CHAPTER 3

Haptic Colour: Experiential Viewing in Graeco-Roman Sacred Spaces

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Introduction to Haptic Colour and Cognitive Theory

Graeco-Roman scholarship now widely accepts that the ancient world was as much a world of colour as our own is today, in both the public and private spheres. Those examples of colour in a domestic setting tend to have captured the imagination more profoundly, like the wall-paintings in the rooms of a desolated Pompeii. Works like Moorman's extensive piece, *Divine Interiors*, have noted the brightly painted walls of sacred spaces, and along with polychrome marble floors and the brightly coloured paraphernalia that would have filled these areas, we can imagine the ancient worshipper to have been surrounded by a riot of colour.[1]

This chapter seeks to offer an interpretation on how these colours could have been understood by the ancient viewer, or at the very least to highlight the possibilities and complexities inherent in the associations of the colour choices used in these sacred spaces. To do that, 'Part I Experiencing Colour As a Viewer' will explore the capacity for colour to affect the experience of these spaces using both modern cognitive theories and ancient philosophical thought. Then, 'Part II Experiencing Colour in Mithraic Sacred Spaces' will explore case studies of two Roman Mithraea, their challenges and the surviving polychromy found there. Finally, the principles discussed in the chapter will be applied to the remaining polychromy in Roman Mithraea in 'Part III Fundamental Colours in Mithraism', in order to see how these colourful schema could have had real consequences for the lived experience of ancient ritual activity.

One of the first things to note in any study of the significances of colour, is that not all of the colourful items present in sacred spaces will have a specific meaning or message. Colours contributed to the overall impression of the visual display, but may not have been chosen for any reason

[1] Moorman 2011, also see Bradley 2009 for his influential work on colour in Roman society.

other than that they were pleasing to the eye. This chapter does not seek to argue against colour's intrinsic capability to be decorative, nor that in some cases it was simply illustrative – for example, there is little one needs to infer into the decision of a craftsperson to paint a tree carved into a frieze with greens and browns. Many sacred spaces, and as we will see, especially those of Mithraic worship, were filled with sumptuous decoration the like of which its viewers would not likely see elsewhere. This not only created an awe-inspiring experience of the richness and beauty of sacred space, but could be encoded with deeper meaning, as this chapter will show.

Part I Experiencing Colour As a Viewer

For the most part, restraint and subtlety of design are not considerations common to the Roman colour palette, and the ornamentation and decorative value of these spaces spoke to the glorification of the god or goddess and, of course, the devotion (and, likely, wealth) of the individual or group who expressed such dedication as to fund such a paean. Some materials, pigments, or dyes represented a huge intrinsic cost, in terms of the labour of extraction or production and the sheer effort required to bring these materials from their source to their final destination in these sacred spaces.[2]

The source of a colour could have had significant bearing on the lives of many members of ancient society, well before that pigment or dye was even used. Many of these colours can only be found in specific geographic regions, and might need to be mined, harvested, or otherwise processed at the site prior to transportation to the final owner or destination of the coloured object. As a result, large industries and trade relationships surrounding the production and transport of these colourants existed, especially for those which required many hands to harvest or develop the raw material into the colour source.[3] As an example, the importation of coloured marbles, used ubiquitously through the Imperial *fori* and public temples, but also utilised in the more lavish private homes, created an entire infrastructure of quarries, masons, trade-routes, architects, and builders to deliver the pieces of coloured marble to their designated place.[4] Consequently, large proportions of ancient society, particularly

[2] Most famously in the case of the purple murex dye, of which an estimated 250,000 individual shellfish were required to produce one ounce of subsequently very expensive and very highly prized dye; see Ball 2001: 199, Barber 1991: 228, Barber 1992: 116, Brøns 2014: 67, and Croom 2002: 26.

[3] Cleland, Davies and Llewellyn-Jones 2007: 52.

[4] Discussion of marble trade specifically can be found in Malacrino 2010 or Fant 1999. On marble for personal use, see Fant 2007: 339–40 – Pompeians in the Augustan period used the offcuts from

the lower classes, would have based their livelihood around such industries, so it is not unreasonable to expect that awareness of colour and source was not limited solely to consumers of the finished product.[5]

Geographical location, therefore, could be a key influencer in the associations connected with the colour source. These associations might arise from the society in the geographical region that developed the dye stuff, where local traditions attached a particular meaning to the hue or to the material colourant. These connections then might have been carried with the dye or coloured item to its final destination. Conversely, the opinions of the consumers' society about the culture or region in which the dyestuff was produced could affect its associations within that group. Roman opinion of the blue-turquoise colour produced by woad was influenced by the fact that woad was favoured by the barbarian tribes that often opposed Rome in battle. This meant that the colour itself could be seen as 'foreign' and 'other' to Roman eyes.[6]

All of these factors, then, would have formed a relationship between the pigment and the value placed upon the colour it produced. Considerations would have included its longevity as a pigment, the difficulty it took to develop the product, how dangerous it was to work with, and of course, how much it cost to acquire.

For the purposes of this study, we also need to explore the fundamental colours in ancient philosophy – those which were considered basic and elemental to the construction of all others, but not, as we shall see, 'primary colours' in the sense of the modern term.

So, what were these fundamental colours? Pliny, Cicero, Plutarch, and Pseudo-Aristotle all list four hues as basic colours – black, white, red, and yellow.[7] These, they claim, are colours from which all others can be derived, a claim which is easily undermined of course with any basic knowledge of artistic colour theory, where red, yellow, and blue are our modern primary colours, or from a scientific point of view, where scattered light of all hues can be created from a ratio of red, green, and blue.

Pliny gives an example of a painting which supposedly did use only these four ancient basic colours, but sadly for us, or perhaps luckily for him, the particular artwork did not survive to the present day for our perusal.[8] Other

Roman workshops and set them into standard monochrome mosaics in an attempt to copy the style. One example of this is at the House of General Championnet (VIII.2.1).

[5] Warbuton 2007: 240. [6] Ball 2001: 202, Caes. *BGall.* 5.14.

[7] Plin. *HN* 35.50, Cic. *Brut.* 18.70, Plut. *De def. or.* 436b, Arist. [*Mund.*] 396b13, Ball 2001: 15, Ierodiakonou 2005a: 13, Laurie 1910: 10, Raymond & Fraser 2001: 210.

[8] Plin. *HN* 35.92, namely Apelles's Alexander Holding the Thunderbolt, Ierodiakonou 2005a: 13.

artworks have been suggested in its place; often quoted is the famous Alexander mosaic from the House of the Faun in Pompeii, likely a copy of an earlier Greek work and a richly detailed scene which uses only shades of red or ochre-yellow tesserae, with detail and shade in white and black. But this example does not demonstrate how red, yellow, black, and white could be combined or blended to produce other colours; it merely restricts its palette to this quartet. As such, we must conclude that our ancient sources are not arguing that these were primary colours in the sense that we use now.

Indeed, there is very little evidence that any of the ancient painters or contemporary writers who discussed them thought that paint could be properly blended chemically. Instead, colours were laid against each other, either to give the illusion of blended colour as occurs in pointillism, or applied in washes on top of each other to create a 'mixture' of colours.[9] This behaviour was a result almost entirely of the source material. Ancient painters did not have the luxury of paints which all shared the same base chemical structure, and therefore could be blended as on our modern palettes, both physical or even digital. Pigments were acquired from natural sources, and so their composition could vary from deposit to deposit, let alone across different hues. They also often contained a significant number of impurities which would hinder a proper blending of hue. Finally, an ancient palette of colours would very rarely consist of pigments of a similar saturation or tone, resulting in muddied combinations of colour.[10] Straight off the bat then, the definition of primary colours, as being those that can be mixed together to create other colours, hits a large issue in the ancient world.

There are also many instances where we know that ancient Greek artists used more colours than these four.[11] Almost all temple architecture was of course painted, and many of the friezes, entablatures, and metopes featured bright blue backgrounds.[12] To use an example of a two-dimensional painted frieze is more difficult, as very few have survived. However, literary accounts which describe them to us offer glimpses into the bright colours they might have displayed – the Lesche of the Cnidians at Delphi, for example, painted by the famous Polygnotus, reportedly featured a blue-coloured demon as part of his *Nekyia*.[13] And, even in surviving artwork where reds and yellows dominate, there are still splashes of royal blue and green which could not have been created by an admixture of those four basic colours.

[9] Ball 2001: 19, Ierodiakonou 2004: 93. [10] Ball 2001: 6, 19. [11] Ball 2001: 15.
[12] Brinkmann 2008 e.g. reconstructions of the Siphnian treasury at Delphi, Ierodiakonou 2004: 93.
[13] Stansbury-O'Donnell 1990: 213–35, Steingräber 2006: 181.

So why are these four colours listed by our ancient authors? Traditionally, it has been linked to the Empedoclean theory of the four elements, through which combinations, he posits, consist all objects and colours:[14]

> And if, concerning these things, your conviction is in any way wanting, as *to how from the combining of water, earth, aether, and sun the form and colours of mortal things might come to be*, which have now come to be, fitted together by Aphrodite. (Empedocles, Fragmenta. B71)

The writings of Empedocles, from the early part of the fifth-century BCE, are sadly fragmentary, and so we have relied often on the sixth-century CE doxological work of Aëtius to patch our knowledge. It is from Aëtius that we receive this idea that these four elements each had a colour, namely – white for fire, black for water, and red and yellow for earth and air, though it is not specified to which of these two final elements red and yellow are attached:[15]

> χρῶμα εἶναι ἀπεφαίνετο τὸ τοῖς πόροις τῆς ὄψεως ἐναρμόττον. τέτταρα δὲ τοῖς στοιχεῖοις ἰσάριθμα, *λευκὸν μέλαν ἐρυθρὸν ὠχρόν*.
>
> (Empedocles) declared that colour fits the pores of vision. And the four colours: *white, black, red, yellow* are equal in number to the four elements. (Aëtius, I, 15, 3 (D. 313))

Plato initially seems to adopt Empedocles' theorems, in that he accepts the principle of the four elements of fire, water, earth, and air.[16] When he applies this to his discussion of how we see colour however, he develops these ideas in a somewhat different direction. Most of Plato's discussion of colour appears in the Timaeus, wherein he explores the method by which we see, and how that mechanism allows us to differentiate colours:

> A fourth and remaining kind of perception is one that includes a vast number of variations within it, and hence it divides subdivision. Collectively, we call these variations 'colours'. *[Colour] is a flame* [φλόγα] which flows forth [ἀπορρέουσαν] *from each sort of body*, having its parts commensurate with the visual body so as to produce perception. At an earlier point in our discourse we treated only of the causes that lead to the generation of the visual body; now at this point it is most appropriate to provide a plausible account of the colours. (Plato Timaeus 67c4–d2[17])

[14] Ierodiakonou 2004: 91–2 and 2005a: 2–4, Merker 1967: 81.
[15] Benson 2000, Ierodiakonou 2005a: 10–11. [16] Ierondiakonou 2005b: 221.
[17] Translation here Ierodiakonou 2005b: 220, Taylor 1928: 479–80.

Here we see a connection to ancient extramission theories whereby for Plato the mechanic of sight is an active and fiery effluence that shoots forth from the eye to meet the effluences coming from the objects around us, the meeting of which two 'bodies' creates the impression of which we then see.[18] In this passage, it is clear that Plato considers colour to be part of this activity. This is in contrast to our modern and scientific understanding, where we now know that colour is produced by the surface quality and the wavelengths of light that it can reflect from the sun to then be received by the rods and cones of our retinas.

Plato then builds on the Empedoclean elemental model to apply shapes, rather than colours, onto the four elements – influenced by the Democritean atomic theories, these elements are now building blocks, each with a different shape. For Plato, earth particles are cubes, water is made up of octahedra, air of icosahedra, and fire tetrahedra (otherwise known as the pyramid).[19] As such, within this framework, our visual fire is a stream of fire-particles (pyramids) which shoot towards the object we see and are met by the fire-pyramid effluences of the object itself.[20] And as Plato explains in the following quote, it is the varying size of these pyramids coming from the coloured object that allows our eyes to detect its colour:

> Now the parts that move from the other bodies and impinge on the visual body are in some cases smaller, in other larger than, and in still other cases equal in size to, the parts of the visual body itself. Those that are equal are imperceptible, and these indeed we call 'transparent'. *Those that are larger compress the visual body while those that are smaller, on the other hand, divide it*, and so are akin to what is hot or cold in the case of the flesh, and, in the case of the tongue, with what is sour, or with all those things that generate heat and that we have therefore called 'pungent'. So black [μέλαν] and white [λευκόν], it turns out, are the affections therefrom [i.e. of those bodies which compress and divide the visual body], which, though occurring in a different class, are the same [as these other affections], but appear different for the reasons given. *This, then, is how we should speak of them: white is what divides the visual body, and black is what does the opposite.* (Plato Timaeus 67d2–e6[21])

As such, Plato creates a hierarchy in the size of the pyramids – and we must note that the fiery pyramidal effluences which prompt us to see black, are not by Plato described to *be* black – just that the varying size creates that effect. Larger pyramids therefore blacken our vision, whereas smaller

[18] Pl. *Ti.* 45b, Cornford 1937: 276, Nightingale 2016: 57, Squire 2016: 16–17.
[19] Cornford 1937: 276–8, Ierodiakonou 2005b: 223, Taylor 1928: 480.
[20] Zeyl 2010: 119, 126–7, Harte 2010: 133, 140. [21] Translation here Ierodiakonou 2005b: 224.

pyramids than those sent out from the eye split the visual fire, and are therefore seen as white.[22]

This already challenging passage is still more complicated by its continuance:

> And this moving body, being itself fire, meets fire from the opposite direction; and as the one firestream is leaping out like a flash, and the other passing in and being quenched in the moisture, in the resultant mixture colors of all kinds are produced. This sensation we term "dazzling [μαρμαρυγὰς]" and the object which causes it *"bright [λαμπρόν]" or "brilliant [στίλβον]."* Again, when the kind of fire which is midway between these [black & bright] reaches to the liquid of the eyes and is mingled therewith, it is not *brilliant [στίλβον]* but, owing to the blending of the fire's ray through the moisture, it *gives off a sanguine colour, and we give it the name of "red [ἐρυθρὸν]." And "bright [λαμπρόν]" colour when blended [μειγνύμενον] with red [ἐρυθρῷ] and white [λευκῷ] becomes "yellow [ξανθὸν]."* But in what proportions the colours are blended it were foolish to declare, even if one knew, seeing that in such matters one could not properly adduce any necessary ground or probable reason. (Plato Timaeus 68a–b)

At the far end of the scale of this variety of pyramidal fire-particles are apparently those which are 'bright', and these, at least in Ierodiakonou's interpretation of this passage, are the smallest and most divisive of all the particles, therefore splitting the particles from the visual stream the most, and creating a brighter, more visible image to be perceived by the eye.[23] Moreover, Plato specifies that part way between this scale of larger and smaller sized fire-particles lays those which are 'red'. This gives us, then, a quartet – this time black, white, red, and bright.[24] This quartet has a scale of intensity (the 'sharper', smaller pyramids are most able to divide the pyramidal effluences which stream from the visual body, thereby making things 'brighter' than the larger pyramidal effluences which do not, and therefore create the sense of darkness), which has led to the assumption from some scholars that ancient philosophers were not concerned with hue at all, but instead the colour's 'brightness', or luminosity.[25] This is contradicted quickly by the fact that in that same range of bright to dark, red sits very firmly in the middle. And while ancient philosophers begin with light and dark, the huge range of colour words in both the ancient Greek and Latin lexicon which discriminate between different hues, shades, and

[22] Cornford 1937: 277, Ierodiakonou 2005b: 226–7, Taylor 1928: 480.
[23] Ierodiakonou 2005b: 226. [24] Ierodiakonou 2005b: 219–32.
[25] Benson 2000 chapter 2, Stulz 1990.

source, as well as their luminosity provides inescapable proof that other properties than luminescence were also important. An example of this is the interest in the expression of texture in ancient colour words, of which the Latin *caeruleum* is a case in point. *Caeruleum*, normally translated as blue, could sometimes stray into creamy white and even yellow, because the root of the colour term comes from *cera* – wax – and as such the colour term is as much interested in the expression of 'smoothness' or 'softness' as it is the distinction between blue and yellow hue.[26]

It seems clear from the above quotes that Plato considers these four particles as the constitutes of other colours, as he then goes on to suggest which combinations of these four would create other colours, beginning with yellow.[27] So while yellow is clearly not considered by Plato to be a primary colour, he appears to consider 'bright' (whatever exactly that may be) as a component which could be mixed (*μειγνύμενον*) with red to create it.[28]

Whether the fundamental quartet of colours, as prescribed by the ancient Greek philosophers, were red, white, black, and yellow OR 'bright', it seems clear that this is the root of the intention behind the later writings of Pliny *et al.* to describe the primary palette of ancient painters. It is not then a question of how those four colours, when mixed as on a palette, combine to create all colours; it is that these were understood as the fundamental placeholders, or building blocks, that constituted the elements that made up the world.

With this potential gamut of information behind the colours used in ritual spaces, naturally we are led to ask why and how the use of these colours might have enriched sacred experiences, and how the design of colours in ritual spaces influences the reactions and emotions of those witnessing sacred activity.

Colour is clearly a form of visual communication, carrying either explicit associations – as on a modern traffic-light, for example – or more subtle cultural associations. In the search for how the people of the ancient world thought about and used colour in their own visual messages, cognitive science can be a useful tool with which to explore cultural phenomena. The cognitive science of religion, it should be noted, does not attempt to

[26] A similar phenomenon occurs in the use of *flavus*, which while the etymological root for the English 'blue', is usually accepted to mean 'blond'. It is sometimes however used to describe water, by Pacuvius in *Tragedies* 244, and Ennius in *Annales* 384. This use of *flavus* in Ennius is in fact discussed in Aulus Gellius's Attic Nights (2.26.21–23), and reflected upon in Bradley (2009: 1–7) and Ball (2001: 15–17).

[27] Benson 2000 chapter 2, Cornford 1937: 278.

[28] Ierodiakonou 2005b: 227, Taylor 1928: 482–4.

prescribe how a Greco-Roman person would have experienced ritual activity based on those patterns of behaviour that we see in religion today, but more highlights the inherent capacity in human nature to create and connect symbolic systems through which religious imagery communicate ideas to their audiences.[29] This human ability to share ideas through symbolic competence is part, after all, of the mechanism that allows societies to form ideas about community – those who share the collective world-view, and those who stand without it. 'Symbolic competence' then – the ability to read and understand messages through non-verbal stimuli – is a concept developed from the modern study of systems of culture, and demonstrates a capability inherent in the human race to construct and act upon complex schema.[30] The application of these ideas about cognitive science to classical religious spaces, including Mithraea, has already been demonstrated to be successful.[31] But what about combining both ancient ideas about colour and the capacity for symbolic competence? While some polychromy is clearly visible to the naked eye on Mithraic material culture, there has been no scholarly discussion recognising the predominance of these four colours highlighted by ancient philosophy. Panagiotidou and Beck's collaborative effort to offer a cognitive approach to the study of Mithraism, for example, offers exciting insights into the importance of the semiosis implicit in such a decorative schema as those found in Mithraea.[32] But in their focus to highlight the capacity of the ancient mind to communicate through signs and symbols, they recognise form and shape but not colour.[33]

Armed with these ideas about the way in which we can use conceptualisations about colour as informed by cognitive science, and the philosophy behind fundamental colours in the ancient colour palette, we will move on to our case studies to see how these concepts might play out in Mithraic sacred spaces.

Part II Experiencing Colour in Mithraic Sacred Spaces

Some of the best sites in which to find surviving polychromy in Roman sacred spaces are those which are underground, and so we shall turn to the friezes and polychrome statuary of the mystery cult of Mithras for our case

[29] Deeley 2004: 248, Panagiotidou and Beck 2017: 4, For more on the use of CSR, see Boyer 2002, Geertz 2004, Guthrie 2002, Misic 2015, Sperber 1996.
[30] Panagiotidou and Beck 2017: 25, reflected in Lentz 1975: 362.
[31] For example, Beck 2004, Gordon 2001, Martin 2015, Misic 2015.
[32] Panagiotidou and Beck 2017: 116. [33] Panagiotidou and Beck 2017: 4–5.

study. This cult is practised in either natural caves appropriated for use, or artificially created underground spaces constructed for purpose or appropriated from pre-existing buildings. Away from the natural weathering of the elements, Mithraea often contain some of the best preserved polychromy both on the friezes of the walls of the cave, or sometimes on the painted sculpture found therein. Typically, these underground spaces were broadly rectangular in floorplan, with a central aisle or approach along the long axis of the space towards the cult image, situated at the centre rear wall and the focus of all sight-lines in the sacred space, the design of which we will consider below. Often at sites where the space appropriated natural cave structures the ceiling or walls would be left unfinished in order to heighten the sensation of the space being an extension of the natural world, as opposed to the inescapable artificiality of a grand free-standing construction. The effect of these spaces on the viewer, even before we consider their decoration or the imagery held within them, must have been considerable. New initiates would have spilled out from a dark passageway into the enclosed space of the temple-cave, with the preternatural hush of subterranean places offset by the noise of shuffling feet, lit often by the glittering of oil lamps or candles throwing dramatic shadows and entirely removed from all the normality and hustle of the world beyond the cave. This experience would have been novel and arresting for many of the visitors to the space, as Roman worship usually took place at altars in open spaces in front of the temple of worship, which itself was set on a pedestal to raise it above the level of the ordinary man – not below. For many of the initiates, who would have been merely part of the throng at a festival, the closest they might have gotten to their sacred spaces could have been their *lares*, the rather more modest household shrine. In the limited space of the cave, there would have been little distance at all from the confrontation with the god; once admitted into the space, the meeting with the cult image would have been immediate and personal.

Before we discuss the colour used in these sacred spaces, and thereby how it would have affected the experience of the sacred activity itself, we must first address some of the challenges when dealing with visual and material culture found in Mithraea. The study of the cult of Mithras is, as one of the most famous of the mystery cults, something of a minefield.[34] As the worshippers of Mithras intended, very little remains to inform the

[34] As can be noted from the varying theories and ideas posited by scholars, such as those of Hinnells 1975, Gordon 1996, Beck 2006, and Adrych *et al.* 2017, since the foundational work of Cumont in 1903.

historian what exactly went on in these spaces and how they were used.[35] With so much room for speculation and hypotheses, this has resulted in a turbulent history for the study of Mithraism, as vastly differing theories have been promoted and dispelled through scholarly discourse, often as much influenced by the background and circumstances of the author themself, than by the evidence we have remaining.

Some early research on the cult of Mithras was heavily influenced by the Christian model, where Mithras was conflated with a Christian god-like figure, and the typical cult scene then interpreted as a fairly biblical battle of good and evil, where for example the snake, typically found at the bottom centre of the cult image, was connected with the incarnation of evil in the garden of Eden.[36] Now, it is more accepted that the snake motif is in fact a positive symbol of distinctly pagan origin, more in keeping with the representation of the snake associated with both Asclepius, the god of healing, and Bacchus, of revelry and feasting.[37] Instead of a battle between good and evil, the snake and scorpion (another element that traditionally was seen as a biblically evil icon) are instead understood as benevolent symbols of the earth.[38]

Another issue is that of origin. Mithras gains his name from Mitra, a deity worshipped in the second millennia BCE in the region of modern-day Iran.[39] The Roman worship of Mithras, who shares much of the same visual iconography, originated in the Campania region of Italy in the second century CE, and it is from this tradition that the Mithraea we see today have been produced. However, much of the early scholarship on the Roman cult of Mithras has been concerned with the issue of transmission of these tenets of the worship of Mithras from its ancient Iranian source to that of Roman society.[40] This debate at first suggested a direct inheritance, as it were, of the Roman cult from its eastern ancestors, and connected specific elements of the design of cult spaces created by Roman hands to mythologies originating from Zoroastrian texts. There is, to some extent, truth in this, as some of the key images found repeated in many of the Mithraea, like the image of Mithras born from the rock, have very early origins.[41]

The Neoplatonist philosopher Porphyry of Tyre also gives some tinder to this flame, as in his essay 'On the cave of the nymphs in the Odyssey', Porphyry gives the worshippers of Mithras the appellation of 'Persians'.[42]

[35] Panagiotidou and Beck 2017: 2. [36] For example, Gordon 1996: 99. [37] Hinnells 1975: 294.
[38] Hinnells 1975: 294–303. [39] Clauss 2000: 3–8, Lahe 2018: 483.
[40] Historiography of these issues discussed in Adrych *et al.* 2017: 7. [41] Clauss 2000: 3–8.
[42] Porphyry is of course a difficult source because much of his work is either fragmentary or difficult to attribute to either his own original thinking or to development of earlier philosophers, and was

Panagiotidou argues however, that this is better viewed as a matter of self-perception, given that the rivalry between Rome and Persia would have meant that referring to someone as a Persian because of their association with the cult of Mithras must have been understood as something very separate from actually claiming heritage from that foreign culture:[43]

> Οὕτω καὶ Πέρσαι τὴν εἰς κάτω κάθοδον τῶν ψυχῶν καὶ πάλιν ἔξοδον μυσταγωγοῦντες τελοῦσι τὸν μύστην, ἐπονομάσαντες σπήλαιον τόπον· πρώτου μέν, ὡς ἔφη Εὔβουλος, Ζωροάστρου αὐτοφυὲς σπήλαιον ἐν τοῖς πλησίον ὄρεσι τῆς Περσίδος ἀνθηρὸν καὶ πηγὰς ἔχον ἀνιερώσαντος εἰς τιμὴν τοῦ πάντων ποιητοῦ καὶ πατρὸς Μίθρου
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> The Persians [i.e. the Mithraists] perfect their initiate by inducting him into a mystery of the descent of souls and their exit back out again, calling the place a 'cave'. For Eubulus tells us that Zoroaster was the first to dedicate a natural cave in honour of Mithras, the creator and father of all; it was located in the mountains near Persia and had flowers and springs.[44] (Porphyry, On The Cave of the Nymphs, 6.13–17)

However, more modern scholarship eschews direct connection between the two, suggesting that while Roman worshippers might have claimed an ancient heritage to further consolidate the power of the cult and its god, the cult space itself was constructed for and by Roman cultural sensibilities, and the activities therein peculiar to that society also.[45] This is not to say that there is no relationship between the two, as clearly the practice of Mithraism differs so greatly to the normal experience of Roman worship; even on solely an architectural level, Mithras was not worshipped in the raised temples of the normal Roman pantheon. The delicacies of such a relationship where the ancient east is thereby adapted for Roman use is of course a complicated issue, and more thorough discussion can be found elsewhere.[46] For the purposes of the study of the meanings and connotations behind the colours extant in these spaces, we must remember that

written either from Tyre or from Rome during an uncertain dating window – among other problems. While he must therefore be attributed some caution, the paucity of literature referring to Mithraism draws us here nevertheless. While therefore the connection between Platonic colour philosophy and Mithraic cult practice in Rome raises difficulties both due to the distance between Porphyry and Plato in history, and potentially geographical distance to Rome, there is precedence for this connection. As a neo-platonist, Porphyry's use of Plato's ideas about the descent and ascent of the soul in *On the cave of the Nymphs* is well discussed, see Albanese 2018 in particular for this discussion. Plato's influence in the interpretation of Mithraism is also explored extensively by Turcan 1975.

[43] Akcay 2016: 100–01, Beck 2017: 129, Panagiotidou and Beck 2017: 3.
[44] Panagiotidou and Beck 2017: 3. [45] Panagiotidou and Beck 2017: 3.
[46] Adrych, Bracey, Dalglish, Lenk & Wood 2017, Martin 2015: 15.

while inspiration was inherited from Persian origins, the application of colour appears to be entirely Roman.

While a complex pastiche of influences in terms of subject matter, the figural style of the images represented are of a distinctly Roman style, in keeping with images on domestic frescoes and mosaics. These cult images, painted with such emphasis on the four colours we have highlighted as having significance to classical thought, were created for consumption both by and for Roman audiences. The hand of the craftsman drafted in to paint the interior of these spaces created a product of the Roman visual tradition, and the consistent colour scheme of Roman Mithraea was viewed through the lens of Roman cultural heritage. It is therefore appropriate to analyse these colours using a classical understanding of colour theory.[47]

In his trademark cult image scene, the tauroctony, Mithras stands astride a pale or white bull, his head at a three quarter-angle looking away as he makes the sacrifice with a knife across the bull's neck. A collection of animals – usually the aforementioned snake, scorpion, dog, and crow, are present around the scene, focused on the spray of blood that is pouring forth.[48] Typically in attendance in the skies above are representations of Sol and Luna, where often can be found a representation of time as well, either as a figural personification, or a progression of the zodiac creating an arch over the main scene. On either side of the image of the deity stand his attendants, Cautes and Cautopates, torchbearers who appear to mark both the turning of the year and the bounds of life and death.[49]

In particular, this chapter will refer to two cult images featuring surviving polychromy, both from Rome and created – or re-appropriated from previous purpose – around the second century CE.[50] The first is the Mithraeum of the *Castra Peregrinorum* in the Santo Stefano Rotondo, excavated in 1973–75.[51] This structure, which saw two

[47] The snake, for example, is characteristic of many other Roman depictions of the creature, as discussed in Hinnells 1975: 294.

[48] Typical composition of the tauroctony discussed for example in Adrych *et al.* 2017: 22, Beck 2006, Bremmer 2014, Toynbee 1986.

[49] Beck 2017: 143.

[50] There are other instances of outstanding polychromy in Mithraea outside of Rome in both Italy (such as at the Santa Maria Capua Vetere or Marino Mithraea) and the provinces. In using two examples from Rome, therefore set in a similar geographical and chronological milieu, this paper seeks to reduce variables in the design of the colour scheme as affected by local availability of pigments and materials, or variation in style due to provincial influences. However, it is an ongoing point of interest in studies of Mithraism that there is a considerable consistency in design of Mithraic sacred spaces, and potential expansion for this study would be to look at influences to the polychromatic schema from provincial sites.

[51] Lissi-Caronna 1986.

phases of use, occupied one of the rooms of what is thought to have originally been the barracks for the *peregrini* (provincial soldiers brought into Rome for special services, and therefore holding an uncertain status as free subjects but not full citizens of Rome), and was expanded across another by the third century CE.[52] Though it suffered an apparently deliberate destruction phase before the space was abandoned which resulted in many of the objects including our main frieze being found in pieces on the floor, the underground site and subsequent sealing of the chamber beneath the church of Santo Stefano Rotondo has preserved a great deal of the original polychrome detail.[53]

A large polychrome tauroctony scene served as its cult image, and it is this to which we will refer in **Figure 3.1** (item 205837 in the archaeological report). This has been reconstituted from its fragmentary state to an almost complete high-relief frieze standing at almost 1–1.5 metres, now on display in the museum at the Baths of Diocletian.

Figure 3.1 Relief of Mithras with a tauroctony from beneath the church of Santo Stefano Rotondo Inv. no. 2005837. By permission/courtesy of the Ministry of Culture – Roman National Museum – Baths of Diocletian. Photo by Alison Cooley

[52] The *Castra Peregrinorum* was recorded as existing on this site on the Caelian hill since the reign of Trajan, though the brickwork perhaps suggests an even earlier construction date. Baillie Reynolds and Ashby 1923: 152, Baillie Reynolds 1923: 168.

[53] Lissi-Caronna 1986: 33–4.

Second is the painted fresco on the back wall of the Mithraeum discovered in 1936 under the gardens of the Palazzo Barberini.[54] This Mithraeum is again a rectangular space with side benches flanking the space towards the cult image.

The painting itself, found at **Figure 3.2**, still in situ underground, consists of a collection of ten small scenes depicting various myths relating to Mithras arranged in two columns on either side of the main image of the tauroctony, which will be the main focus of our discussion in this sacred space.[55]

That these tauroctony scenes, and even smaller reliefs and dedications in Mithraic sacred spaces are often found picked out in bright colours is something that scholarship has recognised, albeit often as little more than a footnote. What few ancient texts there are on Mithraea describe richly decorated spaces, with not only painted walls but also brightly coloured

Figure 3.2 Tauroctony Fresco from the rear wall of the Mithraeum at the Palazzo Barberini, Rome. Photo by Michael Scott

[54] Vermaseren 1982: dating discussion places the original structure at the first century CE, the Mithraeum during the third century CE.

[55] Merkelbach 1984: 306.

woven banners with images of the god on them.[56] Campbell's early work made a notable attempt at assigning meaning to the colours he recognised in the Mithraea, especially in his discussion of Cautes and Cautopates on a tauroctony frieze from the Mithraeum in Capua, where he suggests that the muted colours of Cautopates mirror his position as the torchbearer for the latter half of the year after the summer solstice, whereas the more vibrant, verdant colours of the Capuan Cautes reflect his values as a signifier for new life and rebirth from the winter solstice into the spring and summer.[57]

To have such bright colours as can be seen in the images of Figures 3.1 and 3.2, must have created a stunning effect on visitors to these spaces. Leaping out of the darkness, the vibrancy of the paint, still bright even now, must have seemed to glow from the walls. Initiates would have taken the path down from the world outside and experienced the disconcerting adjustment to the comparative lack of sensory stimuli in the darkened route underground. They would then be confronted with the glittering vibrancy of the colours in the hidden space of the Mithraea, and confronted with the image of the god. To have experienced all this within a closed group of the relatively small number of people who could fit in the limited space of the Mithraea, would have contributed to a particularly intimate and poignant experience of the worship of the god.[58] This would have been even more the case for those Mithraea situated at military encampments, and especially so for the *peregrini*, who might not have roamed as freely around the city. For other Mithraea situated outside of Rome, this could have been especially striking, as in outposts or sites further from the centre of the Roman Empire, the wealth and luxury that the decorated Mithraea represented would have been an unusual spectacle for men used to the sights that provincial barracks could afford.

Most archaeological reports catalogue the predominance of red in these ritual areas, both on the details of the cult images and in the rest of the Mithraeum space. For example at Lentia, we find a Mithraeum where even the floors were painted red, and there are several other examples where a red and yellow geometric pattern is used to decorate the walls.[59] Typically, Mithras's Phrygian cap, and those of his torchbearers, was a red colour, as we find in the Mithraeum at the *Castra Peregrinorum*.[60]

[56] Clauss 2000: 50. An inscription in the Mithraeum of Santa Prisca on the Aventine records appropriate decorations to include four wall-hangings depicting the god, though no colours are specified.
[57] Campbell 1968: 39–40. [58] Arnhold 2013: 155–6. [59] Clauss 2000: 46–8.
[60] Lissi-Caronna 1986.

This in itself is a departure from the norm, as in both literature and in other material culture (for example the Alexander sarcophagus as examined by Brinkmann) these Phyrgian caps are typically a saffron-yellow colour, making red likely a conscious choice.[61] In the Barberini cult image, red lines dominate both the borders of the cult image and the sweeping cloaks of both Mithras himself and his attendants, while on the frieze in the Mithraeum of the *Castra Peregrinorum*, red pigment also dominates the clothing and cape of the Mithras figure.[62] The use of red should not be surprising given the consistent connection between red and the sacred in human societies across the globe, owed in part to its constancy as part of the human experience as the colour of blood and life-giving fire. But also, to return to one of our earliest points, red dyes and pigments were easily accessible to ancient societies, making it ubiquitous in its use. In addition, it is of note that red was as much a martial colour then as it is now – literally so as the god of war, Mars, was consistently depicted wearing a cloak of this colour.[63] It is natural then, for the Mithraeum situated in the barracks of the military camp of the *Castra Peregrinorum*, to feature this colour heavily.

The key features of the tauroctony on both of our examples also feature objects painted in black. In the Mithraeum at the *Castra Peregrinorum*, both the scorpion and the raven to the left of Mithras are notably painted a dark black colour. The Barberini fresco also includes a black snake, while the scorpion is a more ruddy dark colour, and the raven, while not part of the fresco scene and instead found perched at the edge of the barrel vaulted room, is also black in colour. These dark colours might seem somewhat unusual choices for an already dim subterranean space, and indeed in the Marino fresco, where the entire background is black, specific effort has been made to arrange the attendant black snake and scorpion either in front of the bullock, or on the pale floor.

These are all in contrast to the sacrificial bull, who is notably left white on the marble frieze of the *Castra Peregrinorum*. On the Barberini fresco, it is picked out in a pale, off-white colour, perhaps only because it sits against a white background, or perhaps as Campbell suggests, because this was the colour of the moon that made the bull manifest in the eastern mythological root of the scene.[64] Certainly, white was common for the colour of the sacrificial animal, as all but a few exceptions feature a white

[61] Brinkmann 2008: 33–6. [62] Campbell 1968: 39.
[63] Such as in the fresco from the House of Venus and Mars in Pompeii, where the divine couple of Venus and Mars are depicted reclined together on a couch.
[64] Campbell 1968: 260.

bull in the Mithraic cult images that have been recovered.[65] Often the colour of the sacrificial animal was an important prescription for the success of the sacrifice – with chthonic sacrifices to gods associated with the underworld usually sternly stipulating black sacrificial animals for example. Whether as part of the remit of the sacrifice or not, these light hues provide a stark contrast to the red blood that flows down from the bull towards the creatures that face the sacrificial animal.

There is also a significant amount of yellow or gold to be found in these sacred spaces, especially on the *Castra Peregrinorum* relief, where the snake is painted a deep ochre, and both the shining face of the god and the knife that descends onto the bull are gilt with gold.[66] The Barberini painting features yellow elements on some of the smaller scenes around the main cult image, but on the whole follows a more illustrative colour palette for the skin of the god.[67]

Apart from a few exceptions then, like the blue of the outfit of Mithras on the Barberini fresco, or the hints of the green in the tree on the frieze of the *Castra Peregrinorum*, the overwhelming quartet of colours in the decoration of these sumptuous spaces were that of red, yellow, black, and white, those same colours. Moreover, this is a scheme that exists consistently in Roman Mithraea that have been discovered over the width and breadth of the Roman empire, as it has been noted that the design of Mithraea are remarkably uniform across our known examples.[68]

Equipped with an understanding of the significance of these four colours as the theoretical building blocks of the universe, we must now ask why such a palette is appropriate for the sacred space of a mystery cult?

The answer lies in the role that the Roman interpretation of Mithraism cast for the god. Instead of a biblical creator, or an anachronistic resurgence of a far more ancient deity, Porphyry's description of the cave continues on to describe a different role for Mithras:

> εἰκόνα φέροντος αὐτῷ τοῦ σπηλαίου τοῦ κόσμου, ὃν ὁ Μίθρας ἐδημιούργησε, τῶν δ' ἐντὸς κατὰ συμμέτρους ἀποστάσεις σύμβολα φερόντων τῶν κοσμικῶν στοιχείων καὶ κλιμάτων·
>
> This cave bore for him the image of the cosmos which Mithras had created, and the things which the cave contained, by their proportionate arrangement,

[65] The Dura Europos Mithraeum relief featured a white bull which was later repainted a ruddy orange-red, Campbell 1968: 260.
[66] Lissi-Caronna 1986: 34. [67] Merkelbach 1984: 306.
[68] Homogeneity of internal design explored in Szabo 2018.

> provided him with symbols of the elements and climates of the cosmos. (Porphyry, On The Cave of the Nymphs, 6.18–20[69])

Mithras as a Roman god, then, is better imagined as a caretaker over the order of the universe.[70] Subsequently, the Mithraea were representations of the entire universe, a microcosmic depiction of the world outside the subterranean space. Some examples of Mithraea have been found with constellations mapped across their ceilings, others with the zodiac expressing the order of time. The figures and animals surrounding the spilling of the blood of the bull have also been interpreted as placeholders for the composite parts of the physical universe; the sun and moon, the attendants Cautes and Cautopates marking the changing seasons, and the creatures as symbols for different aspects of life on earth.[71]

With this interpretation of the design of Mithraea as a series of messages about the fundamentals of the universe, and thereby painting these sacred spaces as a microcosmic expression of the world as a whole, the poignancy of the colours used leaps to the fore. We see here a confluence in both the figural decoration of these spaces, and the way in which they were chosen to be decorated; where Classical thought about colour, accepted not only by Greek minds but perpetuated in the writing of much later Romans like Cicero and Pliny, aligns with the imagery displayed in these spaces. Just as the figural decoration symbolises the very fundamentals of the world outside the cave, so the colours on the floors, walls, frescoes, and friezes enhance and enrich this message of the fundamental building blocks of the universe falling under the purview of Mithras.

Notably, in Plato's Timaeus, it is the Demiurge that is the creator of the universe, and he is not named Mithras. But he is qualified from Zeus by calling him not only father, but maker of the universe, and he creates the cosmos 'as an image of the Paradigm'.[72] This is the same role that the Roman worshippers of Mithras cast for the god; a creator of a perfect order, with the sacred space an expression of the universe as crafted by the god. This is not to suggest a direct connection between Plato's philosophy and Mithras, but certainly his influence on Porphyry's interpretation of the cult is felt here. This influence, after all, can be attributed to the period of his life when Porphyry lived in Rome to study under Plotinus, the founder of Neoplatonism. It is not surprising then that the cult of Mithras caught his attention, where these ideas about creation were so clearly in line with Plato's search for the origins and order of the world around him.

[69] Discussed in Beck 2017: 129. [70] Clauss 2000: 7, Martin 2015: 16, Merkelbach 1984: 153–88.
[71] Campbell 1968: 49. [72] Vorwerk 2010: 79, 89.

That such a message, originating as we have seen from philosophical thought and carried through a collective social perception of colour, should be communicated in these spaces raises the question of who was there to read and receive them. Certainly, by their own records, these spaces were frequented primarily by Romans from a mixture of tiers within ancient society.[73] Epigraphic evidence for Roman worshippers of Mithras is of course weighted towards those who could afford to set up such a permanent record of their devotion, and as such provides good evidence of men of middling to higher ranks – both centurions from the military, and elites up to and including senatorial class.[74] However, worship is not believed to have been limited to such august company, and some records, like the bronze album which recorded membership at the Mithraeum in Virinum, reveal a little more about the kinds of people in attendance.[75] The majority were of educated but not lofty class; soldiers, veterans, freedmen, and members of the municipal elite. While this collection of attendants may have had some education in philosophical thought, the Mithraea at the *Castra Peregrinorum*, as we have already mentioned, existed in a camp of soldiers who were not even citizens, and significantly less likely to hold the kind of classical education required for references to Plato.[76]

In fact, it is not the aim of this study to argue that direct comparison would have been drawn from the decoration of the Mithraea and the writings of Plato; but that the associations of these colours, rooted in theoretical philosophy informed and lived on in the connotations and meanings of these colours. Competency in reading signs implicit in colour association, as we explored in the theories of the cognitive science of religion, is not predicated upon complex literacy, but the enduring ability to attach meaning to visual cues.

This does not mean that the design of the space was spurious or accidental, nor that none of the audience present in Mithraea would have appreciated the colour scheme. In the study of the constellations and astrological symbols present in Mithraea, including the zodiac which appears in our Barberini Mithraea, Roger Beck argues convincingly that the figural decoration of Mithraea could be interacted with to follow the passage of time in the changing constellations and phases of the moon. Beck's argument suggests a particular level of scholarly interaction with the space, at the very least on the behalf of the priests who practised there.[77]

[73] Panagiotidou and Beck 2017: 37. [74] Bjørnebye 2007: 170–9.
[75] Panagiotidou &and Beck 2017: 37, see more in Piccottini 1994.
[76] Baillie Reynolds and Ashby 1923: 152, Baillie Reynolds 1923: 168.
[77] On Mithras' role in astronomy, see Beck 2006, Ionescu 2018, Speidel 1980.

This interpretation of Mithraea as spaces which were used as an active arena for the ordering of time as an element of the universe around us reinforces the significance of these fundamental colours. We can also posit that varying levels of semiotic competency could have understood the significance of these colours; from simple awe at the experience of such bright hues, to a more well-rounded appreciation of the philosophical thought that lends significance to these colour choices.

Part III Fundamental Colours in Mithraism

If we recall from Plato's discussion of fundamental colours that 'brightness' could be considered to be a building block to the creation of the world around us, there are other elements of the decorative schema of Mithraea that warrant a second thought. Some scholars have noted that a common feature of the tauroctony cult image is that a number of elongated rays are depicted shooting from the figure of the sun towards the deity and the bull that is being slayed.[78] Typically, these originate at Sol's radiate crown, and create a notable ray or beam slicing across the scene on the diagonal – two such rays can be seen very clearly on the Barberini fresco (**Figure 3.2**), where the connecting beam appears to line up with the gaze of the sun down onto the sacrifice taking place.

In order to understand more fully the significance of this gaze as a beam of light, we need to take into consideration the early theories about sight and the mechanism of vision. Several ancient philosophers ventured into this arena to offer their suggestions, creating multiple schools of thought about how the eye can see.[79] These theories have since been labelled 'extramissionist' or 'intromissionist' depending upon the direction of action that was theorised.[80]

Broadly, extramissionist theories came first, discussed by writers like Alcmaeon and Anaxagoras around the sixth-century BCE, the precept of which is that the eye emits a beam or ray which reaches out to the object, which is then seen when the reflection of the beam returns to the eye.[81] The writings of Empedocles, reported to us by Theophrastus, liken the eye to a fiery lantern, beaming out into a stormy night. This simile does align with

[78] Campbell 1968, Lentz 1975: 371.
[79] These include Alcmaeon of Croton (mid sixth-century BCE), Anaxagoras of Athens (mid fourth-century BCE), Democritus, Empedocles, Plato, and Theophrastus.
[80] Rudolph 2016: 36, Squire 2016: 16.
[81] Biefeldt 2016: 124, Gross 1999: 58, Lindberg 1976: 3, earlier traces of extramissionist theory can be seen in archaic literature and philosophy, as discussed by Darrigol 2012: 2.

the common and long-held belief that the eye was a kind of fire, shooting out light actively towards the object of its view.[82] While this was the oldest theory, even comparatively later philosophers like Plato and Hipparchus returned to champion it.[83] The idea of the 'fiery eye' can be seen throughout Greek literary history – being prominent from the *Iliad* and the flashes of light from Athena and several other characters of considerable agency and danger.[84]

Even more intromissionist standpoints, which hold that effluences are given off by objects, claim that the effluences are 'met' by the eye, rather than passively received. These theories, led first by Democritus and developed later by Aristotle, suggest that the direction of sight was into the eye, which received the image. The method of that reception is where Democritus's theory diverges from the modern, as he speculates that objects give off some kind of radiation which the eye reaches out to interpret. These effluences then create a kind of impression, caused by the meeting of these effluences and the eye, like some sort of imprint on wax caused by the compressed air between the eye and the object.[85] The moist eye then lets the image that has been created pass through the eye thereby causing sight.[86] While the intromissive eye is a receiver, then, it is not the passive kind of sight that we understand today, whereby the eye detects objects as the result of light from an external light-source (usually the sun) bouncing off of the object and towards our eyes, in which structures detect and interpret that information.[87]

As such, almost all of the ancient theories about sight, both extramissionist, intromissionist, and those that trod a line between, could be considered a haptic experience.[88] For the ancients, the eye was an active component in the mechanism of sight, reaching out to touch either the object seen, or at the very least, its effluences. If sight is cognized as an active experience, where vision occurs as a beam meeting the gaze of a deity either in an epiphanic moment or 'catching' the eye of a cult statue representing and embodying the god or goddess, it then becomes a much

[82] Nightingale 2016: 57, Rudolph 2016: 39.
[83] Pl. *Ti.* 45b, Nightingale 2016: 57, Squire 2016: 16–17.
[84] Hom. *Il* 1.101, 14.341, 19.12, Hom. *Od.* 4.150, 19.466, Hom. *Hom. Hymn Her* 45.415, Hom. *Hom. Hymn Dem.* 70, Hom. *Hom. Hymn Hel.* 9–11, Hes. *Theog.* 826–7, Pind. *Pae. Ode* 9 (frg.52K), Pl. *Ti.* 45b–46a, Soph. *Trach.* 606, Soph. *Aj.* 69, Biefeldt 2016: 123–4, Cairns 2011: 37–50, Darrigol 2012: 3, Rudolph 2016: 39, Webb 2016: 206.
[85] Theophr. *Sens.* 50.1–6, Nightingale 2016: 56, Rudolph 2016: 49.
[86] Democritus, quoted by Theophr. *Sens.* 50.6.11, Rudolph 2016: 49–51. To what extent Democritus's views were combined with extramissionist theories, see discussion in Rudolph 2016: 50, Nightingale 2016: 56, Tanner 2016: 110, all with reference to Vitr. *De arch.* 7 *praef.* 11.5.13.
[87] Rudolph 2016: 50. [88] Squire 2016: 16–17.

more significant experience. No less, in this conceptualisation, as sight is a matter of motion, to see something is also to be seen.[89] This means that the synaesthetic experience of meeting the gaze of a cult statue that one believes is the embodiment of the deity themselves is even more jarring – not only does the viewer see the object, but in that very activity, the object is meeting that gaze with its own.[90]

In the case of the Barberini fresco, a shooting ray of light, from either his radiate crown or his gaze itself, is drawn in such a way as to fire down from the personification of the sun across the cult image to shine upon the figure of Mithras.[91] This then is particularly powerful: we have a physical representation of the fiery effluences that we see both in this area of ancient philosophy and earlier in Plato's discussion of the mechanics of sight, and not just from any god, but the elemental personification of light itself. From a stylistic point of view, the beam/gaze also draws the eye of the viewer onto the central figures, compounding the strength of the audience's focus on the cult image. This link is played out in the mythic tableau of Sol and Mithras physically shaking hands which is often also featured in these Mithraea, and in fact is visible as one of the framing images around the edge of the main image of the Barberini fresco, in **Figure 3.2**.

As noted earlier, some Mithraea, and specifically the one at the *Castra Peregrinorum*, featured gilding, in this case primarily on the face and dagger of Mithras himself. In the dim spaces of the Mithraea, lit by lamp light, these would have glinted and flickered in a very striking way, making it look as if the beams of light from the sun were playing across the surface of the image.[92] If the travelling light from these reflective patches of gilding were indeed cognised as reaching out to the view in a fiery stream of effluences, the connection is made between the viewer and both the face of the god and the blade that descends upon the bull. This then is a haptic experience, where sight is not only to view as a passive experience, but an active 'handshake' between the initiate and their god.

Perhaps in metaphor, the personification of the sun could reach out a hand and grasp Mithras; for the worshippers, this touch could be delivered by the light of the sun itself, perhaps either as the participant returned to the world above and felt the touch of the sun on their skin.

[89] Biefeldt 2016: 124.
[90] Turner 2016: 156 (broader theories explored in – Lindberg 1976, Goldhill 2001, Hubbard 2002, Darrigol 2012).
[91] This same element of the design is clearly visible in the polychrome tauroctony from the Marino Mithraeum.
[92] Hinnells 1975: 312.

Not only that, but in some cases, initiates could experience the touch of the sun by interrupting a beam of light with their hand, channelled into the darkened space. For painted beams on the cult image were not the only kind we find in ancient Mithraea. In many cases, light shafts have been found exploited from the natural cave, such as at Tigusor in Moesia Inferior (modern-day Romania, near the coast of the Black Sea), or cut into the roof or wall of the structure, as at Santa Maria Capua Vetere, in order to channel a beam of bright light into the darkness otherwise broken only by lamplight.[93] These have been identified as functioning as a gnomon – to cast a light upon a reference point, with which to measure the passage of time and the seasons, and could have been the focus of ritual action, in the same way that many other horological monuments are thought to function.[94] Lentz argues that they are part of an arrangement of observational astronomy, whereby the shifting path of these beams of light from either the sun or moon (as featured, of course, in the cult image) would have marked the passage of the year.[95] The mechanism behind these observations could be complex, and even involve a prism placed within the Mithraea in order to produce carefully directed beams of light into the Mithraea at specific times of the year, like the triangular marble object identified as a prism, found at the Mithraeum of Spoleto.[96]

These light shafts then were potentially very carefully crafted, and served purposes beyond simply supplying light into the otherwise gloomy Mithraea. Often, these beams are directed onto the cult image, either onto the god, or one of the attendant creatures, as in the Barberini Mithraeum where a light beam has been observed shining onto the snake as it darts towards the falling blood.[97] In some Mithraea, the light shafts are marked, with one under the Basilica of San Clemente having a ring of mosaic around the opening, and several in the Mithraeum of the Santa Maria Capua Vetere have white paint in the tunnel itself, and a carefully painted ring of red paint around the opening into the cave.[98] This notable elision of colour and light brings us back to Plato – for whom his fourth fundamental colour was not a hue as we would typically understand it to be, but 'brightness' a measurement of luminosity. In one sense then, these cast rays, both painted and physically engineered through gnomon carved into the fabric of the Mithraeum itself, again utilise Plato's principles of the elements that made up the world.

[93] Lentz 1975: 359–77. [94] Lentz 1975: 362–3. [95] Lentz 1975: 364–5. [96] Lentz 1975: 369.
[97] Hinnells 1975: 295. [98] Lentz 1975: 367, Vermaseren 1971: 4.

After all, every one of the ancient philosophers we have discussed were writers seeking to explain how the world around them was made – to answer what was the fundamental structure of the universe. This should now sound strikingly familiar to the remit of Porphyry's Mithraic cave, in which we are told are arranged symbols of the *στοιχείων* (constituent parts) and *κλιμάτων* (cardinal regions) of the universe, contained and represented in the confines of the sacred space.

In this way, not only does the figural decoration, the form and the design of the Mithraeum communicate the fundamental concepts of the universe, but the use of colour echoes and compounds this message in another no less striking form of visual communication. Much can, and has, been gleaned from the meaning behind the decoration of ancient Mithraea as if from black and white pages. Through this chapter, we have drawn attention to the ways in which we might be able to read other semantic messages through the choices of the colours that enliven these spaces, allowing layers of understanding in a space which clearly held a gamut of religious significance.

In this case study of Mithraea in ancient Rome, we have seen how the schema of polychromy can have deep implications for the experience of the sacred space. For an audience member present in any of the brightly coloured sacred spaces of the ancient world, then, we can see that both the associations of the colours and the agency of their perception itself has consequences for the religious experience. The wealth and luxury displayed in the decoration of sacred structures created spectacle and awe. But through the course of this chapter, we have seen the ways in which colour can enhance and add to the imagery of these ritual spaces, to create a visual communication of ideas and meanings which could impact upon the viewer not only with the immediacy of sight, but with what was then understood as a haptic experience – that these colours and images reached forth and interacted with the viewer in an altogether more dynamic way than we might otherwise imagine.

At a sacrifice, the red blood of the victim, spilling from the altar, is fundamental – blood that is both necessary to life and, in abstract terms, a building block of everything that could be seen. And, still further, through the conception of sight as an active process – a haptic experience whereby to see something is to touch it with the visual body streaming from the eyes – the sacrifice is now personal to every member in the audience. As the audience beholds the scene and serves as witness to the sacrifice, they are part of the act: the blood of the victim is on their hands.

REFERENCES

Adrych, P., Bracey, R., Dalglish, D., Lenk, S. and Wood, R. 2017. *Images of Mithra*. Oxford.

Akcay, N. 2016. *Porphyry's On the Cave of the Nymphs in its Intellectual Context*. Doctoral thesis, University of Dublin.

Albanese, L. 2018. 'Porphyry, the cave of the nymphs, and the mysteries of Mithras', *Acta Antiqua Academiae Scientiarum Hungaricae* 58: 681–91.

Arnhold, M. 2013. 'Group settings and religious experiences', in N. Cusumano, V. Gasparini, A. Mastrocinque and J. Rüpke, eds. *Memory and Religious Experience in the Graeco-Roman World*, 145–65. Stuttgart.

Baillie Reynolds, P. K. and Ashby, T. 1923. 'The Castra Peregrinorum', *Journal of Roman Studies* 13: 153–67.

Baillie Reynolds, P. K. 1923. 'The troops quartered in the Castra Peregrinorum', *Journal of Roman Studies* 13: 168–89.

Ball, P. 2001. *Bright Earth, Art and Invention of Color*. Chicago.

Barber, E. J. W. 1991. *Prehistoric Textiles: The Development of Cloth in the Neolithic and Bronze Ages, with Special Reference to the Aegean*. New Jersey.

Barber, E. J. W. 1992. 'The Peplos of Athena', in J. Neils, ed. *Goddess and Polis: The Panathenaic Festival in Ancient Athens*, 103–17. New Jersey.

Beck, R. 2004. 'Four men, two sticks and a whip: image and doctrine in a Mithraic ritual', in H. Whitehouse and L. H. Martin, eds. *Theorising Religions Past: Historical and Archaeological Perspectives*, 87–103. California.

Beck, R. 2006. *The Religion of the Mithras Cult in the Roman Empire: Mysteries of the Unconquered Sun*. Oxford.

Beck, R. 2017. 'If so, how? Representing "coming back to life" in the mysteries of Mithras', in F. S. Tappenden and C. Daniel-Hughes, eds. *Coming Back to Life: The Permeability of Past and Present, Mortality and Immortality, Death and Life in the Ancient Mediterranean*, 129–52. Montreal.

Benson, J. L. 2000. *Greek Colour Theory and the Four Elements: A Cosmological Interpretation*. Massachusetts.

Bielfeldt, R. 2016. 'Sight and light: reified gazes and looking artefacts in the Greek cultural imagination', in M. Squire, ed. *Sight and the Ancient Senses*, 123–42. London.

Bjørnebye, J. 2007. '"Hic locus est felix, sanctus, piusque benignus": The cult of Mithras in fourth century Rome'. Doctoral Thesis. University of Bergen.

Boyer, P. 2002. *Religion Explained: The Evolutionary Origins of Religious Thought*. New York.

Bradley, M. 2009. *Colour and Meaning in Ancient Rome*. Cambridge.

Bremmer, J.N. 2014. *Initiation into the Mysteries of the Ancient World*. Berlin.

Brinkmann, V. 2008. 'The polychromy of Ancient Greek sculpture' in R. Panzanelli, E. D. Schmitt and K. Lapatin, eds. *The Color of Life: Polychromy in Sculpture from Antiquity to the Present*, 18–39. Los Angeles.

Brøns, C. 2014. 'Textiles and temple inventories: detecting an invisible votive tradition in Greek Sanctuaries in the second half of the first millennium BC', in

J. Fejfer, M. Moletsan and A. Rathje, eds. *Tradition: Transmission of Culture in the Ancient World, Acta Hyperborea* 14, 43–84. Copenhagen.
Cairns, D. 2011. 'Looks of love and loathing: cultural models of vision and emotion in Ancient Greece', *Mètis* 9: 37–50.
Campbell, L. A. 1968. *Mithraic Iconography and Ideology*. Leiden.
Clauss, M. 2000. *The Roman Cult of Mithras; The God and his Mysteries*, trans. R. Gordon. Edinburgh.
Cleland, L., Davies, G. and Llewellyn-Jones, L. 2007. *Greek and Roman Dress from A to Z*. London.
Cornford, F. M. 1937. *Plato's Cosmology: The Timaeus of Plato Translated with a Running Commentary*. London.
Croom, A. 2002. *Roman Clothing and Fashion*. Stroud.
Cumont, F. 1903. *The Mysteries of Mithra*, trans T. J. McCormack. Chicago.
Darrigol, O. 2012. *A History of Optics: From Greek Antiquity to the Nineteenth Century*. Oxford.
Deeley, P. Q. 2004. 'The religious brain: turning ideas into convictions', *Anthropology and Medicine* 11: 245–67.
Fant, J. C. 1999. 'Augustus and the city of marble' in M. Schvoerer, ed. *Proceedings of the Fourth International Conference of the Association for the study of marble and other stones in Antiquity, Archeomateriaux – marbres et autres roches*, 277–80. Bordeaux.
Fant, J. C. 2007. 'Real and painted (imitation) marble at Pompeii', in J. Dobbins and P. Foss, eds. *The World of Pompeii*, 336–46. London.
Geertz, A. 2004. 'Cognitive approaches to the study of religion', in A. Geertz, R. R. Warne and P. Antes, eds. *New Approaches to the Study of Religion: Textual Comparative, Sociological & Cognitive Approaches*, 347–400. Berlin.
Goldhill, S. 2001. 'The erotic eye: visual stimulation and cultural conflict', in S. Goldhill, ed. *Being Greek Under Rome: Cultural Identity, the Second Sophistic and the Development of Empire*, 154–94. Cambridge.
Gordon, R. L. 1996. 'Mithraism and Roman society' in R. L. Gordon, ed. *Image and Value in the Graeco-Roman World: Studies in Mithraism and Religious Art*, 92–121. Aldershot.
Gordon, R. L. 2001. 'Ritual and hierarchy in the mysteries of Mithras', *ARYS. Antigüedad: Religiones y Sociedades* 4: 245–74.
Gross, C. G. 1999. 'The fire that comes from the eye', *Neuroscientist* 5: 58–64.
Guthrie, S. E. 2002. 'Animal animism: evolutionary roots of religious behaviour', in I. Pyysiainen and V. Anttonen, eds. *Current Approaches in the Cognitive Science of Religion*, 38–67. London.
Harte, V. 2010. 'The receptacle and the primary bodies: something from nothing?' in R. Mohr and B. Sattler, eds. *One Book, The Whole Universe: Plato's Timaeus Today*. Athens.
Hinnells, J. R. 1975. 'Reflections on the bull-slaying scene', in J. R. Hinnells, ed. *Mithraic Studies: Proceedings of the First International Congress of Mithraic Studies*, Vol. II, 290–312. Manchester.

Hubbard, T. 2002. 'Pindar, Theoxenus, and the homoerotic eye', *Arethusa* 35: 255–96.
Ierodiakonou, K. 2004. 'Empedocles and the ancient painters', in L. Cleland and K. Stears, eds. *Colour in the Ancient Mediterranean World*, BAR International Series 1267, 91–5. Oxford.
Ierodiakonou, K. 2005a. 'Empedocles on colour and colour vision', *Oxford Studies in Ancient Philosophy* 29: 2–37.
Ierodiakonou, K. 2005b. 'Plato's theory of colours in the Timaeus', *Rhizai* 2: 219–33.
Ionescu, D. 2018. 'Mithras, Sol Invictus, and the astral philosophical connections', *Acta Antiqua Academiae Scientiarum Hungaricae* 58: 657–65.
Lahe, J. 2018. 'Mitra-Mithra-Mithras: The Roman Mithras and his Indo-Iranian background', *Acta Antiqua Academiae Scientiarum Hungaricae* 58: 481–91.
Laurie, A. P. 1910. *Greek and Roman Methods of Painting: Some Comments on the Statements Made by Pliny and Vitruvius About Wall and Panel Painting*. Cambridge.
Lentz, W. 1975. 'Some peculiarities not hitherto fully understood of 'Roman' Mithraic sanctuaries and representations', in J. R. Hinnells, ed. *Mithraic Studies: Proceedings of the First International Congress of Mithraic Studies*, Vol. II, 359–77. Manchester.
Lindberg, D. C. 1976. *Theories of Vision from Al-Kindi to Kepler*. Chicago.
Lissi-Caronna, E. 1986. *Il Mitreo Dei Castra Peregrinorum (S. Stefano Rotondo)*. Leiden.
Malacrino, G. 2010. *Constructing the Ancient World*, trans. Paul Getty Trust. California.
Martin, L. H. 2015. *The Mind of Mithraists: Historical and Cognitive Studies in the Roman Cult of Mithras*. London.
Merkelbach, R. 1984. *Mithras*. Konigstein.
Merker, G. S. 1967. 'The rainbow mosaic at Pergamon and Aristotelian color theory', *American Journal of Archaeology* 71: 81–2.
Misic, B. 2015. 'Cognitive theory and religious integration: the case of the Poetovian Mithraea', in T. Brindle, M. Allen, E. Durham and A. Smith, eds. *TRAC 2014. Proceedings of the Twenty-Fourth Annual Theoretical Roman Archaeology Conference, Reading 2014*, 31–40. Oxford. http://doi.org/10.16995/TRAC2014_31_40
Moorman, E. M. 2011. *Divine Interiors: Mural Paintings in Greek and Roman Sanctuaries*. Amsterdam.
Nightingale, A. 2016. 'Sight and the philosophy of vision in Classical Greece: Democritus, Plato and Aristotle', in M. Squire, ed. *Sight and the Ancient Senses*, 54–67. London.
Panagiotidou, O. and Beck, R. 2017. *The Roman Mithras Cult: A Cognitive Approach*. London.
Piccottini, G. 1994. *Mithrastempel in Virunum*. Klagenfurt.
Raymond, L. and Fraser, A. B. 2001. *The Rainbow Bridge: Rainbows in Art, Myth, and Science*. Pennsylvania.

Rudolph, K. 2016. 'Sight and the preSocratics: approaches to visual perception in early Greek philosophy', in M. Squire, ed. *Sight and the Ancient Senses*, 36–53. London.
Speidel, M. S. 1980. *Mithras-Orion: Greek Hero and Roman Army God*. Leiden.
Sperber, D. 1996. *Explaining Culture, a Naturalistic Approach*. Oxford.
Squire, M. 2016. 'Introductory reflections: making sense of ancient sight', in M. Squire, ed. *Sight and the Ancient Senses*, 1–35. London.
Stansbury-O'Donnell, M. D. 1990. 'Polygnotos's Nekyia: a reconstruction and analysis', *American Journal of Archaeology* 94: 213–35.
Steingräber, S. 2006. *Abundance of Life: Etruscan Wall Painting*, trans. R. Stockman. California.
Stulz, H. 1990. *Die Farbe Purpur im frühen Griechentum*. Stuttgart.
Szabo, A. 2018. 'The two parts of the "Mithraic universe" by right of the external and internal orientation of the cult image', *Acta Antiqua Academiae Scientiarum Hungaricae* 58: 305–24.
Tanner, J. 2016. 'Sight and painting: optical theory and pictorial poetics in Classical Greek art' in M. Squire, ed. *Sight and the Ancient Senses*, 107–22. London.
Taylor, A. E. 1928. *A commentary of Plato's Timaeus*. Oxford.
Toynbee, J. M. C. 1986. *The Roman Art Treasures from the Temple of Mithras*. London.
Turcan, R. 1975. *Mithras Platonicus: Recherches sur l'hellenisation philosophique de Mithra*, EPRO 47. Leiden.
Turner, S. 2016. 'Sight and death: seeing the dead through ancient eyes', in M. Squire, ed. *Sight and the Ancient Senses*, 143–60. London.
Vermaseren, M. J. 1971. *Mithriaca I: The Mithraeum at S. Maria Capua Vetere*. Leiden.
Vermaseren, M. J. 1982. *Mithriaca III: The Mithraeum at Marino*. Leiden.
Vorwerk, M. 2010. 'Maker or father? The demiurge from Plutarch to Plotinus' in R. Mohr and B. Sattler, eds. *One Book, The Whole Universe: Plato's Timaeus Today*. Athens.
Warbuton, A. 2007. 'Basic color term evolution in light of ancient evidence from the near East', in R. E. MacLaury, G. Paramei and D. Dedrick, eds. *Anthropology of Color: Interdisciplinary Multilevel Modelling*, 229–46. Amsterdam.
Webb, R. 2016. 'Sight and insight: theorizing vision, emotion and imagination in ancient rhetoric', in M. Squire, ed. *Sight and the Ancient Senses*, 205–19. London.
Zeyl, D. 2010. 'Visualising Platonic space' in R. Mohr and B. Sattler, eds. *One Book, The Whole Universe: Plato's Timaeus Today*. Athens.