.¹¹ Within the context of his work on the treasure house, Vinzenz Brinkmann proceeded from the assumption that this proposal was correct.¹² If the reconstruction of the artist inscription on the north frieze – "Aristion parios tade kai t'opisthen epoiēn" – is true, then the north and east frieze were carved by the sculptor of the *Phrasikleia*.¹³ The commencement of construction on the Siphnian treasure house is closely associated with the date 525 BC. However, the building may well have reached completion only several years later.¹⁴

A distinct change of style is apparent between the rendering of the *Phrasikleia* and that of the figures in the Delphic friezes. Depending on how this phenomenon is evaluated, the *Phrasikleia* could conceivably have been executed between 550 and 530 BC.

The possible relationships between the Siphnian treasury and the funerary statue of Phrasikleia provide us with an interesting historical insight: after his second banishment, with the aid of the Naxian aristocrat Lygdamis, Peisistratos had returned to power in Athens in the mid sixth century. He used his newly regained strength to conquer Naxos and award Lygdamis with tyrannic rule over the island. In Naxos and Paros, the two important islands for the quarrying of marble (of which the latter was evidently dependent on the former), an extraordinarily ambitious building programme was now undertaken.¹⁵ The marble architecture developed in this phase remained definitive throughout the region and beyond for a long time. It is in this context that the construction of the Siphnian treasury in Delphi is to be understood.

Aristion of Paros, the artist who executed the *Phrasikleia*, could thus have been associated with the friends of the tyrants and their sphere of power.¹⁶ Following their banishment from

Athens, the Alcmaeonidae concentrated on the constant expansion of their influence in Delphi. Even before 510 BC, they began amassing funds for the new construction of the Temple of Apollo in Delphi, which had been destroyed by fire. We know from Aristotle (Pol. 19,4) that they misappropriated money from this fund as a means of urging the Spartans to undertake a military strike against the Attic tyrants.

Was the intent of the Alcmaeonidae – who were taking credit for the restoration of the main Delphic temple – to erase the memory of the cultural accomplishments achieved by the tyrants and their sphere at a place as politically sensitive as Delphi?

The affectionately chiselled letters of Aristion's artist signature on the north frieze of the Siphnian treasury would thus have represented a provocation to the influential enemies of the tyrants in Delphi, and brought about the inscription's systematic destruction.

The base of the *Phrasikleia* was not buried with the figure. Since it was used centuries later as building material in a church, it can be considered highly probable that it remained on the step-shaped tomb. There is every reason to assume that the memory of Phrasikleia was intentionally obliterated. The funerary figure was not destroyed, quite possibly due to a last remaining vestige of reverence to the kore's image, but buried at such a depth in the ground that it remained invisible to the eyes of men for 2,500 years.¹⁷ The funerary epigram, on the other hand, was systematically silenced. This intervention remained visible for a long period, and will hardly have missed its target.¹⁸

If we assume that the kore Phrasikleia belonged to the Peisistratid clan, the observations merge to form a logical set of circumstances. As a Parian, Aristion was a sculptor in the service of the closely connected tyrants of Attica and the islands. Following the military victory of the Alcmaeonidae and the Spartans over the Peisistratidae in 510 BC, the funerary figure was removed, in the process of which the artist signature broke off. The epigram on the front fell silent.

The Figure's Decoration

The girl wears sandals, a long, richly ornamented robe with a wide belt above the hips, and on her head a crown of flowers consisting of open lotus blossoms and lotus buds [FIG. 130]. In her right hand she holds a closed lotus blossom before her breast, while grasping the skirt of her robe with her left hand in a charming gesture. Her jewellery consists of earrings, a necklace with seven pendants, and two bracelets. Her hair is held back from her forehead with a hair band decorated with a meander; on each side, three locks of hair fall past her shoulders and onto her breast. The hair band is tied in a knot; its ends hang down at the back of her head. The dress features various scattered ornaments; specifically, rosettes, swastikas and stars are strewn across the surface. The neckline and edges of the sleeves as well as the vertical strip

down the middle of the front of the robe are decorated with splendid wide meanders. A scale- or tongue-like pattern embellishes the bottom edge of the skirt. The contours of all of the patterns were incised in the stone. The sleeves are elbow-length, and there is a wide seam across the shoulders.

The Documentation and Investigation of the Phrasikleia's Colours

After its excavation in 1972, E. Mastrokostas introduced the sensational find in a scholarly journal.¹⁹ That report, however, contained neither a systematic colour-photographic documentation nor a detailed description of the polychromy.²⁰

In her 1997 contribution to the *Antike Welt*, Katarina Karakasi made a reconstruction of the *Phrasikleia's* colours the chief focus of her deliberations.²¹ She did not carry out a microscopic analysis of the pigments, but observed the figure with the naked eye, and applied to the *Phrasikleia* colour-related observations made on other archaic sculptures.²² The very affectionately rendered graphic depictions are accordingly theoretical in character; details such as the green lotus stems and husks or the swastikas on a black ground are hypothetical.

In 2002, Nikolaos Kaltsas published a thorough scholarly study of the two statues in *Antike Plastik*. He discussed the colouration in detail. On the occasion of the figure's mechanical cleaning, Kaltsas had the pigments microscopically analyzed. He observed the employment of red for the closed inner petals of the lotus blossoms and buds, the meander of the hair band, the robe, the background of the meander borders, and every second scale in the hem border [FIG. 134]. He identified yellow in the meander bands of the robe's borders, the pattern along the hemline and the scattered ornamentation. In the rosettes and the scale-like pattern at the hem he ascertained the presence of black in addition to yellow [FIG. 135]. He also saw this black on the strips framing the meanders and in the crown. The results served as the basis for colour reconstructions of the figure from all four sides; in a number of areas such as the belt, sandals and hair, these reconstructions were hypothetically supplemented [FIG. 136].²³ Apparently, no samples were taken for the purpose of carrying out chemical pigment analyses.

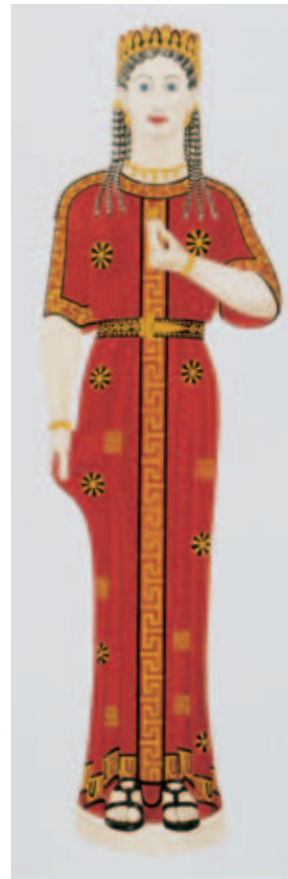
In 2003, Brinkmann published the results of a microscopic investigation²⁴ he had carried out in 1987 with Volkmar von Graeve and Ulrike Koch.²⁵ In 1987, traces of orange-brown flesh colour were observed on the neck. The colour ghosts indicating the eyebrows and traces of black paint were easier to discern in 1987 than in 2009 [FIG. 137]. In several places, gold foil could be detected on the yellow paint indicating the rosette petals, leading Brinkmann to conclude in 2003 that the black in the rosettes and along the garment's hem had also served merely as a ground, presumably for silver or tin foil [FIG. 138]. In areas – for example the belt and a few of the scattered patterns – on which no traces of paint were visible in 1987,



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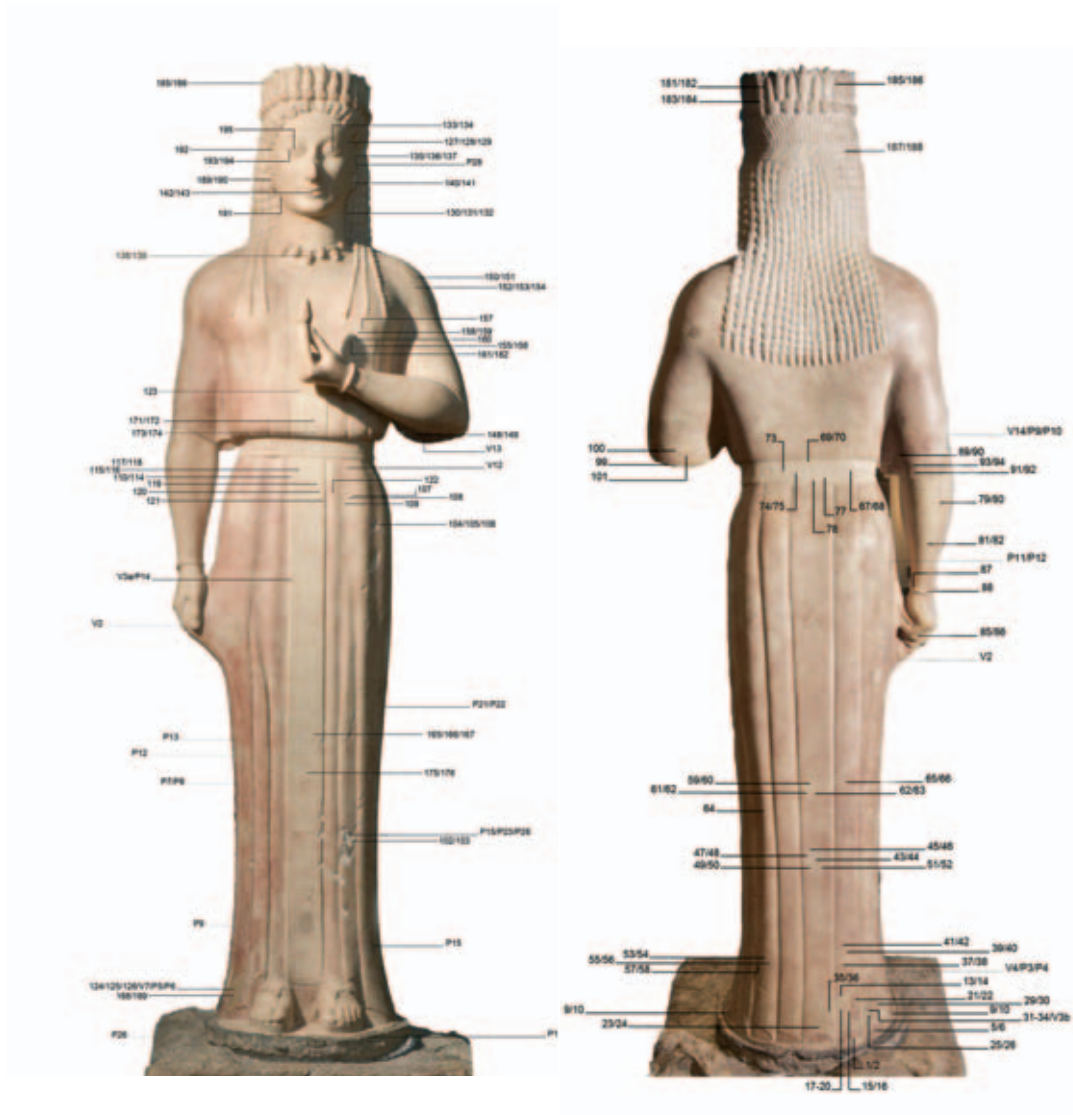
134 Phrasikleia, detail of meander pattern on edge of right sleeve, condition in 1987

135 Phrasikleia, detail of rosette with traces of black, condition in 1987

136 Colour reconstruction of the Phrasikleia after Kaltsas

137 Phrasikleia, eye and eyebrow, condition in 1987

138 Phrasikleia, hem of robe, condition in 1987



139 Mapping of paint measurements (UV-VIS absorption spectroscopy and X-ray fluorescence analysis, marked V and P) in front and back view

he assumed in analogy to other archaic figures the employment of further colours such as green and blue, since the marble surface is very smooth and well-preserved in those places.

New Investigations of the Colourants

In 2008 and 2009, the authors succeeded in taking 230 measurements on the surface of the *Phrasikleia* with the aid of UV-VIS absorption spectroscopy²⁶ and X-ray fluorescence.²⁷ These measurements enhance and modify the previous results and will be presented in the following. Preliminary work carried out by the authors over a period of five years had already led to the compilation of a UV-VIS reference library of colour spectra of antique painted surfaces.²⁸ This library is supplemented by the UV-VIS spectra of samples from the pigment collections of the Doerner Institut of the Staatliche Gemäldesammlungen, Munich, as well as samples of natural pigments manufactured by the Dr. Georg Kremer colour mill and the natural pigments and colourants of other archives.²⁹

On the basis of these comparative measurements, the absorption spectra measured on the surface of the *Phrasikleia* can be precisely mathematically evaluated. Thanks to the magnitude of the reference library, it is even possible to identify mixtures.

Overview of the colourants employed with identification of the measuring positions [FIG. 139]

AREA	UV-VIS	RFAT	ANALYSIS RESULT
flesh colour	79–84, 127–129, 135–137, 191, 192	P28	mixture of white lead, red ochre and light brown umber ³⁰
irises	133, 134, 195		brown madder ³¹
whites of the eyes	193, 194		white lead
lips	142, 143		mixture of reddish brown madder and flesh colour
hair	130–132		mixture of brown madder and light brown umber
hair band	187, 188, 222, 223		orangey red ochre
lotus petals	185, 186, 146, 147, 215, 216		orangey red ochre
earring pendants	140, 141		yellowish goethite
necklace pendants	189, 190		yellowish goethite
earrings	87		mixture of gold ochre and orpiment ³²
bracelets	88		mixture of gold ochre and orpiment
belt, triangles on upper edge	70, 71		yellowish goethite

robe	5, 6, 37–40, 122	P7, P8, P13, V2, V12	orangey red ochre iron oxide
inside of robe at bottom edge and edges of sleeves	5, 6, 148, 149	V13	red ochre iron oxide
rosette petals, stars	43–66, 108, 109, 159–162	P11, P12	yellowish goethite, iron oxide
swastikas	41, 42		mixture of gold ochre and orpiment
meander on central decorative strip	115, 116, 123, 175, 176		very light yellow ochre
meander along neckline and sleeve edges	91, 92, 100, 152–154		very light yellow ochre
contours of scale-like pattern elements	13, 14, 15, 16, 21–24, 27–30, 35, 36		very light yellow ochre
background of meander patterns	101, 112, 150, 151, 123, 171, 172	V17	dark red haematite ³³ iron oxide
scales in pattern along hem	17, 29, 30, 93, 94	V4, P3, P4, P9, P10	dark red haematite iron oxide
borders and scales of hem pattern	17, 18, 25, 26, 31–33	V3a, V3b, P6, P7,	not black pigment, coating with high lead content
borders of meander patterns	110, 114, 121		not black pigment, coating with high lead content
rosette petals with blackish colouration	47, 48, 107,	P14, P17, P19, P20–P22	not black pigment, coating with high lead content

The Composition and Application of the Colourants

Eleven different colourants were verifiably used for the *Phrasikleia*'s polychromy. To an extent, these colourants were used in pure (unmixed) form:

The dress is characterized by the rather orangey shade of red which covers its surface – an intense light red ochre (iron oxide red). This colour is also found on the meander decorating the hair band and in the interiors of the lotus blossoms and buds. The inside of the robe's fabric is visible in the zigzag folds of the hem and the edges of the sleeves. Here red ochre can likewise be identified; since it is substantially darker, however, it contrasts with the orangey-red colouration of the outside of the fabric [FIGS. 140, 143].³⁴

The background of the meander ornaments on the sleeve edges and the vertical ornamental strip down the middle of the robe's front is coloured with a red haematite tending towards violet. This pigment also appears on every second scale of the ornamental pattern along the hem. Carefully cleaned light yellow ochre is to be observed in the meanders on the sleeves and

central strip as well as in the contours of the scale stems on the hem border. Yellowish brown ochre (yellow goethite) is to be found in the rosettes and stars of the scattered ornament and on the pendants of the necklace and earrings.

In other cases, colourants were mixed: the swastikas strewn across the entire surface of the robe exhibit traces of a mixture of gold ochre and orpiment. This luminous yellowish gold shade can also be observed on the bracelets and earrings. In the area of the face, the mixture of various colourants is highly complex: in the ears, on the neck and arms, and between the fingers and toes, small traces of the flesh colour have survived, and exhibit an identical mixture at all measuring points, consisting of red ochre or burnt Cypriot earth, white lead and light brown umber [FIGS. 141, 144]. The irises were painted with dark brown madder, the whites of the eyes with white lead. The lips exhibit a mixture of reddish madder and the flesh colour. For the hair, the dark brown madder used for the eyes was mixed with umber.

Gold and Lead Foil as Elements of the Polychromy

The *Phrasikleia*'s polychromy consists not only of colourants: when examined in 2009, the petals of two different rosettes on the robe were not only painted with ochre but also exhibited traces of gold foil, allowing us to conclude that all elements painted with this yellowish ochre were initially gilded [FIG. 145]. The yellowish brown shade, which neither represents precious jewellery nor sets the scattered ornaments off against the orangey red colour of the robe with sufficient contrast, supports this assumption.

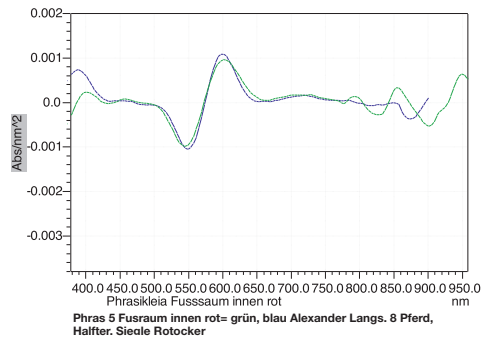
A further result of the investigations strengthens this argumentation: the blackish looking traces found on the rosette petals, the strips along the edges of the border patterns, the scale-like elements of the hem border and the background of the crown of blossoms cannot be identified as a colourant [FIG. 146]. On the contrary, the X-ray fluorescence analyses reveal a two-hundred-fold concentration of lead in these areas as compared to those surrounding them, for example the marble [FIG. 142]. Such high lead content is not characteristic of any pigment,³⁵ but can only be explained with the addition of a material containing lead, namely lead tin foil.³⁶

The Design of the Kore's Polychromy

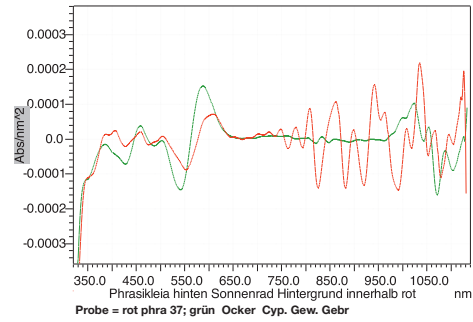
Contrary to the initial impression of simple polychromy dominated by shades of red and yellow, upon closer inspection we encounter in the *Phrasikleia* a very subtly differentiated colour scheme. Colour mixtures were employed very artfully, for example in the face.

To add the red of the lips – derived from madder – to the flesh colour, or to tune the colour of the eyes to that of the hair without using the identical material reveals great mastery in the handling of colouration.

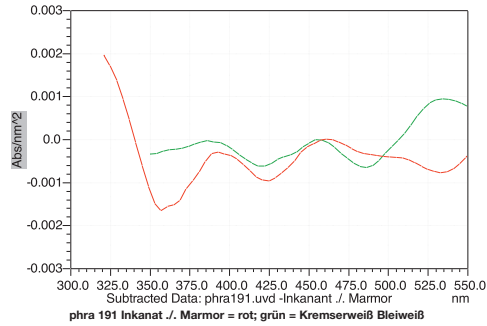
140 A



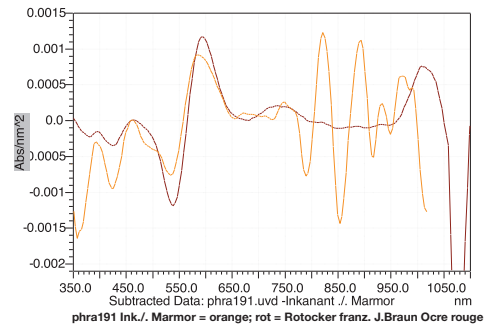
140 B



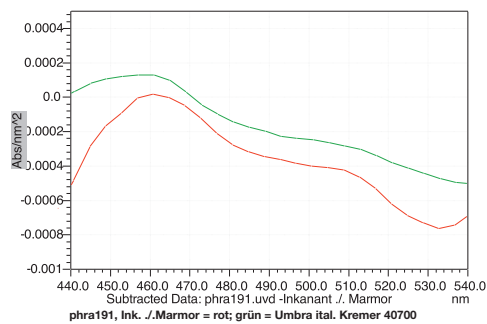
141 A



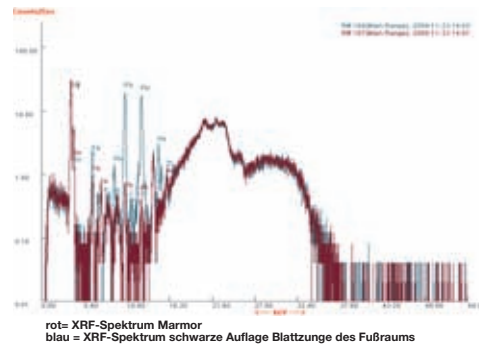
141 B



141 C



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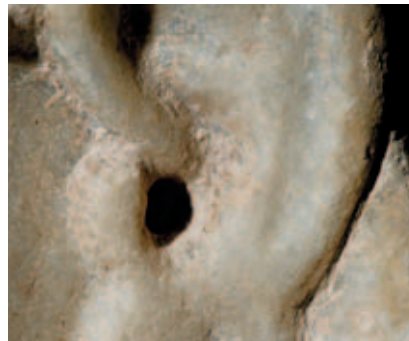
140 A UV-VIS spectra of
colour on inside of robe and
140 B outside of robe

141 UV-VIS spectra of the
three colour components of
the flesh colour:
A white lead, B red ochre,
C light umber

142 XRF spectra of marble
(red) and blackish traces in
hemline pattern (blue) in
comparison



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143 Phrasikleia, detail of area near foot with traces of three different red colourants

144 Phrasikleia, traces of flesh colour in ear

145 Phrasikleia, detail of a rosette with reflecting remnant of gold foil

146 Phrasikleia, lotus flower wreath with blackish colouration of background, condition in 1987

147 Phrasikleia, incised compass mark as guideline for a star

148 Phrasikleia, incisions for a swastika

149 Phrasikleia, ornaments partially covered by folds of drapery

The ornaments have been generously rendered, sometimes even in a skilful but rather hasty manner. The meander borders exhibit no basic unit of measurement; the intervals between the individual elements vary unsystematically. On the shoulder, for example, the meander is conspicuously elongated; in the view from the back it is much wider on the left sleeve than on the right. The scale-like elements in the pattern along the robe's hem are narrower in the back than in the front. The rosettes of the scattered ornament vary in the size and number of their petals, as is also the case with the swastikas, which are moreover rendered irregularly in and of themselves. Incisions made with the help of a compass served as construction aids for the rosettes and stars, but liberties were taken in the execution of the details [FIG. 147]. There are various star forms, for example, not only three- and four-pointed stars, but also six-, eight- and even sixteen-pointed ones. All of the ornaments were evidently incised freehandedly without any measurement of the intervals between them, an assumption also supported by the dynamic character of some of the incisions. They are sharp-pointed and shallow on both ends and deeper in the middle [FIG. 148]. Even today, we have a distinct impression of the quick, sketchy, but precisely positioned strokes of the sharp instrument. The positions of the scattered ornaments, however, were evidently always very deliberately chosen. A number of the stars and rosettes were cut off by folds in the robe [FIG. 149].

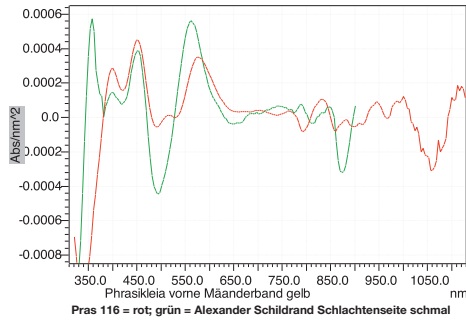
The Prerequisites for a Reconstruction of the Polychromy

The new results of the UV-VIS absorption spectroscopy and the X-ray fluorescence analysis are supplemented with observations of the painting techniques employed, leading to a conception of the *Phrasikleia's* original appearance.

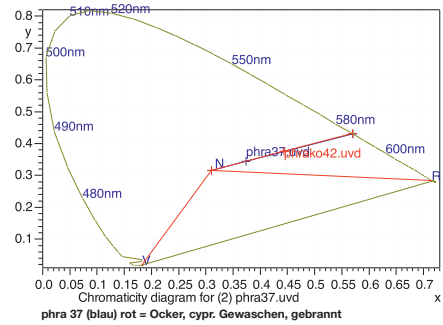
It thus stands to reason that these results be translated into a three-dimensional reconstruction of the polychromy.³⁷ The experimental recovery of the polychromy not only produces a concrete image, but also, on its basis, the analysis of the colourants becomes even more precise. Due to the fact that UV-VIS absorption spectroscopy is a physical and optical method of measurement, not only can the respective colourant be identified, but the shade exactly defined in a chromatic diagram. As a result, it is possible to determine the hue independently of the individual sensory impression.³⁸

Grinding and washing changes the consistency as well as the hue of natural pigments. The light yellow Cypriot earth of the meander bands on the *Phrasikleia's* chiton, for example, has its counterpart in a very light, pure ochre employed on the short side of the so-called *Alexander Sarcophagus* depicting a Persian battle scene [FIG. 150, ALSO SEE FIG. 67].³⁹

It was possible to identify the orangey red ochre covering the *Phrasikleia's* robe as iron oxide, but there is no red earth available today which possesses an identical hue. Even the most elab-



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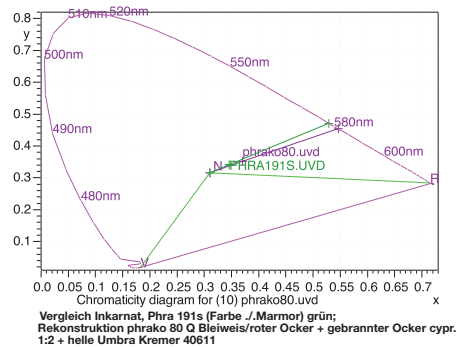
151 A



151 B-D



152 A



152 B

150 UV-VIS spectrum of Cypriot ochre

151 A Burnt Cypriot ochre in chromatic diagram, comparison with colour of robe

151 B-D Cypriot light ochre during burning process

152 A Reconstruction of flesh colour, samples with various ratios between the ingredients
152 B Sample q in chromatic diagram

orate treatment of various red earths by washing and grinding did not lead to satisfactory results, although the newly produced colours were likewise subjected to UV-VIS measurements and assessment as a means of obtaining the necessary data for an exact chromatic comparison with the original colour [FIG. 151 A]. Only extensive experimentation with the burning of various yellow ochre earths for varying lengths of time led to a feasible solution: when it is heated for only a short period at 600 to 800 °C, light Cypriot ochre takes on the orangey red shade in question. The longer this material is burnt (over one hour), the darker it becomes [FIG. 151].⁴⁰

The Analysis of the Colours on the Original

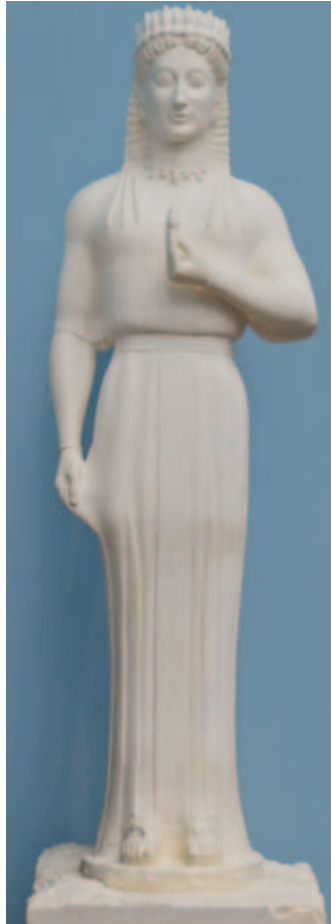
The *Phrasikleia's* flesh colour consists of the three components white lead, light brown umber and red ochre earth. It is only through experimentation that the proper proportions of the individual components can be found. The chromatic diagram indicates exactly whether the proportion of red, brown or white in the mixture is still too high in comparison to the original mixture. Once the proportions of the components has been roughly determined, i.e. several parts of white lead to one part each of red and brown ochre, the precise proportions can be ascertained very precisely (six parts of white lead to one part each of burnt Cypriot earth and light umber) [FIG. 152].

The deviations between the original antique paints and the natural pigments and colourants prepared and used for the authors' reconstruction is less than two nm – a difference not perceivable with the naked eye.⁴¹

The Reconstruction of the Painting Technique

The successful analysis of the findings on the original thus requires verification and problematization through an experimental reconstruction process. The analysis of the original is aided by experimentation not only with regard to the identification of the antique colourants, but also concerning the step-by-step reconstruction of the painting technique. To this end, a stereolithographic form was created in polymethyl methacrylate (PMMA) on the basis of a digital measurement of the original [FIG. 153].⁴² A very fine coat of ground marble and an egg-casein mixture was applied to the surface of the white, quasi-crystalline acrylate. On this surface, with a binding agent consisting of one part each of egg, casein and water, the pigments can be applied very precisely and durably as on marble, and even the visual effect of the colours is comparable [FIG. 154].⁴³

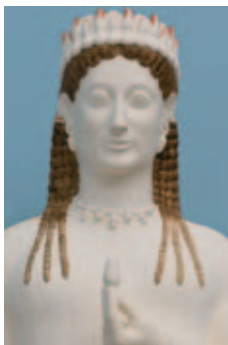
The application of the various pigments is carried out in thin layers in order to obtain a coat of paint which is thin but evenly opaque. Particularly the painting of the flesh colour clearly indicates that an irregular, transparent application of the paint in which the structure of the



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155 A-D

153 Stereolithographic replica in PMMA

154 Reconstruction of robe

155 A-C Application of flesh colour in several layers
D Polishing of flesh colour



156 Reconstruction of polychromy according to findings, front, side and back views of the Phrasikleia, by Brinkmann and Koch-Brinkmann, Leibniz Prize 2007 (O. Primavesi)

brushstrokes can be recognized can only be an intermediate stage, but not the final solution for the aspired aim of representing skin [FIGS. 155 A, B]. The impression of delicate feminine skin does not form until a homogeneous, opaque colour surface has been created [FIG. 155 C]. Since the *Phrasikleia's* flesh colour is based primarily on white lead, this uniform chromatic effect of the surface can be heightened by a shimmer attained by polishing with agate. White lead is evidently the only pigment apart from bole which, when applied to marble, can be reliably polished without the paint chipping off uncontrollably due to the pressure applied during the polishing process [FIG. 155 D].⁴⁴

Sculptor and Painter

The sculptor and painter proceeded according to a common concept. The sculptor differentiated between the skin, garment and hair by smoothing the surface of the face very precisely, giving that of the robe a somewhat rougher finish, and leaving chisel marks visible in the hair. This fine-tuning between the sculptural processing and the execution of the polychromy is also evident in the incised ornaments. On the one hand the area to be painted with a specific colour is precisely demarcated by an incision; on the other hand the latter is a necessary aid in the application of the metal foils. The lead tin foil can be glued on in roughly shaped pieces, pressed down, and then cut out with a knife guided by the incision to attain its intended form. The gilding can likewise be precisely applied and cut out with the aid of the incisions [FIG. 159].⁴⁵

Colour Reconstruction and Original

The colour reconstruction adheres to the traces of the original polychromy of which reliable analyses have been made to date [FIG. 156]. For this reason, the finger- and toenails and parts of the belt and the lotus blossoms were left unpainted. The image of the statue thus regained can be completed with the help of the imagination. It can be assumed that the elements of the hair band left white for the time being were likewise gilded or painted. On the belt, further ornamental patterns were specified by incisions. The rows of triangles left blank in the reconstruction could have been covered with lead tin foil in analogy to the gilded ones. The incised wave-shaped pattern as well as the background surface of the belt were likewise painted. In view of the specific traces of decomposition found in the semi-spherical depressions of this ornamental strip, it is even conceivable that they held coloured glass inlays in round-button form.⁴⁶

“Charis – the dazzling brilliance of life”⁴⁷

The colours enhance the life-like impression made by the figure. The painting of the eyes and skin heighten the statue's naturalism like no other elements. For the reconstruction presented

here, reference was made to the ample antique sources pertaining to the polishing method used particularly on areas of naked skin – the technique referred to in Greek as *ganosis*.⁴⁸ Under certain circumstances, wax could evidently be used as a polish.⁴⁹ The lead white verifiably used for the image of the Phrasikleia is itself a highly suitable agent for optimizing the surface density and thus for producing a silky sheen. This white lead would have made the addition of wax superfluous. By painting her irises a blackish brown and her pupils black, the polychromist gave the kore's eyes a particularly intense gaze.

Egyptian Polychromy Techniques and Early Greek Sculpture

It is entirely self-evident that, in the mid sixth century BC, neither would the skin have been modelled in any way nor the eye have received a painted highlight. Illusionistic painting techniques are innovations of the fifth and fourth centuries BC. Egyptian mummy sarcophagi of the New Kingdom and Late Period with their perfectly preserved surfaces demonstrate direct parallels, and thus a clear confirmation of this standpoint. In Egypt, areas of skin were painted homogeneously [FIG. 157].

Particularly the flesh colour of female figures is captivating by virtue of its even, make-up-like application. We occasionally encounter anthropoid Egyptian sarcophagi whose skin areas and eyes have been coated with a transparent layer of gum Arabic. This coating produces a shine without polishing. Thanks to this “glossy varnish”, natural light reflections appear on the skin and in the eyes, and change position depending on the viewer's angle of view.

The influence of Egyptian art on Early Greek sculpture is beyond dispute, and our insights into the transfer of technical knowledge are becoming ever more detailed. It would thus hardly be surprising if not only sculpture techniques but also those of polychromy had been learned in Egypt and then practiced in Greece.⁵⁰ In keeping with Egyptian examples, we also applied this shiny transparent coat to the *Phrasikleia's* eyes in the reconstruction [FIG. 158].

The Aesthetic Effect of Metallic Shine

Numerous elements of the kore statue's jewellery were originally covered with gold foil. This gilding of small objects brings about a striking mimetic effect. The rosette petals of the robe ornaments were even rendered with two different materials. There the gold was joined by the heavy metallic shine of lead tin foil. The alternating types of metallic shine evoke a formal rhythm, but both materials reflect the light with equal intensity, bringing about an iridescence of the metal appliqué which, although they are two-dimensional, lends them the appearance of optical depth.



157



158



159



160 A



160 B

157 Mummy mask, Middle Kingdom, painted linen, Cairo, Egyptian National Museum, inv. RT 24.4.26

158 Reconstruction of the Phrasikleia, detail of face

159 Reconstruction of metal appliqué, rosette with gilded petals and application of lead tin foil

160 A Phrasikleia, hand clutching robe
160 B Reconstruction of lead tin foil

Differentiated Surface Treatment and Polychromy

For the Early Greek sculptor it was a matter of course to lend the various elements of his sculpture various textures, i.e. surface structures.⁵¹ The master of the figure of Phrasikleia differentiated subtly between the fabric of the robe and the much more delicate texture of a girl's skin, and even introduces a third distinct category by leaving the structure of the hair choppy from the strokes of the chisel. The elements to which gold or lead tin foil was applied were first given the completely smooth finish absolutely necessary for the proper practice of this crafts technique.

Already in the sculpting process alone, four different textures were thus produced whose immediate subliminal effect serves to lend the figure a lifelike quality. This eloquent differentiation is adopted, even heightened, by the polychromy.

The Concept of the Marble Figure of Phrasikleia

Against this background, it is with all the greater precision that we can outline the concept underlying the polychromy of the marble statue of Phrasikleia, whose bodily forms had already been given a lifelike quality by the sculptor Aristion. Particular importance was attached to the formal aspects of variegation, iridescence, light reflection and shine – possibly in an unprecedentedly progressive manner, but certainly with the aim of heightening the figure's realism.

The aspiration of Greek culture towards art forms intended to cast a spell over the viewer with their naturalistic appearance is probably that which is referred to in the antique texts as *mimesis*. The word's etymology reveals that it revolves around phenomena of imitation. According to Aristotle, art is to trigger the beholder's accustomed sense of perception and thus take him captive with its latent realism.⁵²

Aristion of Paros sought to achieve this sensory "form of truth" in many details, as well as in the figure's overall appearance. Her stature gives her breathtaking physical presence. Her left hand grasps the cloth of the chiton and lifts it slightly. Particularly the view of this detail from the back shows the lifelike quality thus accomplished. The folds and fabric lithely detach themselves from the rigid overall form and are clasped by a "natural", active hand [FIG. 160].

Colour also contributes its share to these endeavours. Two different red pigments were used for the inside and outside of the chiton's fabric. The inside is thus a bit darker. At the bottom edge of the garment this colour coding leads to a heightening of perspectival phenomena.

Due to the folds it forms, the sloping hemline shows the inside and outside alternately. Not only the sculptural rendering of the robe's fabric and hemline ornament but also the colours guide the eye and generate the effect of spatiality.

Synaesthetic Effects

Quite possibly, the antique beholder was not to be captivated by the sculpture's outward appearance alone. According to deliberations undertaken at least in the more recent literature, the artist likewise sought to employ synaesthetic means of representation.⁵³

When several persons gathered before the funerary figure of Phrasikleia, one would read the inscription aloud to the others, and the *sêma* speaking in the first person thus acquired a voice. The statue, which was at the same time the kore herself, spoke.

We cannot rule out the possibility that the artist also intended to stimulate the viewer's sense of smell. Hanging alternately from the *Phrasikleia's* neckband (*hypothymis*) are imitations of little seed capsules and miniaturized vessels. Young women often wore these aryballiskoi filled with fragrant substances on their skin, thus wrapping themselves in an exciting, perhaps even changing, aromatic aura. In the more recent literature it has been speculated that the presence of these small vessels on archaic sculpture may already have triggered an association with the olfactory sensation the viewer knew from real life.⁵⁴

The Interaction between Sculpture and Viewer

The here-postulated interaction between sculpture and viewer would not have been a Greek invention. In Egyptian funerary imagery, the figure of the woman holding a lotus plays a central role. There she draws the open blossom to her nose in the act of smelling it [FIG. 161].⁵⁵ Phrasikleia holds a closed lotus blossom in her right hand, before her breast. Is this the indication of latent action? Will she next raise the flower to her nose or that of her vis-à-vis? Even if we cannot answer this question at present, it is an irrefutable fact that the figure's appearance, stance and narrative culminate in the pose of the hand and the object it holds.

The lotus blossom closes at night and opens again in the morning. In Egypt it accordingly stands for the alternation of life and death. Phrasikleia holds a closed blossom in her hand, but her hair is adorned with a stephane featuring open and closed lotus flowers in alternation. A symbol whose meaning was clear to any Egyptian – would it have been readable for a citizen of Attica as well?⁵⁶

Iconography and Inscription

For the contemporaries, the figure's pictorial symbolism will quite possibly have spoken a clear language similar to that of the inscription on the base. According to one assumption, the red chiton with its golden rosette appliqué is to be interpreted as a wedding and funerary garment respectively.⁵⁷ The robes in Egyptian graves, including that of the dead Tutankhamun, are frequently decorated with gold plate rosettes.⁵⁸ The rosette form has repeatedly been interpreted as the depiction of a seed capsule (as seen from above), possibly that of the lotus.⁵⁹

Should these hypotheses prove correct, in the statue of Phrasikleia we would be encountering a complex language of lotus imagery telling of death, but also of the potential of continued existence.

A further observation concerning the choice and organization of the ornaments on the *Phrasikleia's* robe also points to the Egyptian culture. The decoration on the front of the chiton follows a uniform scheme for the most part. Golden yellow swastikas and golden rosettes alternate at regular intervals. Through the introduction of new decorative elements, the back view of the figure breaks with the well-structured scheme of the front. In the reconstruction presented here, the formal presence of this star arrangement becomes evident. Eleven gold stars and two “hybrid” star-rosettes are scattered across the surface of the robe in what is initially a serpentine and then a tong-like formation, and emphatically interfere with the regularity of the swastika-rosette pattern on the front. The star formation seems to “ignore” the evenly spaced scattered pattern. A future task for scholarship on this figure will be to develop possible interpretations of this variation on the back of the garment. Perhaps it will become evident that the figure has a “day side” and a “night side”.⁶⁰ In any case, the back of a funerary figure was usually accessible to view, and the artist who designed the decorative programme gave the viewer plenty of “reading material”.

At least we must assume that none of the sculpture's decorative details were added arbitrarily, but were all significant elements in the overall story created in commemoration of “Phrasikleia”. The perishable corpse is not capable of preserving *kleos* or *mneme*. Only the figure can do that. Like the *ka* statues of the Egyptians, the statue is presumably the keeper and resting place of the soul. Phrasikleia tells of her family's fame. She will always remain a daughter, never give birth to her father's male grandchild. She will thus not ensure genesis, i.e. the family's continued existence.

The inscription on the base of the *sêma* graces this monument with melodious, poetic words.

Cult Image and Funerary Statue:

The Ex-Peplos Kore from the Athenian Acropolis and the Figure of Phrasikleia

Kolossos, xoanon, kouros, kore, eikon, hedos, agalma and andrias are all terms from classical Greek literature already used in Antiquity for the classification of Early Greek figural sculpture.⁶¹ Vernant pointed out the animation, the importance of the image's “living presence”. Already the kolossos – initially a rough aniconic stone – had been perceived through ritual, placement and psychology as a kind of physical representative of the lost body of the deceased. The xoanon, originally a plank-shaped wooden stele and frequently understood as an *acheir-ropoieta* (*non manufactum*), acquired the reality status of the venerated deity through kosme-



161



162

161 Ni-Ankh-Scheret, wife of grave owner smelling a lotus blossom, detail of false door of Sechent-in-Ka, Giza, Old Kingdom, early 5th dynasty,

limestone, Frankfurt, Liebieghaus Skulpturen-sammlung, inv. 1638

162 Reconstruction of polychromy of "ex-Peplos Kore", by Brinkmann and Koch-Brinkmann, Leibniz Prize 2007 (O. Primavesi)

ses, i.e. a kind of doll-like clothing and decoration. As such, the xoanon served over a long period as an object potentially inhabited by a divine *numen*.

The kouros and kore are erected above a grave in memory of persons who died in their youth.⁶² These works of “imitation d’apparence” are distinct from the “présentation de l’invisible” of the kolossoi and early xoana.⁶³

The so-called *Peplos Kore* does not actually wear a peplos but an ependytes – the robe of the great gods. The colourful garment, whose embroidered animal frieze represents a culmination of artistic mastery, and the hypothetical gilded crown of feathers which established the shine of precious metal, serve to give the figure an identity [FIG. 162].⁶⁴ Already Ridgway noticed the pillar-like shape of the body and the fact that it somehow seems anachronistic for the period represented by the head. This shape is with all certainty a reference back to the specific form of the xoanon.

It is conceivable that the *ex-Peplos Kore* represents the marble copy of a wooden xoanon. The sources inform us of two cult images of Artemis Brauronia in her new sanctuary on the Athenian Acropolis. The tyrant Peisistratos had had this sanctuary erected as a means of drawing attention to his native parish of Brauron with mighty symbols of his seat of power.⁶⁵ Pausanias reports that the actual xoanon of the goddess was left in her original sanctuary in Brauron.⁶⁶

“καὶ Ἀρτέμιδος ἱερόν ἐστι Βραυρωνίας, Πραξιτέλους⁶⁷ μὲν τέχνη τὸ ἄγαλμα, τῆ θεῶ δέ ἐστιν ἀπὸ Βραυρώνος δήμου τὸ ὄνομα καὶ τὸ ἀρχαῖον ξοάνον ἐστὶν ἐν Βραυρώνι. Ἄρτεμις ὡς λέγουσιν ἡ Ταυρικὴ.”⁶⁸

Was the so-called *Peplos Kore* made as a substitute for the immovable xoanon of the Brauronian cult? Had the tyrant succeeded in transferring a cult from the Attic coast to the Athenian Acropolis – possibly by a kind of mirroring⁶⁹ – but not in tearing the “archaic idol” (“l’idol archaïque”) away from its original site?

The Goddess and the Girl

The reconstruction of the original appearance of these two sculptures – the goddess and the girl – provides us with a more in-depth understanding of the features distinguishing the figural concepts from one another. What the two works have in common is evidently the mimetic effect. The viewer is captivated, moved by the lifelike skin, shimmering jewellery, differentiated materiality and the faithful rendering of the garments’ details. On the other hand, he encounters two completely different garment and decoration systems.

Over her ependytes, Artemis – who is depicted in the form of an ancient cult image – wears a long vest and veil, costume and jewellery elements pointing to Eastern, Oriental traditions and origins.⁷⁰ In the *Phrasikleia*, on the other hand, the presence of her appearance combines

with a complex scheme for the decoration of her costume and attributes, possibly featuring parallels with Egyptian iconography and symbolizing the eternal cycle of life and death. The comparison between the divine image and the kore proves that significant iconographic differentiation is only possible with the aid of polychromy.

- 1 The site of the find is within the necropolis of the Attic demos of Myrrhinus, the present-day Merenda; Traill 1975, pp. 407–08.
- 2 Inv. 4889, National Archaeological Museum of Athens, height with plinth 1.76 m, Mastrokostas 1972.
- 3 See this volume, p. 190.
- 4 See Kaltsas 2002A, p. 7, see note 2; Stieber 2004, pp. 141 ff.
- 5 A drawing of the base was executed by Étienne Fourmont in 1729/30 and first published in 1828 (Boeckh, CIG 20).
- 6 Kaltsas 2002A, pp. 8–9, figs. 1–3.
- 7 X-ray fluorescence measurement with the aid of the portable analysis device Niton XL3t, kindly made available by Athanassios Protopoulos of Multimedia Interactive Services, Athens. X-ray fluorescence spectroscopy (XRF) is one of the most common methods of qualitatively and quantitatively determining the elementary composition of a sample, since the measurement does not destroy the samples and no samples must be removed from the object. In the case of the metal insertion in the base of the *Phrasikleia*, the presence of bronze (XRF P8) and lead (XRF P1, 3, 4) can be determined with certainty.
- 8 Kaltsas 2002A, p. 8, see note 12. If the statue's re-erection had been intended, the removal of the lead-bronze bedding could have been achieved by chiselling a narrow ring out of the limestone base.
- 9 On the influence of Parian and Attic sculpture on the *Phrasikleia*, see Kaltsas 2002A, pp. 23–24.
- 10 Signatures of Aristion of Paros are also found on the bases of the statues of Antilochus and Xenophantos as well as on a fragment of a column flute. Jeffrey 1962, p. 120, nos. 8, 9, pls. 32a–c; Fuchs/Floren 1990, p. 165.
- 11 Jeffrey 1976, p. 185; Ridgway 1977, p. 279.
- 12 Brinkmann 1994, pp. 74–75.
- 13 Not only the epigram of the *Phrasikleia*, but also the artist signature on the north frieze of the Siphnian treasury was made illegible by incisions changing the individual characters. For the visitors to the Pan-Hellenic temple, it was thus no longer possible to learn the artist's name. Evidently, however, not only was half of the frieze by a Parian, but also, according to the results of a precise analysis of the treasury's architectural history, it is today considered certain that the building was designed and constructed by a Parian workshop. It is likewise beyond dispute that the treasure house was built entirely of Parian marble.
- 14 Brinkmann 1994, pp. 73 ff.
- 15 Gruben/Koenigs 1982, pp. 159–95; Gruben 1997.
- 16 It is conceivable that the Siphnian treasury was a cooperation among several tyrant friends. Brinkmann associated the south and west friezes (which, formally speaking, differ distinctly from the east and north friezes) with the Milesian workshops. This conjecture was made on the basis of a sculptural fragment found in Miletus in 1985. See Brinkmann 1994, pp. 79–80. Evidence of the very close relationships between the Naxian-Parian and Milesian tyrants is provided by antique sources. The planning may thus have been carried out jointly between Thrasybulus of Miletus, Lygdamis of Naxos/Paros and Peisistratos of Athens. Following the devastating fire of 548 BC, the institution of the tyrants thus erected a striking monument to itself.
- 17 The kouros found directly next to the kore was with great certainty buried there during the same act of intervention and exhibits clear traces of forceful dismantling. Its feet and arms were already broken off before its "burial". The arms were buried. The missing feet presumably remained in the base along with the plinth. The statue of *Phrasikleia* was also damaged. The left arm was broken off and like-

- wise placed along with the rest of the figure into the “statue grave”. If the later re-erection of the statue of Phrasikleia had been intended at the time of its dismantling, it would only have been necessary to chisel out a narrow ring around the lead embedment; see note 8.
- 18 These observations can perhaps be related to historical events. The assumption hitherto upheld – that Phrasikleia was associated with the political circle of the Alcmaeonidae and her funerary statue was buried for its own protection when the Alcmaeonidae were banished – hardly takes into account the fact that the inscription was obliterated.
- 19 Mastrokostas 1972.
- 20 Mastrokostas published only one colour illustration showing the kore in the location in which she was unearthed.
- 21 Karakasi 1997.
- 22 A number of the conclusions Karakasi arrived at by analogy are based on the results on the statue’s polychromy published to date, e.g. Brinkmann 1987; Brinkmann 1994, pp. 39 ff.
- 23 Kaltsas 2002A, pp. 11 ff, pls. 1a–d, reconstruction by Theodora Kakarounga.
- 24 Brinkmann 2003A, cat. no. 174 A, figs. 174A.1–174A.13.
- 25 In 1987, Katerina Romaiopoulou granted permission for the examination of the *Phrasikleia* with a microscope and under illumination from an extreme angle, and the photographic documentation of details. This investigation programme was funded by the German Research Foundation.
- 26 UV-VIS absorption spectroscopy allows an identification of pigments as well as other colourants – for example vegetable dyes – not only without the necessity of taking samples, but, indeed, without touching the antique object at all. For this analysis method, the ability of coloured materials to absorb certain areas of the light is put to use. In the process, information is gained in the regions of ultraviolet light (UV 300–400 nm), visible light (VIS 400–750 nm) and near infrared light (IR 750–1150 nm). The exposure time is approximately fifty milliseconds. Characteristic spectra emerge which can be mathematically processed and compared with verified reference material (Piening 2007A).
- 27 Permission to undertake these extensive examinations with contact- and damage-free methods of analysis was granted in 2008 by Kaltsas. They were made possible with support from the German Research Foundation, Oliver Primavesi 2007 Leibniz Prize.
- 28 The first major object to be systematically investigated by the authors with the aid of UV-VIS absorption spectroscopy was the so-called *Alexander Sarcophagus* in the Istanbul Archaeology Museum. See Brinkmann 2008, p. 190; Piening 2008, p. 204. As early as 2005, traces of paint on the pediment sculptures of the Temple of Aphaia on Aegina and the funerary stele of Paramythion in the Munich Glyptothek were already jointly analyzed. Piening/Stege 2008, pp. 131–32.
- 29 Dr. Georg Kremer, <http://www.kremer-pigmente.de/shopint/index.php?lang=ENG&list=01>, list of historic pigments and colors of plants and animals, 2010.
- 30 According to the evaluation carried out by means of UV-VIS absorption spectroscopy, the light brown umber corresponds to the Kremer pigment Umbra Natur hell 40611. For more detailed information on UV-VIS absorption spectroscopy, see Piening in this volume, p. 108.
- 31 According to Dieter Köcher (Köcher 2006, pp. 103 ff), in the process of “laking” the root decoction, e.g. with alum, the length of the waiting time before straining has an effect on the colour value. Depending on the duration, a range of colours from bright red to dark brown can be obtained.
- 32 An identical mixture was also used later on the yellow rhombi of the trousers worn by the so-called *Persian Rider* from the Athenian Acropolis. Brinkmann/Koch-Brinkmann/Piening/Triandi 2008, p. 95.
- 33 According to the evaluation of the UV-VIS absorption spectroscopy measurement, the violet-red haematite corresponds most closely to Kremer pigment 11576.
- 34 The red ochre analyzed here is approx. 10 nm darker than the orangey red colour of the robe, and corresponds to Kremer pigment 40090.
- 35 Other lead pigments, such as lead white, lead red or lead yellow, have a high concentration of lead and can change the colour to black, but their spectrum in visible light is clear.
- 36 The X-ray fluorescence analyses were undertaken at twenty-two different points in the area of the hem and the rosettes where traces of the blackish colouration are visible. For purposes of comparison, measurements were carried out in the adjacent areas of the robe separated from the first-named areas by incisions. See table above.
- 37 The reconstructions of the so-called “third generation” pursue the aim of investigating marble sculptures whose

- colouration is particularly well preserved, and thus of approximating the original appearance. The reconstruction of the painting is carried out with the original colourants on a copy created by a digital, contact-free method. To date, one short side of the so-called *Alexander Sarcophagus* (2006), the so-called *Persian Rider* from the Athenian Acropolis (2008), the so-called *Peplos Kore* (2008), and the funerary stele of Paramythion (2009) were reconstructed. This project is being realized with support from the German Research Foundation, Primavesi 2007 Leibniz Prize. See Brinkmann 2008, pp. 70 ff, 94 ff, 174 ff, 190 ff.
- 38 The so-called chromaticity diagram of the Commission Internationale de l'Éclairage (CIE) was created in 1931. It is a colour system which does without samples and allows the objective ascertainment of colour. The CIE "colour space chromaticity diagram" is based on sensory-physiological measurements and represents an internationally agreed-upon method of colour labelling on the basis of additive light mixtures. The regular, tongue-shaped curve represents the chromaticities occurring in moderate brightness and under a so-called standard light type. The colour gamut is demarcated by two lines known as the spectral locus and the line of purples (Agoston 1979).
- 39 Kader et. al. 2008, p. 16, figs. 3.21, 27–28; see Brinkmann / Koch-Brinkmann in this volume, pp. 114–35.
- 40 In the experiment, seven different yellow ochres (Kremer 17000, 40012, 40050, 40194, 40210, 40220, 48000) were brought to a smouldering point by heating. Only two of them (Kremer 17000 and Kremer 40012) acquire the desired shade of light red; the other five vary between dark red and brown, the duration of the burning process not affecting the hue. The latter is merely intensified, but does not become significantly darker.
- 41 This method of approximating the original hue is very time-consuming. In the case of the flesh colour, for example, it was necessary to compare the eight colour measurements taken on the original of the *Phrasikleia* with approximately twelve measurements of the colour samples in order to zero in on the ratio of the mixture's ingredients to one another, and then to undertake a further eighteen measurements of the colour samples in order to fine-tune the colour components. The pigment mixture then employed for the reconstruction itself was produced in large quantity and subsequently tested several further times.
- 42 Since the *Phrasikleia* exhibits many well-preserved traces of paint, it would be irresponsible to produce a cast with the aid of a silicon mould, the traditional method. For this reason, with support from the GOM Company in Brunswick, Ursula Buck and Thorsten Schwing recorded the original three-dimensionally with a scanner (Atos III). Directly from the 3D-CAD file, the copies were then formed stereolithographically by the Alphaform Company in Munich. The structural elements are developed by means of the layer-by-layer application of a particle material (polymethyl methacrylate) which is selectively agglutinated. The Voxeljet Company's VX 800 constructs the copies with very high resolution and surface quality. Small breaks and chips, other damages and the inscription were filled in / supplemented with plaster by the sculptor Christian Tobin. The production, forming and reworking of the digital copy as well as the entire polychromy reconstruction process were financed with funds from the Primavesi 2007 Leibniz Prize.
- 43 It has not yet been possible to identify the binding agent used for the antique polychromy of the *Phrasikleia*. Analyses of polychromy on marble made to date usually verify the use of egg or casein. In order to guarantee the polychromy's resistance to weather, at least one of these substances would have been necessary. See Stege/Fiedler/Baumeyer 2008; Santamaria/Morresi 2007, p. 221; Brecoulaki 2006, pp. 53 ff; Kakoulli 2009, p. 35; Giachi et al. 2009.
- 44 In connection with the reconstruction work being carried out by the authors since 1989, experiments with chalk, calcite and white lead were undertaken on the flesh colour in keeping with the various findings made on the originals. On a firm, inflexible surface such as marble or the casting materials used for the copies (artificial marble and PMMA), chalk and white lead lend themselves best to densification under pressure. When a mixture contains a high concentration of white lead, a porcelain-like sheen can be achieved on the surface.
- 45 Alicia Fisch carried out the oil gilding.
- 46 See, for example, the Phoenician depiction of the head of a woman with a crown in wood with similar inlays, in which a number of the inlaid semispherical decorative elements have survived. Strommenger/Hirmer 1962, fig. XLI.
- 47 Vernant 1983 (1965) p. 310: "The sole effect of all these doubles that, for Menelaus, are substitutes for his wife, is to

- make the gap left by her absence all the more poignant and unbearable. They lack what makes Helen a real woman: *charis*, the dazzling brilliance of life. All these εἰδωλα of Helen, the ghost, the colossus, and the dream figure, bring her husband the disappointment of a constantly elusive presence which manifests itself only to take flight once again." The antique sources provide us with numerous references to the perception of artworks. The deliberations of Jean-Pierres Vernant in the 1960s ("Mythe et pensée chez les Grecs. études de psychologie historique") and 1980s ("De la présentification de l'invisible à l'imitation de l'apparence") are fundamental, but require revision. Vernant recognizes that, in the perception of Antiquity, the shine, iridescence, luminescence, chromatic depth and variegation (transitions) were understood as signs of life (Vernant 1983 [1965], p. 312): "In contrast to a precious stone which is alive in that it shines and reflects the light or allows itself to be entirely flooded with light, the block of dull and opaque stone, the colossus with its 'empty eyes' that Aeschylus refers to, can be seen as representing the world of night." For Vernant, *charis* – as the most effective valence of fulfilled life in youth – is a virtual synonym for the alive. And this *charis* is not only brought about by the shine of the living body, but also through the formal sophistication and richness of dead objects (Vernant 1983 [1965], p. 318, note 31): "For the Greeks, *charis* emanates not only from women or any human being whose youthful beauty makes the body 'shine' (especially the eyes) with a splendor that provoked love; it also emanates from cut jewels, worked gems, and certain precious fabrics: the glitter of metal, the flash of stones in various waters, the variety of colours of many-coloured woven cloth, the medley of designs representing, in a more or less stylized form, a scene of plants and animals directly suggesting the powers of life – all these things combine to make the work of the goldsmiths and weavers a sort of concentration of living light from which *charis* shines out."
- 48 Langlotz 1968; Manzelli 1994, pp. 101 ff.
 49 Plinius NH 33 122; Vitruv VII 9, 2–4.
 50 Kyrielleis 1996, passim; Höckmann 2005.
 51 Brinkmann 2003A, pp. 33, 63–64.
 52 Elsner 2007 (2000).
 53 One of the most spectacular art experiences of the early nineteenth century was a visit to a large diorama or circus: light, smoke and smell blended with the coloured, photo-realistic panoramas of an artist like Daguerre. Brinkmann 2001, p. 404.
 54 Stieber 2004, pp. 157–60.
 55 See the mock door of the Sechentiu Ka and Ni-Ankh-Scheret (end of 5th dynasty), Liebieghaus Frankfurt, inv. 1638 (see Beck 1993, vol. 3, no. 4).
 56 See Stieber 1996, p. 96, note 102; See the princess from the court of Ramses II, limestone bust from Thebes, Egyptian Museum, Cairo, inv. 741, 18th dynasty, Lange/Hirmer 1978, pl. LIV.
 57 Stieber 2004, pp. 167–69.
 58 Vogelsang-Eastwood 1999, p. 105, figs. 6.11–13.
 59 Stieber 2004, pp. 171–72.
 60 See Herodotus 2.121, who assigns the Ramses colossus in Memphis to the two directions south and north, and thus to winter and summer. Also see the so-called pseudo groups of the Old Kingdom.
 61 Vernant 2007; Ducat 1976; Dickie 1996; Vicent 2003, no. 1; Stieber 2005/06, pp. 1–33; Stewart 1986; Karakasi 2001; Schwarzmaier 2006; Hoffmann/Lubsen-Admiraal 2007; Meyer/Brüggemann 2007; Karakasi 2008.
 62 Himmelmann 1996; Steuernagel 1991.
 63 "La taille, le sourire, la beauté des formes corporelles du Kouros et de la Koré, le mouvement qu'elles suggèrent, expriment ces puissances de vie; une vie toujours présente, toujours vivante." As "représentation figurée", the funerary statue preserves and perpetuates the beauty of the deceased. "Dans la représentation figurée du mort, la beauté de l'image prolonge, comme son équivalent, celle du défunt: 'Ta mère a dressé sur ce tombeau de marbre une jeune vierge qui a ta taille et ta beauté, Thersis' lit-on dans une épigramme funéraire de l'Anthologie palatine." The kouros and kore are likewise intended to represent a dominant phase of life which the deceased will no longer experience. The epigrams frequently make use of the expression "anti": "I have been erected here in Parian marble in place of a wife, in memory of Bitté, for her mother's wretched mourning", a funerary inscription of Amorgos of approximately the fifth century BC proclaims. The meaning of "anti gunaikos" should be checked as to whether it corresponds with the "anti gamou" of the *Phrasikleia's* inscription. Then the passage could mean "as a substitute for existence as a married woman" and be synonymous with the

- expression “as a substitute for marriage” in the deceased Phrasikleia’s *sēma*.
- 64 On reconstruction variation C: Brinkmann 2008b, pp. 75 ff. Variation C employs colourants identified with the aid of UV-VIS absorption spectroscopy (Piening) and also examined in their chromatic value with the aid of the same method: flesh colour: light Cypriot ochre and haematite; hair: red ochre as ground, over it caput mortuum; eyes, iris: red ochre, pupil: bone black; lips: red ochre; epiplema and vest: gold ochre; rosette hem of vest: green earth; ornamental hem of epiplema and vest: malachite, haematite and red ochre; scattered pattern of vest and epiplema: azurite; belt: green earth and azurite; back of animal frieze on ependytes: madder red and orpiment; chiton: orpiment and realgar. The reconstruction of the polychromy was carried out by Koch-Brinkmann and Brinkmann and funded by the Leibniz Prize 2007 (O. Primavesi).
- 65 Despinis 1997.
- 66 Despinis 2004. See Paus. 1.33.1: “At some distance from Marathon is Brauron, where, according to the legend, Iphigenia, the daughter of Agamemnon, landed with the image of Artemis when she fled from the Tauri; leaving the image there she came to Athens also and afterwards to Argos. There is indeed an old wooden image of Artemis here, but I will set forth in another place who, in my opinion, has taken the one from the land of the barbarians.” (translation adapted from Perseus Digital Library, Tufts University); Paus. 3.16.7 (Sparta): “The place named Limnaeum is sacred to Artemis Orthia. The wooden image there they say is that which once Orestes and Iphigenia stole from out of the Tauric land, and the Lacedaemonians say it was brought to their land because there also Orestes was king. I think their story is more probable than that of the Athenians.” (translation adapted from Jones / Omerod 1926).
- 67 See Despinis 1994.
- 68 Spiro 1903.
- 69 The fact that important Brauronian inscriptions were copied for the Athenian Acropolis should be taken into consideration here: Despinis 2004, p. 262.
- 70 The Roman sarcophagi (Fuchs 2002, no. 27, *Orestes Sarcophagus*, pp. 104–05) show the cult image of the Tauric Artemis with a drawn sword. Pausanias’s description might conceivably refer to this bloodthirsty motif. Future discussion will produce arguments pro and contra a possible identification of the *ex-Peplos Kore* as the Tauric Artemis. Perhaps the *ex-Peplos Kore* carried a sword in her right hand and a sheath in her left: in any case, this is how the cult image on the *Orestes Sarcophagus* in Munich shows her.



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163 Lawrence Alma-Tadema, Phidias Showing the Frieze of the Parthenon to His Friends, 1886, oil on canvas, Birmingham Museum and Art Gallery

164 Parthenon, West Frieze, traces of paint on Horseman 17

165 Detail of fig. 164