Towards a 'Polychrome History' of Greek and Roman Sculpture

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Ancient and medieval sculpture was normally painted and at times gilded. Today most of the original paint is lost, but scientific methods have made it possible to trace even slight remains of paint no longer visible to the naked eye. Hypothetical reconstructions of polychromy have been displayed at many recent exhibitions in Europe and the USA and documented in a growing number of publications.[1] While the proposed reconstructions obviously are open to discussion and revision, the colouristic 'revelation' invites further art historical considerations on perceptual and aesthetic aspects of sculptural polychromy. The history of ancient art therefore needs to be revised and rewritten in the light of new research.[2]

In the ancient world, colour was an integral part of sculpture, and to combine sculpted and painted form was common practice throughout antiquity. In Egypt and the Near-East, sculpture in soft and hard stone and wood was normally painted. The Egyptian material still retains much colour, while Assyrian and Achaemenid reliefs tend to have suffered heavier losses.[3] This polychrome tradition was continued in the Greek and Roman world. Since marble is a fine and expensive material, it may surprise modern viewers that the antique artists chose to cover it wholly or partly with paint. But in Greece, the terms *chros* and *chroma* embrace the

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[1] Recent publications include: Vinzenz Brinkmann and Raimund Wünsche, eds, *Bunte Götter. Die Farbigkeit antiker Skulptur*, Munich: Glyptothek, 2003; Roberta Panzanelli, e.a., eds, *The Color of Life: Polychromy in Sculpture from Antiquity to the Present*, Los Angeles: Getty Research Institute, 2008; Jan Stubbe Østergaard, ed., *Tracking Colour. The Polychromy of Greek and Roman Sculpture in the Ny Carlsberg Glyptotek. Preliminary Reports* 1-5, 2009-2013, (www.trackingcolour.com); Vinzenz Brinkmann, Oliver Primavesi, Max Hollein, eds, *Circumlitio. The Polychromy of ancient and medieval Sculpture*, Frankfurt a.M.: Liebighaus Skulpturensammlung, Hirmer Verlag, 2010; Amanda Claridge, 'Looking for Colour on Greek and Roman Sculpture', *Journal of Art Historiography* 5, December 2011, 1-6, AC/1 (review of *Circumlitio*); Paolo Liverani and Ulderico Santamaria, eds, *Diversamente bianco. La policromia della scultura romana*, Rome: Edizioni Quasar, 2014; Jan Stubbe Østergaard and Anne Marie Nielsen, eds, *Transformations. Classical Sculpture in Colour*, Copenhagen: Ny Carlsberg Glyptotek, 2014.
[2] As noted by Mark Bradley, 'The Importance of Colour on ancient marble Sculpture', *Art History* 32, 2009, 427-457, at 427: 'paint is seldom taken into account in art-historical studies of ancient marble sculpture'; similarly, five years later, Vinzenz Brinkmann, 'Research History', in Østergaard and Nielsen, *Transformations,* 43: states that 'in the university curriculum the colour aspect of ancient art is mostly absent'.
[3] Alexander Nagel, 'Color and Gilding in Achaemenid Architecture and Sculpture', in Daniel Potts, ed., *The Oxford Handbook of Ancient Iran*, Oxford: Oxford U.P., 2013, 596-621; Alexander Nagel, 'Colour in ancient Near Eastern and Egyptian Sculpture', in Østergaard and Nielsen, *Transformations*, 54-69.

totality of the surface including its colour, which is an inherent part of the whole.[4] Colour being a constituent element of a plastic artwork, an uncoloured sculpture would presumably have been seen as lacking a significant element; it would have been regarded as unfinished.[5] Colour served many functions, ranging from the communicative, to the aesthetic, to the symbolic. An important reason for valuing painted statuary was the sheer cost of the pigments.[6]

All through the Middle Ages, sculpture in stone, wood and stucco was painted.[7] Some medieval wooden sculpture is still colourful, and even blackened church facades on closer scientific inspection, have proven to have been similarly polychrome. Experiments have been conducted with digital colour projections on the facades of the cathedrals at Amiens and Chartres, a non-invasive way of visualizing lost colour.[8] While the strong colours may appear shocking to modern eyes, a large colourful cathedral towering over a neighbourhood of small dark houses must have made a lasting and uplifting impression on the medieval visitor. So the idea of monochrome ancient and medieval statuary and relief has now come to appear almost as a ghost of the past conjured up by a chromophobic tradition.[9]

Methodological problems of reconstructing colour

While the sculptural polychromy of pre-modern art is now generally acknowledged, the colouring raises new questions and poses new problems. For while the monochrome white is historically incorrect, the suggested reconstructions must be regarded as almost equally incorrect, given that they cannot be other than largely

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[4] Elena Walter-Karydi, 'ΧΡΩΣ. Die Entstehung des griechischen Farbwortes', *Gymnasium*, 98, 1991, 517-533; Marcello Carastro, 'La notion de *khros* chez Homère. Éléments pour une anthropologie de la couleur en Grèce ancienne', in Carastro, ed., *L'antiquité en couleurs. Catégories, pratiques, représentations*, Grenoble: Jérôme Millon, 2009, 301-313.

[5] Philippe Jockey, *Le mythe de la Grèce blanche. Histoire d'un rêve occidental*, Paris: Belin, 2013, 17.

[6] Harikleia Brecoulaki, '"Precious Colours" in ancient Greek Polychromy and Painting: material Aspects and symbolic Values', *Revue archéologique* 2014:1, 3-35, discussing examples from the Bronze Age to the Hellenistic period.

[7] See, e.g., Stefan Roller, 'The Polychromy of mediaeval Sculpture: a brief Overview', in Brinkmann, ed., *Circumlitio*, 338-355; Stéphanie Deschamps, ed., *La polychromie des sculptures francaises au Moyen Âge*, (Techne 39) Paris: Musée du Louvre, 2014; Sandra Saenz-López-Pérez, 'Coloring the Middle Ages: textual and graphical Sources that reveal the Importance of Color in medieval Sculpture', *Miscellanea medievalia* 37, 2014, 274-287; Noelle L.W. Streeton & Kaja Kollandsrud, eds, *Paint and Piety: collected Essays on medieval Painting and polychrome Sculpture*, Oslo: Archetype, 2014.

[8] Christopher Weeks, 'The Portail de la Mere Dieu of Amiens Cathedral: Its Polychromy and Conservation,' *Studies in Conservation* 43:2, 1998, 101-108; Denis Verret and Delphine Steyaert, eds, *La couleur et la pierre. Polychromie des portails gothiques* (Actes du colloque, Amiens 12-14 octobre 2000), Paris: Picard, 2002; Grazia Maria Fachechi, 'Quando le cattedrali non erano bianche: uso e funzione del colore nell'archittetura sacra medievale', in Massimo Zammerini, ed., *Il mito del bianco in archittetura*, Macerata: Quodlibet, 2014, 85-113.

[9] For chromophobia, see David Batchelor, *Chromophobia*, London: Reaktion Books, 2000; further, Jockey, *Le mythe de la Gréce blanche*.

conjectural.[10] Even when based on physical evidence, it is close to impossible to recreate the ancient polychromy as it would originally have appeared. As gradual adjustments are made to the proposed reconstructions of individual works, it becomes apparent that the proper solution to the precise colouring of a given object is hardly within reach.

The manner of interpreting colour traces evolves over time and is coloured, so to speak, by the cultural outlook of the period; thus the very same paint traces may be interpreted differently by different scholars at different times. When the mysterious Iberian *Dama de Elche*, c. 400 BC, was discovered in 1897, red and blue were noticed on her eyes, lips and dress. Visible to the naked eye are now merely faint traces of red on lips and jewelled collar.[11] It is instructive to compare three colour reconstructions made respectively in 1914, 1934 and 2000: moving from slight, via medium to strong colouring, the subsequent reconstructions become increasingly intense in hue.[12] As the *Dama de Elche* proves, it is hardly possible to make totally neutral or objective reconstructions, as any attempt depends on the interpretation of visible and at times invisible evidence.

The search for lost polychromy is further complicated by the fact that colours could be changed when paint was touched up or renewed. Medieval wooden sculpture, in particular, can retain many layers. A striking example of successive repainting is a Virgin of c. 1250, in the Cloisters, New York, believed to stem from a rood-screen in Strasbourg cathedral. For this figure, no less than six re-paintings have recently been established by means of scientific analysis.[13] Thus attempts to reconstruct an 'original' colour are open to negotiation. Is the first colour the 'right' one, or do all the successive colourings carry equal weight as cultural statements in their own right?[14]

In spite of advances in technical research, many aspects of sculptural polychromy cannot yet be fully accounted for. While some colours can be detected, others cannot. When a certain pigment has been traced, it may still be difficult to ascertain its exact hue, since different binding agents (no longer preserved) resulted in different shades of colour. Another problem concerns which parts of the surface were coloured: was paint applied all over or was it used merely to highlight specific features? The surface finish also depended on factors such as whether the paint was opaque or transparent, whether colours were superimposed or juxtaposed and on polishing and final touches. It is worth noting that even the finest and most expensive marbles with excellent surface qualities appear generally to have been painted. The specific characteristics of the stone could to some extent have bearing

[10] See, e.g., Bente Kiilerich, 'Colour and Context: reconstructing the Polychromy of the stucco Saints in the Tempietto Longobardo at Cividale, *Arte medievale*, anno VII, 2008:2 [2011], 9-24, presenting variant reconstructions based on analogy.

[11] Dirk Paul Mielke, 'Die Polychromie iberischer Skulpturen', *Madrider Mittteilungen*, 52, 2011, 306-332.

[12] Mielke, 'Polychromie', colourplate 3.

[13] Jean Delivré, e.a., 'Les sculptures du jubé de la cathèdrale de Strasbourg', in Deschamps, *La polychromie* (Techne 39, 2014), 78-81 with figs. 2-3 on p. 80.

[14] For restauration of medieval sculpture, see Johannes Taubert, ed., *Polychrome Sculpture: Meaning, Form, Conservation*, Los Angeles: Paul Getty, 2016, 134-210.

on the colours applied, for rather than a total covering, paint might have been used discreetly to draw attention to a particularly fine marble, which was thus subtly enhanced by means of colour.[15]

Among other unsolved issues, it remains to establish the extent to which different techniques were used for indoors and outdoors settings, and the extent to which viewing distance was taken into account. Was colour stronger, when sculptures were to be seen from further away? Was more detailing typical for objects meant to be viewed close-up? Did the colouring of architectural sculpture differ from that of freestanding statues? Another aspect of importance is the lightning condition under which a given work was meant to be seen, and the context as a whole. The skill of the painters obviously played an important part as well. But here we can assume that skilful sculptors joined forces with skilful painters. Depending on these factors, a whole range of material and colouristic solutions must have existed, constituting a complex coloristic vocabulary that to a large extent needs to be deciphered.

Towards a polychrome history of Greek and Roman sculpture

The debate over polychromy in the eighteenth and especially in the nineteenth century concerned whether or not ancient sculpture and architecture were painted.[16] Having now been established beyond doubt that most sculpture was indeed, at least partly, painted, the twenty-first century art historiographer must address the aesthetic, perceptual and iconographic implications of colour. In the art historiography of ancient sculpture, one aim should therefore be to trace the outlines of a 'polychrome history' as a parallel to the conventional history of sculpture, which has not taken original colour into account.

The main features of the sculptural styles of the Archaic, Classical and Hellenistic periods are easily distinguished. But is it also possible to distinguish between their polychrome styles? At present, the evidence seems to indicate that red, blue, yellow and green were prevalent before the Hellenistic period, while the latter period possibly saw an increase in hues with purple, pink and pastel (?) colours entering the repertoire.[17] Still, since certain pigments are more stable than others, and since only a small percentage of extant sculpture has been examined, further studies may come to present a less categorical and more nuanced view.

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[15] Clarissa Blume, 'The Role of the Stone in polychrome Treatment of Hellenistic Sculptures', in *IX ASMOSIA Conference*, (Tarragona 2009), Tarragona: Institut Català d'Arqueologia Clàssica, 2012, 754-762.

[16] See, e.g., David van Zanten, 'The Parthenon imagined painted', in Panayotis Tournikiotis, ed., *The Parthenon and its Impact in modern Times*, Athens: Melissa, 1994, 258-277; Wilhelm Drost, 'Colour, Sculpture and Mimesis: a nineteenth-Century Debate', in Andreas Blühm, ed., *The Colour of Sculpture 1840-1910*, Amsterdam: Van Gogh Museum, 1996, 61-72.

[17] For the Hellenistic period, Konstantin Yfantidis, *Die Polychromie der hellenistischen Plastik*, Mainz: Joh. Gutenberg-Universität, 1984 (dissertation), is perhaps slightly outdated. Clarissa Blume, 'Bright pink, blue and other Preferences. Polychrome Hellenistic Sculpture', in Østergaard and Nielsen, *Transformations*, 166-189. It may be wondered whether the remains of madder lake, which now appear pink (173, fig. 9), were originally of a darker tone.

The Archaic period

The three-bodied *Bluebeard*, c. 575, from the Athenian Acropolis got his name from the colour of his hair and beard. When this pedimental sculpture in coarse limestone was unearthed in the late nineteenth century, it was described as having green eyes, reddish skin and blue hair. Today the hair and beard have become black, while the eyes have lost their original colour.[18] The large Medusa in the centre of the Corfu pediment, c. 590, shows even less colour, but her staring eyes, snake-coiled hair, lolling tongue and other scary features would certainly have made more impact when painted. Strong, salient red, blue, green and yellow, which were attested by early viewers, underlined her fabulous nature. On the frieze of the Siphnian treasury at Delphi, c. 530-25, horses' manes were painted blue, green and red and thus apparently – unless these colours were originally mixed with others in a more subtle manner – displayed a non-naturalistic colouring.[19] This aesthetic attitude brings to mind the equally non-naturalistic colouring of horses on the twelfth-century *Bayeux Tapestry*. What prompted artists to paint horses' manes red, blue and green rather than more naturalistic colours? To a modern viewer, the archaic images would perhaps seem somewhat cartoon-like. Still, the strong colouring undoubtedly served a purpose. It may tentatively be suggested that these so-called unique hues, red, yellow, blue and green, were chosen for their saliency.[20]

Whereas a gorgon on a temple had the apotropaic function of scaring off would-be-aggressors and was painted accordingly, the functions of freestanding statues were different, thus other aesthetic preferences presumably came into play. Among its various functions, a *kouros* served as a symbol of masculine strength. A gigantic archaic *kouros* from Samos (original height c. 4.8 m) was apparently coated with a dark reddish paint, plausibly to indicate suntanned skin, a striking contrast to the lack of preserved colour on most statues from the Greek mainland.[21] Attic funerary statues like the *kouros* from Anavyssos (FIG. 1) and *Aristodikos* only have remains of red in their hair. Since red was sometimes used as an underpainting for gold, if this was also the case for these statues, the red suggests a heroized image of the deceased. Thus, by use of colour and/or gilding, the basic significance of the statue could change.

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[18] Bente Kiilerich, 'Bluebeard – A snake-tailed Geryon?', *Opuscula Atheniensia* 17, 1988, 123-136, with references.

[19] Brinkmann, 'The Polychromy of Archaic and Classical Greek Sculpture', in Østergaard and Nielsen, *Transformations*, 80-115, at 89.

[20] For the unique colours, see, e.g., André von Wattenwyl and Heinrich Zollinger, 'Color-term Salience and Neurophysiology of Vision', *American Anthropologist*, 81, no. 2, June 1979, 279-288. It has recently been argued that the unique colours are not more salient than other hues, Lauren E. Wool, e.a., 'Salience of unique Hues and Implications for Color Theory', *Journal of Vision* 15(2): 10, 2015, 1-11.

[21] Helmut Kyrieleis, Hermann J. Kast and Gunther Neumann, *Der grosse Kuros von Samos*, Bonn: Rudolph Habelt, 1996; Vinzenz Brinkmann, 'Der nackte Marmorkoloss von Samos, in Idem, *Bunte Götter*, 66-69. For the caveat of generalizing that all *kouroi* were dark-skinned, see Richard Neer, *The Emergence of the Classical Style*, Chicago: Chicago U.P., 2010, 75-76.

Figure 1 Kouros from Anavyssos, detail of head. Athens, National Archaeological Museum (photo: author)

In the portrayal of young Athenian girls, *korai*, prestigious colours enhanced the visual impact of their garments and indicated their social position. Due to the cost of the dyes, clothes in bright colours were more expensive than drab ones; a circumstance that represented clothes would have to reflect. Greek texts praise the saffron-coloured dresses of young girls, and one can imagine this expressed in sculpted form in the *korai*, some perhaps priestesses of Athena.[22] Colour had a function beyond that of enhancing the beauty of the *agalma* (a work for pleasure and enjoyment). It could be employed to distinguish and characterize the person represented, and would thus have a bearing on meaning.[23] A close examination of remaining traces of paint on the so-called *Peplos kore* from the Acropolis revealed that the archaic statue did not wear a *peplos.* Rather the long dress decorated with animal friezes was an *ependytes,* an Oriental prestige garment. From this it could be inferred that the sculpture did not represent a mortal woman but, most likely, a goddess.[24] The technical analysis of the *korai* thus shows that colour can bring a new dimension not only visually and aesthetically but also with regard to meaning and content.

The early Classical period
In the late nineteenth century, excavators found evidence of red paint on sculpture from the Temple of Zeus at Olympia, 470-456.[25] It is apparent from the surface

[22] Catherine M. Keesling, *The votive Statues of the Athenian Acropolis*, Cambridge: Cambridge U.P., 2003; Mary Stieber, *The Poetics of Appearance in the Attic Korai*, Austin: University of Texas Press, 2004. Stieber discusses the colours of the korai, noting the different hues of eyes, hair and clothes.
[23] Ivonne Manfrini, 'Entre refus et nécessité de la couleur la sculpture grecque antique, in Carastro, *L'antiquité en couleurs*, 21-41, at 29: 'C'est donc la couleur qui spécifie le sens et la function de l'objet'.
[24] Vinzenz Brinkmann, 'Mädchen oder Göttin. Das Rätsel der 'Peploskore' von der Athener Akropolis, in id. *Bunte Götter*, 81-84. For the polychromy of the korai in general, see Dimitrios Pandermalis, ed., *Archaic Colors*, Athens: Acropolis Museum, 2012 (peplos kore 28-29).
[25] Georg Treu, 'Die technische Herstellung und Bemalung der Giebelgruppen am olympischen Zeustempel', *Jahrbuch des deutschen archäologischen Instituts* 10, 1895, 1-35, at 25-

treatment that accessories were added in bronze, while details like sandals were painted in. These colours have long since disappeared through contact with the air, and the colourless sculptures and reliefs therefore give a 'minimalist' impression. This early Classical phase of Greek sculpture has been termed the 'severe style'.[26] But the severity that has been seen as characteristic of the early Classical period may be partly due to the very loss of colour. It may be conjectured that if the original polychromy was restored to the Olympia sculpture, the style might well appear less 'severe'.

Colour could have underlined the theatrical aspects of the pedimental groups at Olympia, a sculpted visualization of the themes of contemporary tragedies and a parallel to the paintings of the *ethographos*, or character-painter, Polygnotos. It is therefore important to analyse how paint may have been used to stress certain psychological aspects of these sculptures. The east pediment depicts the preparations for the chariot race between Pelops and Oinomaos. The sunken posture and worried facial features of the old seer reveal his emotional state. However, seeing the sculptures from a distance, an ancient viewer would not have experienced these features as clearly as the modern viewer, who faces the sculpture at eye-level in the museum at Olympia (or in photographic reproductions). So, colour would have facilitated the understanding of the figure. It is therefore worth exploring the possible manners in which colour could have been used to present to best advantage the protagonists and onlookers in this early Classical tragedy set in stone.

At about the same time impressive bronze statues such as the *Delphi Charioteer* and *Zeus from Artemision* were created. By means of artificial patination, the bronze surface could acquire various colours ranging from yellowish to reddish to darker nuances. Bronzes also had eyes and details inlaid in other material. Indeed, in addition to various copper and silver alloys, large-scale bronzes may have shown various types of additional colour, a practice widespread in Egyptian art.[27] For instance, the charioteer's long dress, the *xystos*, in real life was white and it cannot be ruled out that it may have been coloured white in the bronze statue at Delphi. This metal polychromy also deserves closer art-historiographical attention. Most recently, Vinzenz Brinkmann and his collaborators have experimented with

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35: iron oxide red attested at five places, including red on the drapery of Apollo, horses' tails and Cretan bull.

[26] Vagn Poulsen, 'Der Strenge Stil', *Acta Archaeologica* 8, 1937, 1-42; Brunilde S. Ridgway, *The Severe Style*, 1970. The bold style was proposed by Evelyn Harrison, 'Early Classical Sculpture: The Bold Style', Cedric Boulter (ed.), *Greek Art. Archaic into Classical. A Symposium held at the University of Cincinnati* (Cincinnati Classical Studies n.s., vol. 5), Leiden: Brill, 1985, 40-65.

[27] See, e.g., Sophie Descamps-Leguime, 'La polychromie des bronzes grecs et romains', in Agnès Rouveret, Sandrine Dubel and Valérie Naas, eds, *Couleurs et materières dans l'antiquité: textes, techniques et pratiques*, Paris: Rue d'Ulm, 2006, 79-92; Marion Muller-Dufeu, 'Les couleurs du bronze dans les statues grecques d'après les descriptions antiques', ibid. 93-102. Further bibliography on the colour of bronzes in Østergaard and Nielsen, *Transformations*, 109. For Egypt, e.g., Susan La Niece, 'Polychromy and Egyptian Bronze: new Evidence for artificial Coloration', *Studies in Conservation* 47, 2, 2002, 95-108.

three-dimensional reconstructions of the two famous bronze statues Riace A and B, c. 460-450. With 'suntanned' skin and black or reddish hair, they acquire a completely different look from what they presently have in the museum at Reggio di Calabria.[28] Much in these reconstructions is obviously conjectural, still, there is no doubt that along with various attributes, the colouring chosen in antiquity for the Riace bronzes and other statues would have helped differentiate individual figures and communicate particularizing aspects.

The Classical period

Colour communicated at various levels. In a multi-figured group or scene, it served to differentiate individual figures and to distinguish one figure from another. Certainly, the many horses and riders on the Parthenon frieze, difficult to make out from a distance, benefitted from differentiating colours.[29] But until physical evidence of colour has been established, it is hazardous to hypothetically reconstruct the painting of this c. 160 m long frieze. Still, some general remarks can be made. A composition encircling a building on all sides is difficult to take in; it cannot be seen at a single glance but must be perceived in parts or experienced as a performance unfolding before the eyes of a viewer who is moving around the building. Colours could create a rhythmic flow, separate different parts of the narrative, set off specific entities and highlight particular elements. Changes of scenes and moods could conceivably have been marked by changes of colour.

It has often been pointed out that landscape indications are scarce in Greek art, but one can imagine that some landscape elements may have been added in paint. It is uncertain whether the seated gods on the Parthenon frieze should be imagined as witnessing the Panathenaic festival from the Acropolis or from their home on distant Mt Olympus. This point may have been clarified by means of paint. The problematic central scene on the east frieze (the handing over of the peplos to Athena?) could also have been made more explicit by colour. According to ancient sources, the peplos was saffron-coloured with a woven gigantomachy motif (Euripides, Ion, 1528-29). Colour would therefore have clarified whether it was indeed Athena's new robe that was represented on the frieze. Today the seated gods on the east frieze can only be distinguished from the humans by means of their larger size. Colour could have further set them apart. If gilded, the attributes of the gods, such as Athena's aegis and Zeus' sceptre, would have added to the overall splendour of the monument. So, on the frieze, the (potential) polychromy must have been an important means of communication as well as a means of distinguishing between humans and divinities. Moreover, polychromy and chrysochromy would

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[28] The reconstructions were presented in 2016 at the exhibition *Athens. Triumph der Bilder*, Liebighaus Skulpturensammlung, Frankfurt a.M.

[29] Colour traces on the Parthenon sculpture are barely existent, for recent finds, see Christina Vlassopoulou, 'New Investigations into the Polychromy of the Parthenon', in Brinkmann, ed., *Circumlitio*, 218-223; Alessia Zambon, 'Les premiers voyageurs et la dorure du Parthénon. Mise au point sur une controverse ancienne', *Revue archéologique* 2012, 41-61. For the problems of viewing the frieze, see Clemente Marconi, 'The Parthenon Frieze: Degree of Visibility', *Res: Anthropology and Aesthetics* 55/56, 2009, 156-173.

change our perception of the frieze as an exquisite but somewhat monotonous roll of 'wall paper'.[30]

The Parthenon was exceptional for its rich sculptural decoration: a frieze in low relief, metopes in high relief and pediments sculpted in the round. One can imagine paint being used differently for these different kinds of sculpture. The metopes possibly relied on a strong colouring that served to set the Greek heroes apart from their opponents, be they centaurs, giants, Amazons or Trojans. In the pediments, the backside of each figure was carefully carved, even though this part of the figure was hidden from view. It is therefore reasonable to assume an equally careful executing of colouristic accents. The gods who appear both in the pediments and in the frieze, Athena, Zeus and Poseidon, would probably have worn the same colours both places for easier identification and in order to tie together the various scenes. The most important art work in the Parthenon, of course, was not the architectural sculpture but the monumental chryselephantine (gold and ivory) statue of Athena Parthenos.[31] Using the appearance of this statue as a lead, it might be speculated whether the marble representations of Athena would have been predominantly in white and gold with just a few coloured accents.

The next generation of Athenian sculptors worked in the so-called rich style. With its finely modelled, windblown, wet and clinging draperies revealing the body beneath, colour seems superfluous. Yet, colour there plausibly was. On the Nike parapet, paint must be imagined to have been employed so as to make the Nike untying her sandal and the other relief figures stand out.[32] Further studies are needed to establish potential remains of paint: Were the Nikai all dressed in white, or did various colours alternate? Were they set against a blue ground? There is little doubt that the reliefs were meant to be noticed; embodying Athenian victory, they had a propagandistic rather than religious function. Since it was imperative to signal the victory to visitors as they entered the Acropolis, this suggests the use of strong rather than subdued colours.

The late Classical period

The thoughts of Socrates, Plato and Aristotle came to inform the art of the fourth century.[33] Portraiture became more prevalent and interest in the psychological aspects of images grew. In the decades from c. 400 onwards, sculpture also increasingly turned to a pathetic mode, as evidenced by a few tortured faces and bodies that are preserved from the pediments of the Temple of Asclepios at

[30] Brunilde Ridgway, in a lecture on Greek sculpture, Copenhagen University, many years ago, used the term 'wall paper' for Greek friezes on Ionic temples. As she put it, one could roll it out, take as much as one needed and place it where one wanted.

[31] For the chryselephantine technique, see Kenneth D.S. Lapatin, *Chryselephantine Statuary in the ancient Mediterranean World*, Oxford: Oxford U.P. 2001.

[32] Andrew Stewart, *Greek Sculpture: an Exploration*, New Haven and London: Yale U.P., 1990, 166-167, at 166, compares the drapery style on the parapet reliefs to that of Parrhasios' paintings without, however, implying that the reliefs were painted.

[33] See, e.g., Blanche R. Brown, *Anticlassicism in Greek Sculpture of the Fourth Century B.C*, New York: the University Press, 1973.

Epidavros, c. 380.[34] Again, as with the Old Seer from Olympia, it can be wondered whether paint was used to stress the emotions of these figures. By means of colour, artists could express some essential or psychological aspects of the represented subject. It was theoretically possible to visualize a figure as being, say, pale with fear, green with envy, or red hot-tempered. Thus by choosing the proper colour the artists might suggest the emotions of a person.

Praxiteles is said to have preferred those of his statues that were painted or treated (the term is *circumlitio*) by Nikias (Plin. NH, 35.133).[35] If this Nikias is identical with the well-known painter by that name, it goes forth that a statue could be coloured by an artist who otherwise worked in the two-dimensional arts. It can therefore be speculated whether the manner of using colour and shading developed along the same lines in sculptural painting as in panel and mural painting. A potential mutual influence of two- and three-dimensional art might suggest that statues could at times appear as 'paintings in the round', while reliefs, wavering between two- and three dimensions, could be perceived as 'two-and-a-half' dimensional paintings. Sculptor and painter collaborated: some parts were carved while surface and details were filled in with paint. Whether Praxiteles' statues were 'suntanned', like the Samos *kouros* mentioned above, or whether their surface was more discreetly treated remains to be discovered. On Praxiteles' *Hermes* in Olympia (which is plausibly not an original by the Greek sculptor but a later copy/variant in marble of either a marble or a bronze statue), the individual locks of hair are rudimentarily carved, especially at the top of the head.[36] This treatment suggests that the hair may have been detailed by paint (at least on the marble version in Olympia, whereas a potential bronze prototype raises different questions). It is also apparent that the roughly chiselled irises were prepared for paint. Plato famously referred to painters making the eyes of statues black, although they ought to make them purple (*ostreios*) since the most beautiful part of the body deserved the most beautiful colour (Plato, State, 4, 420c-d). Rather than showing dead eyes without iris and pupil, artists would presumably have used colour, or, in bronzes, inlays of glass and other material, to give an illusion of life to dead matter and suggest a 'living presence'. This would be in keeping with the fact that Greek statues habitually were praised for their liveliness and lifelikeness.[37]

The Hellenistic period
In comparison with classical and archaic sculpture, Hellenistic sculpture shows greater stylistic and iconographic variety. Some works, like the *Venus de Milo*, are classicizing in style; other works are rendered in manners that have been labelled

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[34] Alison Burford, *The Greek Temple Builders at Epidauros*, Liverpool 1969.

[35] Philippe Jockey, 'Praxitèle et Nicias, le débat sur la polychromie de la statuaire grecque antique,' in Alain Pasquier and Jean-Luc Martinez, eds., *Praxitèle*, Paris: Musée du Louvre, 2007, 62-72.

[36] For Hermes, see, e.g., Aileen Ajootian, 'Praxiteles', in Olga Palagia and Jerome Jordan Pollitt, eds, *Personal Styles in Greek Sculpture*, Cambridge: Cambridge U.P., 1996, 91-129.

[37] Deborah Tarn Steiner, *Images in Mind. Statues in Archaic and Classical Greek Literature and Thought*, Princeton: Princeton U. P., 2001, esp. 135-156.

'rococo', 'baroque' and 'realistic'.[38] The repertoire was enriched by a large number of new figure types ranging from small children to old people, from kings to wounded boxers. It also included sleeping figures and explicit mythological motifs such as the Flaying of Marsyas. Hellenistic polychromy would certainly have reflected this multitude of visual images. Colour choices may also have been quite varied due to the cosmopolitan milieus in which the new subjects were created.

Figure 2 Alexander Sarcophagus, detail of fighting Persian. Istanbul Archaeological Museum (photo: author)

The *Alexander Sarcophagus* from Sidon, c. 320, (Istanbul Archaeological Museum) is the best preserved example of early Hellenistic sculptural polychromy. Much colour, although faded, can still be observed with the naked eye. The painted eyes of a Persian make him look focused and attentive (FIG. 2), while Alexander the Great charging on horseback has a determined expression that would have been difficult to depict without colour. To a certain extent, the battle is like a live drama acted out in relief. But exactly how did the colours *in toto* originally appear? It is instructive to compare the reconstruction on paper proposed by Franz Winter in 1912 and the reconstruction made, a century later, by Vinzenz Brinkmann and Ulrike Koch-Brinkmann, some of the foremost experts on sculptural polychromy.[39] Although based on scientific analysis that has attested to the use of some twenty different pigments, the harsh colours of the latter reconstruction can hardly do justice to the original. But it serves to give a general idea of how paint can enrich sculptural relief. Three variants of the head of the Persian raising his shield have been presented; it may be open to negotiation which version is closest to his original appearance.[40] In addition to the physical remains of pigments, the reconstructed colouring of these heads seems informed in a general way by the colour scale of the

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[38] See in general, e.g., John Onians, *Art and Thought in the Hellenistic Age*, London: Thames & Hudson, 1979; J.J. Pollitt, *Art in the Hellenistic Age*, Cambridge: Cambridge U.P., 1986.

[39] Franz Winter, *Der Alexandersarkophag aus Sidon*, Strassburg: K.J. Trübner, 1912; Vinzenz Brinkmann, 'Die Blauen Augen der Perser. Die Farbige Skulptur der Alexanderzeit und des Hellenismus', in Id. *Bunte Götter*, 166-179, at 166-173, with Winter's coloured drawings, fig. 279-295. Vinzenz Brinkmann and Ulrike Koch-Brinkmann, 'On the Reconstruction of antique Polychromy Techniques', in Brinkmann, ed., *Circumlitio*, 114-135, at 125-135; Østergaard and Nielsen, *Transformations*, 114-115.

[40] Østergaard and Nielsen, *Transformations*, 324, cat. no. 51.

Persians on the *Alexander Mosaic* from Pompeii. The fine nuances of this basically four-colour image (yellow, red, black and white, plus shades of brown and grey) and of other Hellenistic mosaics that include more hues make it likely that a comparative nuanced sculptural polychromy can be expected. Future studies may therefore include further analysis of the colour-scale preserved in Hellenistic mosaics. The paintings from Macedonian tombs – the royal tombs at Vergina and the significant recent finds at Agios Athanasios – could give further hints about Hellenistic attitudes to colour.[41] Here one must obviously be aware of the pitfalls of uncritically transferring the colours from one medium to another.

In ancient sculptural polychromy, both in stone and metal, gilding played an important part.[42] Gilding ranged from painted-in details, to a total covering. The importance of gold in Hellenistic art has been substantiated by several recent studies.[43] The surface of a marble *Diadoumenos* from Delos (Athens, National Archaeological Museum) is now white all over; but this particular statue seems originally to have been totally covered in gold-leaf, tree-trunk included.[44] This raises the question of whether Polykleitos' bronze *Diadoumenos* was similarly gilded, or perhaps patinated to acquire a gilded look, thus implying that gold was the choice of a nouveau-riche late Hellenistic customer.

From Greek to Roman polychromy
Another area that calls for further exploration is the relation between Roman and Greek sculptural polychromy. This is especially pertinent in instances where Roman sculptures are copies or variants of Greek works. How did the various Roman *Diadoumenoi* – some sixty of which survive – and *Doryphoroi* vary with regard to surface treatment? When a Greek bronze was reproduced in marble, its material colouring would inevitably have changed, so it should be studied how Greek bronze colouring 'translated' into Roman marble colouring: How did the colouring of a Roman Venus differ from that of a Greek Aphrodite, the colouring of a Roman Mars from that of a Greek Ares, and so on.

Roman sculptural polychromy extended far beyond the realm of *Idealplastik*.[45] One of the most important sculptural genres was portraiture. On an

[41] Maria Tsimbidou-Avloniti, 'Les peintures funéraires d'Aghios Athanassios', in Sophie Descamps-Lequime, ed., *Peinture et couleurs dans le monde grec antique*, Paris: Musée du Louvre, 2007, 56-67.

[42] Maria Michela Sassi, 'Sul colore dell'oro', in Maria Tortorelli Ghidini, ed., *Aurum. Funzioni e simbologie dell'oro nelle culture del Mediterraneo antico*, Roma: l'Erma di Bretschneider, 2014, 349-359.

[43] Brigitte Bourgeois and Philippe Jockey, 'D'or et de marbre. Les sculptures hellénistiques dorées de Délos', *Bulletin Correspondence Hellenique* 128-29, 2004-05, 331-349; Iid., 'La dorure des marbres grecs. Nouvelle enquête sur la sculpture hellénistique de Délos,' *Journal des Savants* 2005, 253-316 ; Iid., 'Le marbre, l'or et la couleur. Nouveaux regards sur la polychromie de la sculpture hellénistique de Délos', in Descamps-Lequime, *Peinture et couleurs dans le monde grec antique*, 163-191.

[44] Bourgeois and Jockey, 'D'or et de marbre', 335-339.

[45] Bradley, 'Importance of Colour', discusses visual and literary evidence and addresses Roman polychromy under the headings visibility, finish, realism and *trompe-l'oeil*; Mark Bradley, *Colour and Meaning in ancient Rome*, Cambridge: Cambridge U.P., 2009, is mainly

imperial marble statue, the *Richmond Caligula*, no colour traces are visible.[46] But photo-induced luminescence imaging has revealed traces of madder lake and Egyptian blue in the upper right tunic folds. From this it has been inferred that red and blue would have been mixed to make purple and that the toga had at least displayed a purple *clavus*. Three hypotheses have been advanced: a *toga praetextata*, all white except for a purple border, an all purple *toga purpurea* or a *toga picta* which differs from the former by the golden ornaments on edge and *clavus*.[47] In its present monochrome state, the statue appears indistinct, whereas the restorations – especially the *toga picta* variant – provide the sculpture with a totally different presence.

A statue that has featured heavily in recent studies on polychromy is the *Augustus Prima Porta*. Based on attested slight remains of red, blue and gold, the statue has been reconstructed with these colours, in the relevant areas, but for the rest left white. The reconstruction therefore dispenses with guesswork in the choice of other colours.[48] In a recent experiment in 2014, Spanish scholars introduce more colours, creating a more harmonious (if not necessarily more correct) impression of the statue.[49] In view of the fact that this marble portrait presumably derives from a statue in bronze, it may be speculated whether the colouring would have reflected the metal prototype. In that case it may be conjectured that rather than clear blue and red, as first reconstructed, the colours may originally have had a different brightness and saturation that made them appear more metallic. Blue could have been mixed with other pigments and substances to represent silver, and red could have been made to represent copper. With additional gilding and colours, the imagery on the cuirass could have stood out against a seemingly bronze ground. While at first sight this may seem at odds with current evidence, a striking example of polymateriality in metal is preserved in the remains of an imperial *paludamentum* from Volubilis in Marocco (Rabat, Archaeological Museum).[50] By means of bronze, copper, silver, brass and black and orange inlays, the figural fragment obtains a damasked look. One could imagine that in its metal version the cuirass of Augustus had a somewhat similar appearance, and that the various marble versions may have partly endeavoured to reproduce this effect.

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concerned with the textual evidence. Recent studies include Liverani and Santamaria, eds, *Diversamente bianco*; Amalie Skovmøller, *Portraits and Colour-codes in ancient Rome: the Polychromy of white marble Portraits*, Copenhagen: University of Copenhagen, PhD thesis, 2015 (available online).

[46] Bernard Frischer, 'Digital Sculpture Project: Caligula', http://digitalsculpture.org/papers/frischer/frischer_paper.html

[47] Frischer, 'Digital Sculpture', figs. 4-6, virtual restorations from 2012.

[48] Paolo Liverani, 'L'Augusto di Prima Porta', in Paolo Liverani ed., *I colori del bianco. Policromia nella scultura antica* (Musei Vaticani), Roma: De Luca Editore, 2004, 235-242; Paolo Liverani, 'La polychromie de la statue d'Auguste de Prima Porta', *Revue archéologique*, n.s., fasc. 1, 2005, 193-197.

[49] Emma Zahonero Moreno and Jesús Mendiola Puig, 'La policromia del Augusto de la Prima Porta: una propuesta procedimental', in *Tarraco biennal. Actes 2on congrés internacional d'Arqueologia i Món Antic*, Tarragona 2015, 85-92.

[50] Christine Boube-Piccot, *Les bronzes antiques du Maroc, I, La statuaire*, Tanger: Éditions marocaines et internationales, 1969, pls. 16-37.

The polychromy of large official monuments served other ends than that of freestanding statues. The *Ara Pacis Augustae* has been visualized in colour with the aid of digital projection and its polychromy has been reconstructed 'on paper'.[51] In marble white, the monument can be difficult to take in, unless one has a close up view. Certainly with added colour, it was easier from a distance to single out Augustus in the procession of priests and magistrates, and by the purple mantel he wore, link him to the representation of Aeneas on the front of the altar to draw a connection between a historical and a mythical figure. Enriched by colour, each single plant and flower, tiny bird and insect in the frieze's lustrous growth would be visible even from some distance. Imagined in colour, the finer points are easier to comprehend. To visualize the idea of an *aurum seculum* to the full, gilded details would have brought home the point. Politically, the polychromy thus had an important communicative and semantic function.

Colour served propagandistic ends on political monuments such as triumphal arches and columns. Like other now monochrome landmarks in Rome, the reliefs on the *Arch of Titus* originally stood out in colour – plausibly supplemented with gilding.[52] As for the triumphal columns of Trajan and Marc Aurel in Rome, it is easy to understand the problems of transmitting the messages of the helical windings. Although their reliefs were not meant to be read like a book roll, colour would have assisted the eye in picking out the emperor in the crowd, and paint would have been a structuring factor in the overall composition.[53] Perhaps in order to increase visibility on the later columns of Theodosius (c. 386-c. 394) and Arcadius (c. 402-423) in Constantinople – preserved only in fragments, but attested in drawings – the number of scenes was reduced and the height of individual bands was increased in comparison with the two predecessors in Rome.[54] Thus it is reasonable to assume that paint was also applied differently in Constantinople and Rome. At present, however, it is barely possible to establish in how far sculptural polychromy changed from the second to the fourth century.

Late antique polychromy

[51] Orietta Rossini, 'Ara Pacis. I colori del biancho', *Archeo* XXV, 1 (287), January 2009, 66-75; Simone Foresta, 'La policromia dell'Ara Pacis e i colori del Campo Marzio settentrionale', *Colore e colorimetria* VIIa (20), 2011, 333-340; Simone Foresta, 'La funzione della policromia nell'interpretazione storico-artistica dell'Ara Pacis Augustae dal 1894 alla metà del '900', *Eidola* 9, 2012, 91-110.

[52] The Arch of Titus Digital Restoration Project in 2012 discovered remains of yellow ochre on the menorah, see Steven Fine, 'Menorahs in color: Polychromy in Jewish visual Culture of Roman Antiquity', *Images* 6, 2013, 3-25.

[53] Michele del Monte, Patrick Ausset and Roger-Alexandre Lefèvre, 'Traces of ancient Colour on Trajan's Column', *Archaeometry* 40.2, 1998, 403-12, found minuscule traces of paint: red on one of Trajan's cloaks, yellowish orange on a tree trunk. Ritchie Pogorzelski, Die Trajanssäule in Rom. Dokumentation eines Krieges in Farbe, Berlin: Nünnerich-Asmus Verlag, 2012, is highly speculative, but although the colours are mostly arbitrary, they visualize in a general way the importance of paint.

[54] Bente Kiilerich, *Late fourth-century Classicism in the plastic Arts*, Odense: Odense U.P., 1993, 50-64.

Late antique sculpture is often judged as being aesthetically and technically inferior to earlier Roman sculpture and in particular to Greek sculpture. The *Arch of Constantine* in Rome, with its ungainly reliefs, is the key work in underscoring the 'deficiency' or decline of late Roman sculpture.[55] At any rate, viewing the Constantinian historical frieze, it may be claimed that it cannot be fully evaluated aesthetically when only one part of the visual expression is preserved, namely the sculpted relief, whereas the perhaps equally important part, the painting, is missing. On the Arch, the six narrative scenes encircling the monument are undoubtedly influenced by triumphal paintings, and they therefore ought to be rendered in colour. The great care with which details like weapons and standards are depicted proves that the paramount intention was that the monument should communicate a clear message. Again, colour would have facilitated the reading of the narrative, and brought out the highlights of the imperial military campaign and festivities.[56] The golden wagon, shining armour and purple coloured banners would have come to the fore by means of colour. It should be stressed that the new and old reliefs incorporated into the arch were not primarily intended as 'art': they were visual documents, their primary function being to convey a political message. Colour would therefore have 'spelled out' the message: there should be no doubt what was going on in the pictures; it should be easy to tell the winner from the looser and easy to perceive the visual information with regard to topography, prosopography and paraphernalia. With inlays of red and possibly green porphyry, light yellow column shafts, gilded bronze letters (set against a painted ground?) and surmounted by a golden quadriga, the monument must originally have been quite colourful.[57]

In the aesthetics of painted sculpture, an important issue to focus on is the potential changing perceptions of colour in combination with the ensuing potential changing attitudes to polychromy. Did the Roman attitude to polychromy give way to a different aesthetic in late antiquity? Did pagans and Christians part ways as far as colouring was concerned? It has been suggested that in late antiquity, 'it seems that people began to perceive colors more vividly, to recognize more of them, or anyway to write about them more in Latin and Greek'.[58] While it is difficult to prove whether people perceived colours more vividly, at least it is reasonable to assume that the technique of large mosaic decorations set with tiny tesserae in a large variety of hues and nuances did make artists more aware of colour and colouristic

[55] Bente Kiilerich, 'What is ugly? Art and Taste in Late Antiquity', *Arte medievale* 6, 2007:2, 9-20.

[56] Siri Sande, 'The Arch of Constantine: who saw what?', in Stine Birk & Birte Poulsen, eds, *Patrons and Viewers in Late Antiquity*, Aarhus: Aarhus U.P., 2012, 277-290; Bente Kiilerich, 'Formal Shortcomings or a different *Kunstwollen*: Ritualisation and the Arch of Constantine,' in *Hommage à Jean-Pierre Caillet*, Motovun and Turnhout: Brepols, 2013, 95-104.

[57] Green porphyry: Patrizio Pensabene and Clementina Panella, 'Reimpiego e progettazione architettonica nei monumenti tardoantichi di Roma, *Rendiconti Pontificia Accademia* 66, 1993-94, 11-283, at 191-93.

[58] Paolo Squatriti, *Landscape and Change in Early Medieval Italy. Chestnuts, Economy and Culture*, Cambridge: Cambridge U.P., 2013, 123.

phenomena.[59] This may also have had a bearing on sculptural polychromy. Trying to recreate the lost polychromy of sculpture of the fourth to sixth century, representations in mosaic may, by analogy, be used to suggest colours of clothes and hair. What is more, the golden mosaics may have led to chrysochromy being increasingly desired in the sculpted media, as seen in some late antique and early Christian sarcophagus reliefs with remains of both paint and gilding.[60]

Figure 3 Statuette of late antique empress. Paris, Cabinet des Médailles (colour reconstruction by author)

Polymaterial techniques, encountered already in Phidias' chryselephantine statues of Zeus and Athena, was explored to the full in late antiquity. The colossal seated marble of Constantine (Capitoline Museums, Rome) is likely to have presented a mixture of polychrome (reused) marble and other materials, including, painted stucco and gilded bronze for the *paludamentum*.[61] Early Byzantine commissioners continued the tradition of colouring and gilding portraits and of

[59] Bente Kiilerich, 'Optical Colour Blending in the Rotunda Mosaics', *Musiva et Sectilia* 8, 2011 [2014], 163-192.

[60] Maria Louise Sargent, 'Recent Investigation of the Polychromy of a metropolitan Roman garland Sarcophagus', in Østergaard, ed., *Tracking Colour* 3, 2011, 14-34. The visible gilding is modern, overlaying the original one. Identified pigments are blue, yellow, green, purple and three reds.

[61] See, Claudio Parisi Presicce, 'Costantino e i suoi figli. Il nuovo volto dei potenti', in Paolo Biscottini and Gemma Sena Chiesa, eds, *Costantino 313 d.C*, Milan: Mondadori Electa, 2012, 109-119, at 113-116.

inserting semiprecious stones.[62] For instance, the portrait head of the empress 'Ariadne', ca 500, originally had inset eyes, inset jewels in the diadem and a gilded hood, thus being chrysochrome, polychrome as well as polymaterial. The surface of a marble statuette of an early fifth-century empress has been treated in a manner that suggests the use of colour and supplementary material (Paris, Cabinet des Medailles). The ears are pierced for inserting earrings, the surface is prepared for a *Juwelkrage* and the *clavi* down the front of the tunic are rough, perhaps intended to be covered with a thin foil.[63] The empress may be tentatively reconstructed in colour by using the prevailing hues imperial purple and gold (FIG. 3), somewhat like the portrait of Princess Anicia Juliana in the *Vienna Dioskourides* manuscript.[64] All things considered, some of the seemingly lacklustre sculptures may come to appear in different guise if their lost colours can be reconstructed with some degree of probability.

Conclusion

The study of sculptural polychromy has advanced considerably in recent years. Scientific analysis, experimental archaeology and virtual reconstructions have helped visualize the lost colours of ancient art. The preceding pages have argued for the need to revise the historiography of Greek and Roman art in accordance with the current state of research, in other words to write a polychrome history of ancient sculpture. As far as possible, the various aspects and problems of colour should be integrated into general discussions of the monuments. It is obviously hazardous to base a story of ancient sculpture on hypothetical reconstructions. Still, by including technical data and when possible presenting modern reconstructions in combination with coloured drawings made by earlier scholars (when preserved paint may have been more visible), the reader gets a chance to evaluate the propositions and to perceive new dimensions of the sculpted images in all their complexity. The present article has endeavoured to take a few hesitant steps towards an outline of some aspects of an aesthetic of polychrome ancient sculpture.

Tracing the 'history' of colour, the archaic Greek artists appear to have preferred the so-called unique colours – red, blue, yellow and green – also known as the psychophysical primaries. These were at first used in an abstract artistic language well suited to a world inhabited by monsters: the gorgon Medusa on the Corfu pediment must have been a fabulous sight with her lolling tongue, rolling mesmerising eyes and live snakes for hair, all rendered in strong primary hues. Indeed, it can be argued that without colour it would have been difficult to fully appreciate her monstrous nature. In the early Classical period the temple of Zeus at

[62] Paolo Liverani,'Late Antiquity 300-500 CE', in Østergaard and Nielsen, *Transformations*, 272-281; Bente Kiilerich, *Visual Dynamics: Reflections on Late Antique Images*, Bergen: 2015, 185-192 (https://uib.academia.edu/BenteKiilerich/Books)

[63] Bente Kiilerich, 'Monochromy, Dichromy and Polychromy in Byzantine Art', in Denis Searby e.al. ed., *ΔΩΡΟΝ ΡΟΔΟΠΟΙΚΙΛΟΝ. Studies in Honour of Jan Olof Rosenqvist*, Uppsala: Uppsala University, 2012, 169-183.

[64] Bente Kiilerich, 'The Image of Anicia Juliana in the Vienna Dioscurides: Flattery or Appropriation of imperial Imagery?', *Symbolae Osloenses* 76, 2001, 169-190.

Olympia had to tell a more complex story than the one on the Corfu pediment. Here the artists must be imagined to have used colour primarily to emphasize the dramatic and theatrical potential of the scene. Some 'lingering archaism' can be postulated for the metopes showing the hero Herakles and his exploits, which to some extent still follow the 'cartoon-like' idiom of the Herakles pediments from the Athenian Acropolis with strong contrasting colours such as those on *Bluebeard*. The Parthenon's different types of sculpture (low relief, high relief and sculpture in the round) would probably have involved different manners of colouring: viewing distance, height of relief and the importance of the given subject would all have had bearing on the choice of colour. Classical bronze statues showed polymaterial surfaces, and it is reasonable to assume that these statues, which were praised for their lifelikeness, could attain a sophisticated colour-scale. The Hellenistic age saw an increase in sculptural production, in part due to more private commissions. The cosmopolitan Hellenistic world with its large repertoire and the growing exploration of the natural sciences with optics as a major field undoubtedly presented the viewer with a comparably varied use of colour. Current views hold that pink and light blue were favoured by a Hellenistic audience. However, this view may have to be modified in coming years. In Roman imperial sculpture, colour became particularly important for communicating a political message. It was obviously easier to make sense of the triumphal arches and, especially, the triumphal columns, if their reliefs were rendered in colour. On the *Ara Pacis Augustae* colour and gilding would have stressed the political message of the new golden age. With the rise of Christianity and the move from sculpture to mosaic as the primary medium, sculpture would plausibly have taken on a more pictorial surface finish, with an increasing use of gilding.

Much more research is needed in order to develop and substantiate the above claims. Nonetheless, by combining bits and pieces of evidence, we are at least moving towards an outline of a coloured history of ancient sculpture.

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