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MATERIALITY IN ROMAN ART AND ARCHITECTURE

AESTHETICS, SEMANTICS, AND FUNCTION

Edited by Annette Haug, Adrian Hielscher and Michael Taylor Lauritsen

DECOR

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Decorative Principles in Late Republican and Early Imperial Italy

Volume 3

Materiality in Roman Art and Architecture

Aesthetics, Semantics and Function

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Preface

This volume is the outcome of the second colloquium financed by the ERC Consolidator Grant DECOR (grant no. 681269), devoted to the topic *Materiality as Decor: Aesthetics, Semantics and Function*, which was held in June 2020. Because of the ongoing COVID-19 pandemic the colloquium took place digitally.

DECOR aims to provide a holistic analysis of the decorative principles employed in Roman Italy between the Late Republic and Early Imperial period (2nd century B.C. – late 1st century A.D.). The aim of this conference volume is to focus this approach on the decorative potential of materials. Alongside images, forms and ornament, materials were an elementary component of *decor* and design in Roman antiquity, with respect to both architecture and objects. This book concentrates in particular on three qualities of materials – aesthetics, semantics and function – and the manner in which these qualities interact. All of the authors refer to these categories and contribute to a cultural history of materials; individual papers differ, however, in contextual focus and methodological approach.

The volume has benefitted substantially from verbal discussions with Jens-Arne Dickmann and Andreas Grüner, as well as of the critical support of anonymous reviewers. Nadia Cahenzli and Marcel Deckert were responsible for preliminary editing and the production of certain figures, and we are extremely grateful for their work. We would also like to thank Rubymaya Jaeck-Woodgate, who provided proofreading and editing support. Finally, we are grateful to De Gruyter, who established the DECOR series for the publication of the ERC project's results, and to Mirko Vonderstein in particular, who facilitated the production process.

Annette Haug, Adrian Hielscher and Taylor Lauritsen
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Materiality of Objects

Introduction

Annette Haug and Adrian Hielscher

Materiality as Decor: Aesthetics, Semantics and Function

Phenomena exist in the material world.
Material makes thoughts tangible.
Materials manifest the world[1].

The materiality of things has always received special attention in Classical archaeology. During the last two decades, however, this aspect of things, combined with a new interest in media, has become a focal point in all of the humanities, captured by the catchphrase the 'material turn'[2]. This has led to a new and more specific form of attention to material phenomena, which focuses upon the physicality of human beings, their relationship to the materially 'arranged' space, and, in this connection, also examines the overarching 'thingness' of the world in which they live[3]. In recourse to phenomenological approaches, especially that of Martin Heidegger[4], material substantiality and the 'object character' of our environment has moved into the foreground of humanistic, cultural and social scholarship. In this research tradition, it is recognised that things resist a one-dimensional, functional appropriation[5]. These insights into the 'power' of things inspire material culture studies to examine their biographies, their 'social life'[6], and their psychosocial and economic relevance[7]. No less important, this intensive tendency towards 'thingness' is also a reaction to recent social developments: on the one hand, the current social discourse is confronted with a rapidly advancing digitalisation and the accompanying dematerialisation of our life-worlds[8], and on the other hand, it is equally confronted by a flood of material objects (products, goods and commodities)[9].

1 Viray 2011, 8.

2 The volume 'Materialität der Kommunikation', published by Hans Ulrich Gubrecht and Karl Ludwig Pfeiffer in 1988, has significantly promoted, if not initiated, this new research focus. On the 'material turn' in archaeology, see Hicks 2010; Bräunlein 2012; Reckwitz 2013.

3 On the historicising of the opposition between body and soul, materiality and immateriality, see Heibach – Rohde 2015.

4 Martin Heidegger differentiated between thing, work and tool (Ding, Werk and Zeug). By thing/Ding he meant each and every object in and of itself. He used tool/Zeug to describe all artefacts that humans have put into use, but that also might fail to fulfil a specific purpose and thus attract attention; see Heidegger [1927] 2006, 74: 'Die Modi der Auffälligkeit, Aufdringlichkeit und Aufsässigkeit haben die Funktion, am Zuhandenen den Charakter der Vorhandenheit zum Vorschein zu bringen.' The work/Werk (e. g., artwork) is that which has been made by humans, but without a specific purpose in mind, see Unverzagt 1998/1999; Hahn (2005, 19 f.) with further conceptual differentiations. Meanwhile, Feest (2003) differentiates artefacts from natural 'Naturfakte' and 'Exofakte', i. e., natural things that are used by humans. These differentiations are not of interest in the following discussion, as here the focus lies on artefacts.

5 Flusser 1993; Heidegger [1927] 2006, 73–75; Hahn 2015b, 9 f.; Karagianni et al. 2015, 33–46; Kalthoff et al. 2016, 21–23.

6 For relevant scholarship, see Appadurai 1986; Hahn 2005, 7 f. 18; 2015, 28; 2015a; Hahn – Weiss 2013; Boschung et al. 2015; Kalthoff et al. 2016, 25 f. This understanding of things, otherwise formulated for the discipline of ethnology, is also obligatory for archaeology. On the methodological interdependence of both disciplines, see Hahn 2012, 35–37. For an explicit discussion of the further and systematic interaction with objects in historical archaeology, see Eggert – Samida 2016, 123–140.

7 E. g., Habermas 1999.

8 In this sense, we can recall Jean-François Lyotard's exhibition 'Les Immatérieaux', shown in 1985 at the Centre Pompidou (Lyotard 1985); similarly, Jacques Derrida; see Gumbrecht 2004, 25; Heibach – Rohde 2015, 13.

9 Miller 1997; Ulrich 2008; Weltzien – Scholz 2016, 9–13; Schmidt-Funke 2019.

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Our starting point for this colloquium, however, is not the material culture or the artefact as such[10], but a specific quality of things, namely their material[11]. This approach shifts the focus onto the cultural effects of these materials; onto their aesthetics, semantics and functions. Although these aspects of the topic are the subject of countless individual studies and are universally present in both material culture studies[12] and in the artisanal-creative disciplines[13], a systematic conceptualisation is still lacking. In the following discussion the aesthetics, semantics and functions of materials will be considered first against a theoretical background, and then from an ancient perspective[14].

Aesthetics of Materials

Considerations of material aesthetics lie in the realm of general reflections on aesthetics, since such reflections have always paid attention to the (material) appearance of things. The early theories of aesthetics from the 18th century were particularly interested in the relationship between aesthetics and knowledge. For Alexander Gottlieb Baumgarten (1750), scholarly thought aimed for a clear and comprehensible knowledge, while sensory knowledge was a kind of *cognitio confusa*. However, Immanuel Kant did not follow Baumgarten's notion of aesthetics as a form of knowledge. According to Kant, aesthetic intuition was concerned neither with insights and concepts, nor with any practical purpose, but rather with perception[15]. Kant's transcendental aesthetics privileged the unadulterated intuition pre-existing in its pure form within a person's mind, as opposed to the sensations corresponding to the appearance yielded in turn by matter or physical substance[16]. In the following period, this notion opened up the way for a striving towards the conquest of materials in favour of form[17]. Only in the recent past have we accomplished an 'aesthetic renewal' that understands aesthetics as both experience and appearance[18]. According to Martin Seel, this is accompanied by a

10 The word 'artefact' denotes something that is artificially made. In the various disciplines of archaeology and ethnology, there is a differentiation between man-made artefacts (e. g., a spear) and naturally occurring things (e. g., a branch). Generally, everything that humans create, both material and immaterial, is subsumed under the term 'artefact' (Eggert 2014, 169). Each discipline adopts a somewhat different definition of the term. For an introduction, see Eggert 2014, 169–173; Tsouparopoulou – Meier 2015, 47–61.

11 See Ingold 2007; Meier et al. 2015, 19–31; Stockhammer 2015, 26. See also Seel 2003, 173: 'Material steht dabei nicht für Materie, sondern für das, was bearbeitet bzw. womit gearbeitet werden muß [sic], damit von Kunst einer bestimmten Gattung die Rede sein kann.' (Here, 'material' does not stand for 'matter', but rather for that which must be processed or worked with so that we can speak of a particular genre of art). On physical presence, see Thomas 2007, 15: 'Die Materialität korreliert also mit der von uns wahrgenommenen, physischen Präsenz des Objekts, die Substanz mit der physikalischen Beschaffenheit der Bestandteile des Objekts' (The materiality correlates with the physical presence of the object as we perceive it, and the substance with the physical qualities of the parts of that object).

12 In Hahn (2005) we find (albeit with a different focus) similar categories, while Hartmann and Haubl (2000, 9 f.) look at the quality of things in their function ('technical aspect'), aesthetics ('aesthetic aspect') and semantics ('cultural and social aspects') in a short summary text.

13 Heufler speaks of 'practical functions' (Heufler 2016, 27–32), 'aesthetic functions' (Heufler 2016, 37–43) and 'product semantics' (Heufler 2016, 44–58) in design; see also Hirdina 2010, 41. 62; Steinbrenner 2010, 12 f. 18; Bürdek 2015, 11–14.

14 For aesthetics, semantics and function in object design of Roman small finds, see Hielscher, forthcoming.

15 On this culmination in Kant, see Seel 2003, 18.

16 Kant [1790] 1954, 63–65; von Kutschera 1988, 100 f.; Wagner 2005, 872 f. In the aesthetics of Georg Wilhelm Friedrich Hegel, painting still claimed the highest place amongst all the fine arts, on the basis of its capacity for abstraction and independence from materials. Nevertheless, because all the fine arts are dependent upon sensorial/physical matter, Hegel valued them less highly than music or poetry. Only when all material was stripped away could true art emerge, see Hegel 1979, 123 f. 936.

17 Wagner 2005; Heibach – Rohde 2015, 17 f. For potential definitions of 'medium' and 'material', see Kleinschmidt 2012, 38–40.

18 Dewey 1988; Seel 2003.

tendency towards the medial quality of materials: 'The outline of certain categories is first revealed through types of uses for the "basal" material. In this way we can define the fundamental operation of architecture as the division of space, the establishment of interior/exterior differentiation; [...] a fundamental operation of painting ought to lie in the production of differences between the picture surface and the picture's appearance [...]. These differences, that are created by a specific use of the basal material, can be understood as the primary medium of an artistic composition'[19]. At the same time, this kind of consideration should draw our gaze to the sensuality of the material (meaning its aesthetic effects and presence), since media possess a sensorial quality per se[20]. The insights theoretically formulated by Seel were already an important source of inspiration for artistic practice during the course of the 20th century. This new interest in materials correlates with the tendency towards abstraction and a focus on the technical and material contingencies of art, while also abandoning reproductive imitation[21]. Artists highlighted the theme of material aesthetics from many different angles. They addressed colour as material (as in the work of Jackson Pollock, for example), temporality as material (in the Fluxus movement), as well as the material's synaesthetic qualities[22] and its plasticity[23].

However, these general considerations can be specified with regard to two aspects. First, materials do not possess a single aesthetic quality, but rather a variety of aesthetic potentials. In this sense, one might speak of a 'polyaesthetic cloud'[24]. This leads to the second important aspect: it is only through the artistic treatment of a material that certain aesthetic qualities are visually privileged or made visible. In the case of alloys or ceramics, this applies to the production of the 'artificial' material per se, but in a large number of cases the aesthetic effects are created by a specific surface treatment of the material, such as polishing or coating. As a consequence, when materials are used for the production of artefacts (including architecture), this necessarily includes an artistic treatment of the material which affects heavily its aesthetic appearance.

Semantics of Materials

Material culture is understood in more recent scholarship as both a medium for discourse and a carrier of meanings. With this tendency towards mediality, a particular focus upon the materiality of communication[25] and the semantics of materials also appears. Seel formulates this from a philosophical perspective in the following way: 'In historical, cultural and foremost in special artistic contexts, certain materials always have a more or less determined significance or symbolism'[26]. In art history this provides the impetus for considerations of material iconography and material iconology[27].

19 Seel 2003, 174 f.: 'Die Kontur bestimmter Gattungen ergibt sich erst durch Arten der Verwendung der „basalen" Materialien. So könnte die grundlegende Operation der Architektur als „Raumteilung" bestimmt werden, als eine Einrichtung von Innen/Außen-Differenzen; [...] eine basale Operation der Malerei dürfte in der Herstellung einer Differenz von Bildfläche und Bilderscheinung liegen [...]. Diese Differenzen, die aus einer spezifischen Verwendung eines basalen Materials entstehen, können als das primäre Medium einer künstlerischen Gestaltung verstanden werden.'

20 On materiality and presence, see Gumbrecht 2004. On materiality and art, see Kleinschmidt 2012, 40–42.

21 With respect to painting, this began with Kandinsky ([1912] 2009) but it can also be substantiated in music, theatre and film: see Kleinschmidt 2012, 16–19.

22 On different aspects, see Wagner 2001.

23 Rohde 2015, 130.

24 See the contribution by Reinhardt, this volume.

25 Baudrillard 1985, esp. 20; Pfeiffer 1988.

26 Seel 2003, 174: 'Im historischen, kulturellen und erst recht im speziellen künstlerischen Kontext haben bestimmte Materialien immer schon eine mehr oder weniger festliegende Signifikanz oder Symbolik'.

27 Bandmann 1969; Wagner 2001; Raff 2008, 8. 13–17; Wagner et al. 2010.

On a (pre)iconographic level we find the sensorially palpable qualities of the material. These physical characteristics provide a frame of reference for attributing meaning – for example, the hardness and resilience of stone, or the warmth of wood. This semantic reference, which may be understood in a semiotic sense as an 'indexical' reference, is, however, ambiguous. In this sense we may speak of a polyvalence/polysemanticism of the material[28]. It is then the (historically specific) usage of a material[29], as well as its spatial, social and cultural context[30], which provides a more specific attribution of meaning. Iconology thus opens up the possible symbolic references of materials[31], as well as the meanings of the objects in question (product languages[32]). This is exemplified by various semantic relationships: lead is heavy and so awakens the related associations that fan out into various culturally-specific discourses[33]. Bronze is weatherproof, and during the medieval period it not only signified endurance but was also understood as a reference to tradition and antiquity[34]. Under National Socialism durable materials represented the aspiring endurance of the Third Reich[35], while the arte povera of the post-war period intentionally distinguished itself from this trend with the use of 'simple' materials[36].

Functions of Materials

Heidegger, in his definition of 'thing quality', identifies two determined aspects of things: (1) they serve particular purposes and (2) in being used, they prove themselves reliable[37]. These aspects are applicable to materials, as well. The function of materials is often thematised in design- and architectural theory. Indeed, the first such considerations date from antiquity (see below). The Industrial Revolution brought not only new methods of production, but also a many new synthetic materials, which led to a new theorising of material science[38].

Under the catchphrase 'truth to material'[39], which refers to a design and handling appropriate to the raw material[40], different uses of materials were ideologically justified. The main issue at the centre of this discourse was the rejection of industrial-capitalist practices and techniques that imitated costly materials. There was no a priori opposition to individual materials or surface treatments. For John Ruskin and the Arts and Craft movement[41], imitating materials, creating artificial

28 See Wagner, this volume.

29 Plastic is exemplary of this: see Rohde 2015. On plastic as a sign of consumption, see Hahn 2015b, 42.

30 On the value of material objects from a diachronic perspective, see Bokern et al. 2015; Picht et al. 2015.

31 Erlhoff – Marshall 2008, 359–361; Bürdek 2015, 83–97. 148–154. 170–177; Heufler 2016, 33 f.

32 The theory of product language was developed during the 1980s by Groß (1983) at the Hochschule für Gestaltung Offenbach (thus, it was later called the 'Offenbacher Ansatz'): see Steffen 2000, 6–8; Schwer 2014, 12–17; Heufler 2016, 33–35; Reinhardt 2018, 7 f. For a focus on the polyvalence of product language, see Schwer 2014.

33 In Ovid's tale of Apollo and Daphne (Ov. Met. 1, 452–567), for example, lead symbolises sadness and loss. Here, Amor fires two arrows at the pair, one of gold and one of lead. Apollo, hit by the golden arrow, is overcome with love for Daphne, while she, struck by the lead arrow, responds only with aversion and disgust. In modern visual and performing arts, lead was used as both as a metaphor and a medium. Both evoke various meanings. Lead is always heavy; it pulls one to the floor, and is the opposite of vitality and liveliness. 'Leaden times' are difficult, melancholic, or gloomy. In the context of alchemy and mysticism, lead is also associated with protection, prophecy and transformation. On this, see Wagner et al. 2010, 41–43; Macho 2015, 199–206.

34 Since large-scale bronzes served as symbols of power and authority, bronze was ascribed the attributes of value and durability from the Carolingian period: see Gramaccini 1987, 147–180.

35 Fuhrmeister 2001.

36 Blaschke 2005, 50.

37 Heidegger 1952, 16–23.

38 Neroth – Vollenschaar 2011, 1–3; Weber et al. 2012, 13 f.; Mareis 2015.

39 On the development of the term the 'truth to material' (Materialgerechtigkeit), see Rottau 2012, esp. 3.

40 Wagner 2003, 135–138; Raff 2008, 13 f.; Rübel et al. 2017, esp. 9–11; Reinhardt 2018, 21–34.

41 Ruskin [1849] 2018. William Morris enacted the philosophical-theoretical concepts developed by Ruskin: see Kruft 1994, 335–338; Wagner 2003, 135.

surfaces by painting or lacquering, distorting static structures and using mass-produced ornaments were all to be avoided[42]. Only the material itself, with its aesthetic and functional qualities, was to be made visible.

A somewhat different view of 'truth to material' is represented by Horatio Greenough (1852), Louis Sullivan (1896) and Gottfried Semper (1860). Greenough and Sullivan formulated the maxim 'form (ever) follows function'[43], which led Semper to a functionalist understanding of materials – here we might say that 'material follows function'. In 19th century Germany, this principle of 'Materialgerechtigkeit' refers especially to the appropriate and correct processing of materials. For Semper, architectonic forms[44] were the 'result of the material service or usage intended'[45], and the 'result of the substances used during production, as well as of tools and procedures that come into use during that process'[46]. The choice of materials is determined by a complex network of intended use, availability and their specific characteristics[47]. This fundamental idea was carried on in Bauhaus design theory[48]: here, the material was subject to the maxims of practicality, integrity and austerity[49].

Both interpretations of 'truth to material' persist to the present day. The aim of construction-material science is to develop functional and appropriate materials for specific purposes and

42 Posener 1964; Kruft 1994, 331–335; 2004, 381.

43 Sullivan 1896, 408: 'Whether it be the sweeping eagle in his flight, or the open apple blossom, the toiling workhorse, the blithe swan, the branching oak, the winding stream at its base, the drifting clouds, over all the coursing, "form ever follows function", and this is the law'.

44 At the centre of Semper's (aesthetic) theory of styles stands the beauty of form. This is not, however, considered to be something transcendental, but rather a 'product or result' (Produkt oder Resultat). Since the 'elements of the form are not the form itself' (Bestandtheile der Form, die nicht selbst Form sind), Semper viewed 'ideas, energy, raw matter and resources' (Idee, Kraft, Stoff und Mittel) as 'pre-elements and basic requirements' (Vorbestandtheile und Grundbedingungen): see Semper 1860, 7.

45 Semper 1860, 8: 'Resultat des materiellen Dienstes oder Gebrauches, der bezweckt wird'.

46 Semper 1860, 8: 'Resultat des Stoffes, der bei der Production benutzt wird, sowie der Werkzeuge und Proceduren, die dabei in Anwendung kommen'. For this reason, Semper also later (1860, 9–12) considered the construction and artisanal arts with reference to the qualities of materials. For him, the core task of textile art, ceramic art, tectonics and stereotomy was to render the raw materials useful for specific purposes, through labour and technical processes: see Mareis 2015, 250 f.

47 Quitsch 1962, 59; Reinhardt 2018, 22 f.

48 Siebenbrodt – Schöbe 2012, 39–47; Nerdinger 2018.

49 Gropius 1923, 9: 'Die Kunst des Bauens versank in den letzten Generationen in einer schwächlich sentimentalen, ästhetisch-dekorativen Auffassung, die ihr Ziel in formalistischer Verwendung von Motiven, Ornamenten und Profilen erblickte, die den Baukörper bedeckten. Der Bau wurde ein Träger äußerlicher, toter Schmuckformen, anstatt ein lebendiger Organismus zu sein. [...] Der Architekt blieb im akademischen Ästhetentum hängen, ward müde und konventionsbefangen, und die Gestaltung der Städte entglitt ihm. Dieses Bauen lehnen wir ab. Wir wollen den klaren organischen Bauleib schaffen, nackt und strahlend aus innerem Gesetz heraus ohne Lügen und Verspieltheiten, [...] der seinen Sinn und Zweck aus sich selbst heraus durch die Spannung seiner Baumassen zueinander funktionell verdeutlicht und alles Entbehrliche abstößt, das die absolute Gestalt des Baues verschleiert. Mit zunehmender Festigkeit und Dichtigkeit der modernen Baustoffe (Eisen, Beton und Glas) und mit wachsender Kühnheit neuer schwebender Konstruktionen wandelt sich das Gefühl der Schwere, das die alte Bauform entscheidend bestimmte. Eine neue Statik der Horizontalen, die das Schwergewicht ausgleichend aufzuheben strebt, beginnt sich zu entwickeln.' (The art of construction has sunk in recent generations into a weak, sentimental, aesthetic-decorative notion that finds its highest aim in the formalist usage of motifs, ornaments and profiles that cover the body of the building. The building has become a carrier for superficial, dead decorative forms, instead of a living organism. [...] The architect remains stuck in academic aesthetics, grows tired and trapped by conventions, and the composition of the city escapes him. We reject this building. We want to create the clear organic body of the building, naked and radiant, based on inner laws without lies or frivolity, [...] that functionally indicates its sense and purpose in and of itself through the tension between its constructed masses, and sheds everything fragile that veils the absolute composition of the building. With the increased strength and density of modern construction materials (iron, concrete and glass), and with the growing boldness of the new types of suspended construction, this feeling of heaviness that defined the old buildings will be transformed. A new static of the horizontal that strives to balance and lift the heavy weight is beginning to develop).

bring these materials into use – in the recent past with an eye on the environmental sustainability of the product, as well[50].

However, 'truth to material', which is dazzling in itself and anchored in the 19th century context of its creation, is actually based on two problematic and interrelated notions. First, it assumes that a material is suitable for a specific use, that it is monofunctional, so to speak. In a second step, it elevates this functional use to an ideological maxim. Consequently 'truth to material' is not suitable as a hermeneutic description of a material's function in relation to architecture and objects. Rather, materials can be used in various ways and with various aims. Thus, we may not only speak of polyaesthetics and polysemantics, but also of a polyfunctionality. The actual use of a material may rely upon specific physical qualities, but may also counteract other properties in a more or less intentional manner.

Material and Object

Up to this point, material has been viewed as a category in its own right. Nonetheless, the long-standing primacy of form[51] should in no way be replaced by the primacy of materials[52]. This focus has only been taken initially, in order to analyse the potential of materials as clearly as possible.

In any case, material only exists in concrete forms. The aesthetics, semantics and functions of a given material therefore only reveal themselves in relation to a specific object. This is of course the case for things that have not been culturally appropriated or transformed, but applies specifically to designed artefacts, the topic under discussion here. Materials and objects can not only mutually enhance their aesthetics, semantics and functions (in the sense of a materiality that is appropriate to the object), but can also contradict and question one another[53].

The **aesthetics** of materials can emphasise the object's form, meaning and function in the most optimal way: colour gradients, patterns or surface textures, for instance, are all particularly effective in accentuating and highlighting formal qualities. The round form of a table top made from the cross-section of a tree trunk is supported by the concentric age-circles appearing in the timber. In contrast, a visually prominent material will dominate the form and confuse its line. Pavonazzetto and other heavily veined types of stone make it difficult for the viewer to observe and appreciate the play of finer forms in a sculpture. A particularly strong tension arises between material and form when the object's surface and its core structure are produced in different materials: for example, when architecture is plastered or panelled, or when objects are coated in gold or silver. In this case, there is a differentiation between the 'form-determining' material and the aesthetically effective material applied to the object's surface.

The **semantic spectrum** of meaning for materials unfolds particularly in relation to the object, which that meaning influences or even creates. In the case of a statue sculpted from coloured marble, the marbling may imitate the fabric of clothing or drapery. In particular, cultural connotations first arise from stable material-object form correlations. It is therefore also possible to play with (and even break) certain cultural norms and expectations: for example, by introducing luxury materials into contexts where they do not seem to be appropriate.

50 Weber et al. 2012, 13.

51 The notion that material is secondary to form has dominated Western thought for a long time, and must be overcome: see Wagner 2005, 867; 2008, 4–6; Strässle 2013, 8 f.; Meier et al. 2015, 23–26.

52 In more recent times a material-oriented approach has emerged as competition for the product-oriented approach in both design and architecture. This new approach sees materials as the starting point for the design process and tries to break down the traditional use contexts for particular materials: see Pahl – Weber 2008; Holzbach – Bertsch 2014; Holzbach 2014; Reinhardt 2018.

53 On material as a decorative quality of objects equivalent to form, ornament and image, see Hielscher, forthcoming.

Material and **object function** can mutually reinforce one another. Stable building materials lend the whole building stability. Nonetheless, various qualities considered desirable for an object can also end up in competition with one another. Glass vessels are considered ideal for tableware and for the storage of food on the basis of their neutral scent and taste, but they are nonetheless more fragile than vessels made from harder materials[54]. When the aesthetics of an object becomes its actual function, as is the case with show pieces, its practical use can be made difficult or even impossible. By combining various materials in a single object, the specific qualities of certain materials can be employed in a targeted way. Thus, wooden furniture gains greater stability through the addition of metal feet, whereas metal tools are made easier to use through the addition of wooden or bone grips.

These various examples not only make it clear that material and form enter into interaction with one another in terms of aesthetics, semantics and function; it is also apparent that the aesthetic, semantic and functional qualities generally cannot be played off against each other. The combination of different materials can perhaps have a functional motive, but it simultaneously has an aesthetic effect and invokes specific semantic associations. These material-form interrelations refer to a broad range of potential effects, of which only a few will be mentioned here. Plastering a wall, for example, protects the building material against the elements but it creates simultaneously a new aesthetic surface quality[55], while silver inlays of bronze vessels have not only the effect of polychromy but also communicate the higher economic value of the object.

Materiality in Antiquity: the *Naturalis historia* of Pliny the Elder

Against the backdrop of these modern and postmodern theoretical discussions, we will now turn to an ancient perspective on the topic. Although a coherent theory of materiality was not developed during antiquity, ancient literature is rife with commentary on particular materials and their social value. The elder Pliny is a particularly prominent author in this regard; he refers not only to contemporary thought during the Imperial period, but also cites a large number of older sources. Many of the contributors to this volume refer to him, and consequently we will consider his work in greater detail here.

In his *Naturalis historia*, Pliny dedicates books 33 to 37 to metals, ores, painting/pigments, stones and precious gems. But these chapters can also be read as a discourse upon mediality and materiality. In the following discussion, we will consult Pliny's text with regard to the material effects discussed earlier from a theoretical point of view; that is, aesthetics, semantics and function. In doing so, it will become clear that although Pliny does not model his considerations systematically upon these categories, but many of his remarks can be related to them[56].

The Social Value of Materials: Luxury and Decadence

At the heart of Pliny's *Naturalis historia* there lies a specific aspect of material semantics, namely the social value (*pretium*) of materials, which he discusses in the introduction to Book 33: *Metalla nunc ipsaeque opes et rerum pretia dicentur*[57]. In Books 33 to 37 he describes the social history of

54 For further qualities of glass, see Swift, this volume.

55 See Plant, this volume.

56 This is fundamental to the discourse of materiality in Pliny: see Anguissola – Grüner, 2020.

57 Plin. HN 33, 1: 'Our topic now will be metals, and the actual metals. Resources employed to pay for commodities.'

different materials, noting that their value can be explained by their changing social uses[58]. Gold, for example, was rare in Rome (it was initially hidden away inside the Temple of Saturn) until the spoils of war made it somewhat more common[59]. During the 5th century B.C., the rhetorician Gorgias commissioned a statue of himself in solid gold at Delphi[60], whereas in Rome this practice began significantly later. Gold also only came gradually into use for jewellery – the rings used as a symbol of marriage were initially made from iron, and only changed to gold at the end of the Republic[61]. Pliny presents the conquest of Asia as a turning point in the handling of gold. Lucius Cornelius Scipio brought 1500 pounds of golden vessels back to Rome from Asia[62]. We can also observe a progression from simple copper coins to silver and gold coinage over the course of the Republic[63]. Taking the discussion of gold as an exemplary case, it is clear that Pliny binds his history of materials with an extensive critique of luxury and carries this on into a discussion on decadence[64]. Other materials, such as silver and precious stones, are also described by Pliny in terms of an escalation in luxurious living and a concomitant moral decline[65].

Pliny himself is aware that a material's worth is the result of the interplay between its various qualities. In the case of gold, the crucial factor for Pliny is that gold does not lose any of its value when exposed to fire: rather its quality increases[66]. There are also aesthetic qualities such as its shine and colour, but it shares these with other materials[67]. With respect to stones and pigments, additional aspects that determine a material's value are mentioned: its rarity, the difficulty of its acquisition and the transport costs associated with shipping it to Rome[68]. Marble, which was quarried and shipped to Rome at great expense and effort, is the ultimate expression of *luxuria* for Pliny[69]. Above all, however, Pliny implies in his *Naturalis historia* that materials necessarily take the form of objects by linking materials and objects always and exclusively. The total economic value of objects can only be assessed through the value of both the materials employed and the 'aesthetic labour'[70] invested in them. Gold and silver, he tells us, can be made more expensive through processing or smithing[71]. In the case of gems, *ars* is also a factor in the increasing of their value[72]. Terracotta vessels, which are produced from a material of comparatively low value (clay), can become more precious than their stone counterparts after firing[73]. Finally, this increase in value is particularly obvious in the case of bronze: through their 'audacious' and 'miraculous' production bronze statues gain great admiration and material value[74]. *Luxuria* is therefore expressed not only in the use of ever more exquisite materials, but also through the ever evolving techniques applied

58 The iterative criticism of precious materials exploited by intensive mining, the destruction of nature and the wasteful use of resources represents a form of proto-environmentalism: see Wallace-Hadrill 1990, 85–90.
59 Plin. HN 33, 14–16.
60 Plin. HN 33, 83.
61 Plin. HN 33, 8–13. 17–34.
62 Plin. HN 33, 148.
63 Plin. HN 33, 42–47.
64 Isager 1991, 52–55. 70–73. Pliny indicates the correlation between *avaritia* and *luxuria*; for more on *luxuria*, which is expressed through the use of gold: see Isager 1991, 57–66; Beagon 1992, 75–79. 190–194; Lao 2011.
65 Plin. HN 36, 1: *insania morum*.
66 Plin. HN 33, 59.
67 Plin. HN 33, 58.
68 Plin. HN 33, 164; 34, 48; 36, 55. 59.
69 Plin. HN 36, 1–8: *luxuria in marmoribus*; Isager 1991, 144–147; Carey 2003, 79; Barry 2020, 81. In HN 35, 1 Pliny criticises marble incrustations replacing wall paintings as decorative elements of bedrooms.
70 Böhme 1995, 35 f. For Böhme, the atmospheres of spaces are influenced by the 'aesthetic labour' invested in them, such as architectural ornaments, interior design or object design.
71 Plin. HN 33, 4.
72 Plin. HN 33, 22; see Lang, this volume.
73 Plin. HN 35, 162.
74 Plin. HN 34, 38; Carey 2003, 91–99. For more on the *opera mirabilia in terris*, see Isager 1991, 190–205; Healy 1999, 69 f.; Carey 2000, 1–13.

in artisanal production. When discussing silver vessels, Pliny states explicitly that no one type of form or craft remained in fashion for long: *vasa ex argento mire inconstantia humani ingenii variat nullum genus officinae diu probando*[75].

Social appraisal is therefore always based on the use of certain materials and the artistic craftmanship invested in the finished product. This aspect of the ancient critique of luxury has already been discussed thoroughly in modern scholarship[76], which has recognised that the increasing decadence of the Late Republic constituted a veritable cultural revolution[77], creating the requisite conditions for Pliny's observations[78]. Admiration and criticism are therefore tightly bound within Pliny's work. This also applies to content and style: the author's meticulous great, almost tiresome attention to detail is presented in a strikingly simple style[79] that lends formal expression to the critical attitude towards luxury phenomena.

Semantics of Materials

In Pliny, the critique of luxury provides a culturally specific framework of interpretation, in relation to which the more specific semanticisation[80] of the materials are carried out. In the following examples, it is clear that the iconology of the materials refers to a cultural system. Thus, Pliny reports that Italian cult images and the architectural ornament applied to temples were originally made from terracotta[81]. Even when gold and silver became available in later periods, these terracotta elements, which Pliny associated with *firmitas* (endurance), conveyed an importance sense of sacrosanctity, as well as a certain innocence: *mira caelatura et arte suique firmitate, sanctiora auro, certe innocentiora*[82]. Marble is also loaded with different cultural meanings. Since every type of marble had to be imported into Rome, Pliny characterised the Hymettan marble as foreign[83] and therefore by implication sumptuous or excessive.

Colours can also be semantically charged, either through association or social use. Pliny reports that for some people, the value of gold is revealed by its colour and shine, which can be likened to that of the stars[84]. To a certain extent, then, gold possesses a heavenly quality. Pliny also notes the cultural value associated with *minium* (cinnabar)[85], which was applied to the face of statues depicting Jupiter, as well as to the bodies of *triumphatores*[86]. Through these social practices *minium* acquired an enhanced, almost royal connotation.

Although Pliny offers important insights into the semantic associations of particular materials, it is useful to consult other authors as well. However, each single author holds a specific (and ideologically permeated) view of materials. Consequently, the perspective of Pliny, especially his criticism of luxury, must also be contextualised in this sense.

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75 Plin. HN 33, 139: 'Fashions in silver plate undergo marvellous variations owing to the vagaries of human taste, no kind of workmanship remaining long in favour.'

76 E. g., Neudecker 1988; regarding Pliny specifically, see Wallace-Hadrill 1990.

77 Wallace-Hadrill 2008.

78 E. g., Lao 2011, 55.

79 Wallace-Hadrill 1990, 80 f.

80 The term 'semanticisation' denotes a process of attributing personal, social, cultural or other symbolic meanings to 'something', e. g., images, objects or materials. Siefkes (2012, 69) defines seven principles of semanticisation, which include (1) frame connection, (2) style, (3) iconicity, (4) individual experiences, (5) cultural allusions, (6) connection to social groups, (7) specific contexts; for 'semanticisations' see also Baranov 2006; Bracker 2020, 3 f.

81 Plin. HN 34, 35.

82 Plin. HN 35, 158; Grüner 2017, 27–29, with further sources that connect the use of terracotta with old Roman virtues.

83 Plin. HN 36, 7: *peregrines*.

84 Plin. HN 33, 58.

85 On colour, see Lepik-Kopaczynska 1958, 82; Healy 1999, 259.

86 Plin. HN 33, 111–116; Isager 1991, 66 f.

Aesthetics of Materials

Pliny also touches on the various aesthetic qualities of materials, which – in addition to the function of the things in question – establish their social value, with the visible surface being of particular import. Pliny devotes a whole book to the qualities of **colours** (Plin. HN 35), for example. In relation to painting, he states that forms are created through (contour) lines[87] and monochrome shading (therefore also colour differences)[88]. Light and dark tones[89] are used to produce light and shadow (*lumen/umbra*), and in addition to this brown ochre from Sinop can be employed to produce a shine (*splendor*)[90]. Thus, painting plays with contrasts (*tonos*) and shading (*harmogen*)[91], with the result that certain colours achieve different aesthetic effects. They can be *austerus* (austere) or *floridus* (vivid)[92], terms that were also adopted in rhetoric[93]. These particular effects were associated with specific colours: *minium*/cinnabar, *armenium*/azurite, *cinnabaris*/dragon's blood, *chrysocolla*/blue-green or yellow-white, *indicum*/indigo and *purpurissum*/bright purple are all considered as *floridus*. All other colours are *austerus*. With these statements, Pliny outlines a proper aesthetics of colour, especially with respect to wall painting. While identifying various painters by name[94] and judging their treatment of colours[95] he defines wall painting as an independent 'artistic genre'.

Furthermore, for Pliny colour and paint are not only qualities of wall surfaces. Their aesthetic effects were used for other surface modifications as well. Regarding this, the respective pigments are chosen in accordance with the medium: different types are used for panel-paintings, buildings, ships, the production of ink and for fabric dyeing[96], to name but a few examples.

Coloured architectural surfaces can also be achieved, Pliny reminds us, through the application of marble veneers[97], a practice that was still novel during the author's lifetime[98]. In Rome, the equestrian Mamurra, a military officer under Caesar, was the first to outfit his house with marble veneers and decorative marble columns[99]. Pliny also notes that the colour effects and patterns vary greatly according to the type of marble used – Lucullus, for example, famously brought black marble to Rome[100]. He suggests that Egyptian marbles, which arrived under Augustus and Tiberius, can be distinguished by their wave-like pleats and striped patterns[101]. These stone surfaces

87 On Parrhasius, see Plin. HN 35, 67. Apelles mastered the drawing of outlines (Plin. HN 35, 84: *lineas*): see Pollitt 1974, 392. 397.

88 Plin. HN 35, 15 f. Originally, pictures were produced using silhouettes; on the contextualisation of painting outlines and contours, see Kurbjuhn 2014, 55–57.

89 Plin. HN 35, 29: *differentia colorum*.

90 Plin. HN 35, 31. For different types of whiteness (e. g., *albus* or *canditus*), their reference to particular material aesthetics and semantic connotations in the Roman period, see Barry 2020, 41–46.

91 Plin. HN 35, 29: *tandem se ars ipsa distinxit et invenit lumen atque umbras, differentia colorum alterna vice sese excitante. postea deinde adiectus est splendor, alius hic quam lumen. quod inter haec et umbras esset, appellarunt tonon, commissuras vero colorum et transitus harmogen*. See also Pollitt 1974, 399 f. (who makes reference to Plin. HN 35, 131); Isager 1991, 123; Grüner 2014, 447.

92 Plin. HN 35, 30.

93 On *austerus* and *floridus*, see Pollitt 1974, 321–325. 373–375, respectively. For a less aesthetic and more technical reading of these terms, see Lepik-Kopaczska (1958, 79–99), who suggests that the *colores floridi* listed by Pliny are coloured glazes composed of multiple layers, in contrast to the *colores austeri*, which are simple opaque colours manufactured from clay, chalk or iron oxide.

94 Plin. HN 35, 116–119.

95 In relation to specific painters – namely, Aristides and Nicophanes – Pliny (HN 35, 37. 98) notes the 'hard' effect (*durus*) of their colours; see also Pollitt 1974, 359–361.

96 Plin, HN 25, 43; 35, 35. 37. 44.

97 Plin. HN 35, 2.

98 On marble veneer, see Barker, this volume.

99 Plin. HN 36, 48. On marble columns, see Beck, this volume.

100 Plin. HN 36, 49; Isager 1991, 186.

101 Plin. HN 36, 55.

therefore possess a natural form of ornamentation[102]. The gilding of walls during the Flavian period[103] replaces references to a natural landscape with an artificial, 'deceptive' strategy[104].

Importantly, colour effects also play a role in the production of bronze. For example, Pliny differentiates the various types of Corinthian bronze by their colour: (1) a white variety, coming very near to silver in brilliance (*candidum argento nitore quam proxime accedens*), (2) a version in which the yellow quality of gold dominates (*alterum, in quo auri fulva natura*), (3) a type in which all the metals were blended in equal proportions (*tertium, in quo aequalis omnium temperies fuit*)[105] and (4) a darker class (*hepatizon*) that was typically produced by accident[106].

In addition to colour, further aesthetic effects like **reflection and shine** are also decisive for the appearance of materials. Pliny praises a particular type of opal for its soft shine (*mollius nitet)*[107] after polishing. Using the example of *carbunculi* and its varieties he details the qualities of shine, reflection and brilliance[108]. 'Masculine' stones are more brilliant (*acriores*), he says, whereas 'feminine' stones have a weaker lustre (*languidius refulgentes*). He also explores reflectivity: some *carbunculi* possess a dark red glare (*flammae nigrioris*), some shine from deep beneath their surface, blazing with exceptional brilliance in sunlight (*ex alto lucidos ac magis ceteris in sole flagrantes*), but the best are the amethyst-coloured stones that have a bright 'feathery' lustre (*pinnato fulgore radiantes*). Pliny notes that Indian *carbunculi* lack brilliance and look generally flawed, with a 'parched' lustre (*Satyrus Indicos non esse claros dicit ac plerumque sordidos ac semper fulgoris retorridi*), and that the Ethiopian stones take on a greasy appearance and produce no shine at all, instead burning with a fire that is compressed within them (*Aethiopicos pingues lucemque non fundentes convoluto igne flagrare*). According to Callistratus[109], he says, a *carbunculus* ought to cast a brilliant, colourless radiance, so that when placed on a surface it enhances the lustre of other stones, thanks to its own glowing brilliance (*Callistratus fulgorem carbunculi debere candidum esse, ut positus extremo visu nubilantes attollat exardescente fulgore*). In this passage on *carbunculi* it becomes clear how varied the linguistic references to the quality of shine can be: Pliny uses the words *fulgor*, *flagrare*, *lucrem fundere,* and *flammae*. Shine (*fulgor*) is also central to the discussion of silver and gold[110], with Pliny arguing that the shine of the former extends beyond that of the latter[111]. In the light of oil-lamps, however, *electrum* (a gold-silver alloy) shines even brighter than silver, he says[112]. Such visual brilliance was apparently not always desirable, however, since Pliny also describes the ways in which silver could be made matte, with its value actually increasing as a result[113].

In addition to shine and reflection, **transparency** also plays an important role in the aesthetic appearance of materials. This is particularly relevant for certain types of stones. In the case of emeralds, Pliny differentiates between opaque, semi-opaque and translucent varieties: *hinc genera distinguntur, ut sint aliqui obscuri, quos vocant caecos, alii densi nec e liquido tralucidi* [...][114]. Corresponding categories can also be found in his characterisations of other materials: good onyx

102 Thus, marble columns in temples do not only serve a static function but can also be used as a display of splendour (*lautitia*): see Plin. HN 36, 45. Evans (2008, 120) sees this as a conflict between 'substance and appearance'.
103 Plin. HN 35, 2 f.
104 See Anguissola, this volume.
105 Plin. HN 33, 8.
106 García Morcillo 2010, 446 f.
107 Plin. HN 37, 84.
108 Plin. HN 37, 92–94.
109 The writer Callistratus is unknown outside of Pliny: see Riddle 1973, 8; RE X 2 (1919) 1748 s. v. 'Kallistratos' (no. 41) (Kroll).
110 Grüner (2014, 439–448) stresses the importance of shine for Roman material aesthetics, referring in particular to representations of shine in the Second Style (where gloss serves as *ornamentum*) and also Vitruvius.
111 Plin. HN 33, 58: *longius fulget*.
112 Plin. HN 33, 81: *clarius argento splendere*.
113 Plin. HN 33, 131: *fulgor excaecare*.
114 Plin. HN 37, 68.

is opaque[115], whereas obsidian is sometimes translucent[116] and is therefore also valued for wall decorations, because he believes that translucent materials change the quality of the light in a particular space. A white stone with yellow veins from Cappadocia was used to decorate the interior of the Temple of Fortuna Seiana, and this stone is described by Pliny as *candidus atque tralucens* and *phengites* on the basis of its diaphanous qualities[117]. Through the use of this stone, he says, the temple's interior remained bright even when the doors were closed.

Pliny's high sensitivity for the appearance of objects appears also in his reflections upon the relationship between **surface and core,** specifically with reference to the modification of surfaces. He notes, for instance, that walls can be clad in marble and portable objects finished with a surface of gold[118], silver or lead[119]. In the latter case, the metal finish becomes an *ornamentum* of the object in question[120], and through its application, the original surface is hidden – a subject that Pliny mostly comments critically upon. From his perspective, this act represents a manipulation of nature and thus a sacrilege; as a consequence, the classification of the substance itself becomes questionable[121]. Furthermore, he points out that not only can a 'core' material be fully covered, it can also be modified. Marble veneer, for example, may be concealed under a coat of paint, producing the especially attractive visual effect 'variance' (*varietas*). By creating artificially modified marble patterns and thus unnatural (ornamental) surfaces, Pliny suggests that it is possible to transcend the uniformity of natural types of the stone[122].

Finally, Pliny suggests that the aesthetic significance of surfaces leads to the **imitation of materials**, which he considers to be a deception (*fraus*), with respect to both gold and jewels[123]. Nonetheless it is also clear to him that specific aesthetic effects are produced by the artificial manufacture of materials[124]. Artificially produced stones, for example, are noted as possessing a brilliance and shine comparable to that of silver[125].

Functions of Materials

Importantly, Pliny discusses various materials against the background of their usefulness (*utilitas*) for particular purposes[126]. These general ideas are then refined further. For Pliny, **stability, durability and resistance** (*firmitas*) are the most important qualities for materials. These requirements are applicable in the choice of construction materials, in particular, which are to be as weatherproof as possible. He points out that the Greeks, for example, used ceramic bricks extensively due to their durability[127]. However, he argues that the use of brick had long been avoided in domestic building at Rome because brick walls need to be built quite thick in order to support multiple floors[128]. Pliny notes that density and resistance (*spissa firmitas*), as well as hardness (*duritia*), are desirable

115 Plin. HN 36, 61: *non tralucidus*.
116 Plin. HN 36, 196.
117 Plin. HN 36, 163.
118 Jex-Blake – Sellers 1968, 6 f.
119 Plin. HN 34, 5. 162; 35, 2.
120 Plin. HN 34, 163.
121 See Anguissola, this volume.
122 Plin. HN 35, 3: *unitatem variare*; Carey 2003, 109–111. For the artistic realisation of coloured marble patterns in ancient wall painting, see Barry 2020, 80–103; for Roman antiquity esp. 96–103.
123 Plin. HN 33, 125; 37, 128. 197–200. On *fraus*, see Isager 1991, 76–79; Lao 2011, 40.
124 In scholarship, Pliny has been largely received in abbreviated form. He is viewed as the founder of a tradition of thinking that postulates the primacy of nature over the artificial-artisanal production of materials: see Rohde 2015, 129.
125 Plin. HN 37, 98: *aliquando et pusulis argenti modo relucentibus*.
126 E. g., Plin. HN 13, 63; 14, 88; 34, 121.
127 Plin. HN 35, 172: *sunt aeterni*.
128 Plin. HN 35, 173.

qualities when identifying construction timber, even if this makes the material more difficult to work[129]. He also discusses the suitability of different stones for construction in detail. Decisive factors include the stone's capacity to withstand (without cracking) the salt content of the sea air, as well as wind, rain, damp, cold and frost; ideally, fire should not harm it either[130]. Thus, he recognises that the durability and suitability of a material is always dependent upon the climatic conditions, and for this reason different construction materials and techniques are used in warmer and colder regions, respectively[131]. Construction materials and techniques combine to lend a building *firmitas*.

Durability is also an important quality for portable objects. For Pliny, the real value of gold lies in the fact that it cannot be damaged by fire, does not rust, and does not 'wear out' with use[132]. But he also recognises that, depending upon the functional context, other material qualities can be of greater import: due to its hardness, for instance, iron is an excellent material for the production of weapons and tools[133]. As a consequence, he suggests that it can become more valuable than gold in a time of war[134]. Yet because iron rusts quickly, its use-life is comparatively short[135]. Pliny makes similar observations about ceramic vessels, for which durability (*firmitas*) is likewise considered as a mark of quality[136]. He views the reversal of this value as evidence for decadence, noting that the value of crystal vessels is consequence of their fragility (*fragilitas*). The latter instance constitutes a particularly clear expression of *luxuria*: *hoc argumentum opum, haec vera luxuriae gloria existimata est, habere quod posset statim perire totum*[137].

The **capacity to be processed** is another important quality of materials, according to Pliny. Thus, construction materials must not only be hard and weatherproof, but also be easy to work with. He points out that round stones are therefore quite unsuitable for construction, even if they are very hard[138]. With respect to metals, gold is again distinguished by Pliny for its malleability[139] and the great variety of processing possibilities that it offers[140]. It can be worked into virtually any form, he says, including thin sheets (for gilding), metal plates and even gold thread, which can be used for the weaving of cloth[141]. Iron, for its part, combines a great capacity for processing with hardness, which is achieved by creating iron alloys in combination with other metals[142]. Conversely, bronze combines malleability[143], stability and shine, making it particularly suitable for the production of statues (including colossal representations of gods, as well as portraits)[144], everyday objects such as lamps and tables, and also architectural elements such as thresholds and columns[145]. Furthermore, Pliny notes, materials may possess qualities that make them appropriate for specific

129 Plin. HN 16, 206 f.
130 Plin. HN 36, 166–168.
131 Plin. HN 36, 186.
132 Plin. HN 33, 59 f. 62; Isager 1991, 64.
133 Plin. HN 34, 138 f. Pliny discusses the concept of 'hardness' only implicitly. Healy (1999, 273) postulates that 'hardness' was not generally a descriptive category in ancient thought. Nonetheless, Pliny (HN 36, 159) describes Siphnian stone as naturally soft (*natura mollissimus*), but also reports that it becomes black and hard (*durescit*) when cooked in oil. *Durus* and *mollis* can therefore be recognised as two of this stone's material qualities.
134 Plin. HN 33, 1.
135 Plin. HN 34, 141.
136 Plin. HN 35, 161 f.
137 Plin. HN 33, 5: 'It came to be deemed the proof of wealth, the true glory of luxury, to possess something that might be absolutely destroyed in a moment'.
138 Plin. HN 36, 168.
139 Plin. HN 33, 59. 61.
140 Healy 1999, 272.
141 Plin. HN 33, 61–63; Healy 1999, 288–293.
142 Plin. HN 34, 94. 144. 156.
143 Bronze acquires malleability through (among other things) the ductility and low melting point of the copper it contains. These qualities of bronze were praised repeatedly by Pliny and also brought into comparison with other metals (Plin. HN 34, 5. 46. 94. 97): see Healy 1999, 301–305.
144 Isager 1991, 80–103.
145 Plin. HN 34, 11. 13–17. 20–32. 39–45.

uses. Silver is well-suited for the production of mirrors, for instance, because it not only shines, but also reflects images: *est natura mira imagines reddendi, quod repercusso aere atque in oculos regesto fieri convenit*[146]. The form of the mirror – whether convex, concave or flat – determines the size and shape of the reflected image[147].

Pliny names a countless number of these specific material functions (we need only recall the list of substances used in medicine) that do not need to be further elaborated here. The fundamental idea remains nonetheless the same: that specific materials are particularly well-suited to specific uses.

This Volume

The preceding analysis of ancient sources links the theoretical concepts of materiality to the ancient world and helps to sharpen the phenomena that will be examined in this volume. With regard to aesthetics, the focus is on the sensual qualities of materials – specifically on their surfaces. The various contributions will address materials' appearance as well as their intentional display and performance. Consequently, the colours, visual effects and textures (as well as specific textural effects such as luminance and shine) that Pliny characterises in so many facets are particularly relevant. The camouflaging of surfaces will also be emphasised. Architectural structures, for example, can be hidden by revetment (for example, veneers that simulate marble or stucco that covers the walls), while object surfaces can also be modified (gilded, for instance). In these cases, there are tensions between 'core' and 'surface' or 'above' and 'below' that can be addressed. Such interplay becomes particularly interesting when the original surface remains partially visible. Imitation, the third important aspect of material, is also important, as it introduces an artificial and often ornamentalised material aesthetic, thereby creating a value of its own.

The semantics of materials are the result of social negotiations. When dealing with contexts from antiquity, this conventional meaning can be approached through an analysis of written sources. But such analysis provides an isolated and ideologically/conceptually impregnated view. Alternatively, we may approach (basic) semantics via the material's actual use in and for specific contexts. It is then the contextual embedding that permits a semantic analysis, not only from a chronological and geographic perspective, but also with respect to specific building types (including locations within) and in combination with other visual elements. As a consequence, contrasts between relative categories such as new/old, local/foreign, traditional/innovative and cheap/expensive can shed further light onto particular materials and their meaning.

In addition to aesthetics and semantics, usability (*utilitas*) is one of the central qualities of a material. The choice of specific materials must meet basic functional requirements, and thus the contributions in this volume will address the ways in which different needs might compete with one another. Material choice also reflects the prevailing expectations associated with an object or a space. In the case of huge vaults, for instance, architectonic form is related directly to a particular material: *opus caementicium*. Consequently, the efficacy of the material is implicitly displayed even if it is not visible. A weapon produced in a material that augments its destructive potential represents another clear example. However, material logic can be undermined for specific aesthetic, semantic-communicative or economic reasons. Glass vessels privilege aesthetics and enjoyable taste over durability (*firmitas*), and here the fragility of the material enhances its social value.

All three aspects – aesthetics, semantics and function – are integral to the contributions presented here, although with differing levels of emphasis. Naturally the materials employed, their

146 Plin. HN 33, 128: 'Still, the property of reflecting images is marvellous; it is generally agreed that it takes place owing to the repercussion of the air which is thrown back into the eyes.'
147 Plin. HN 33, 128–130.

technical treatment and their function depend upon the context and the media involved. This volume makes a basic distinction between 'material spaces' (that is, the architecture that surrounds us) and portable objects, but in the comparison of these two media contexts, overlaps and entanglements always arise.

Monika Wagner starts the book by introducing a modern case study: the Barcelona Pavilion designed by Mies van der Rohe. This building provides a model for the analysis of material and surface, as well as surface properties and their semantic connotations. Here, marble and glass were employed to create different gloss and shine effects. In the historical context of the 1920s, these visual effects not only met the taste of the time, but also functioned as 'social equalisers'. Based on a large quantity of quality-source material, this contribution sets out the methodological framework for the entire volume.

Anna Anguissola's contribution transposes Wagner's approach to antiquity, focusing on the aesthetic and semantic properties of gold and gilded surfaces discussed in Pliny's *Naturalis historia*. Gold is typically analysed in terms of the tension between its economic value, functional and aesthetic properties (for example, durability and brilliance) and social meaning (for example, appropriateness, decency, restraint, lavishness). Pliny blames the increased interest in the material's economic value for the loss of art's relevance in Roman society. Gilding, which disguises the 'original' surface and alters the natural qualities and material integrity of an object, lies at the heart of this problem. The article thus broadly embeds the *Naturalis historia* into discourses concerning material semantics and relationships between a series of oppositions: core and surface, essence and appearance, nature and art, value and effect.

The papers that follow focus on material aesthetics in architectural spaces. Each contribution has chosen a specific building material as its starting point. Through a close reading of visual properties, these phenomenological studies unpack different aesthetic strategies that come into play, producing some important new revelations regarding the performance, imitation and camouflaging of surfaces.

Tobias Busen examines the design of construction elements that were intended to be covered by stucco during the final stage of a building process. Despite their later disappearance, these raw structures still sometimes received a basic 'aesthetic' treatment – an effect that could only be perceived while construction was underway. Such a strategy is apparent in the ornamental use of *opus reticulatum* and the design of 'window wall' in the Casa del Citarista at Pompeii. The latter was built using faux *opus africanum* in an attempt to convince viewers of its antiquity. Thus, even basic building materials had a significance beyond functional necessity, becoming an important medium for communication during construction.

Simon Barker examines in detail the marble revetments that Pliny so vividly rejects. Marble facing became one of the most valuable forms of wall decoration in central Italy during the Late Republic and the Early Imperial period. Although the prestige associated with this (rare) material perhaps motivated property owners to use this form of decoration initially, the multisensory effects created by marble, especially in its interaction with light and water, became increasingly desirable over time. Aside from its visual appearance, the sounds produced by marble and its palpable coolness became important aspects for the perception of this material.

Dennis Beck's study of polychrome marble columns in monumental public buildings shows that these decorative architectural features appeared more frequently from the Augustan period onwards. In contexts such as the Temple of Apollo Sosianus or the Forum Augustum, the use of coloured marble generated new aesthetic effects, playing with homogeneity and variety. Marble building elements (where structure and surface material coincide) and cladding (*opera sectilia* on floors; veneer on walls) interacted, predominantly in interiors but also on façades. Marble was most commonly employed in 'perceptual zones', i. e., the lower third of a building. The fluting and polishing of marble columns further enhanced the visual effects they produced. Beck's paper shows that the material properties of marble were adopted for specific decorative strategies.

Jessica Plant examines Roman stuccoed ceilings, which were a highly versatile surface medium within Augustan domestic contexts. Stuccoed ceilings could make reference to underlying architecture, but they could also obscure it or even create a fictive setting. Beyond this interplay of surface and structure, the surface itself took on a performative role, becoming a medium with the potential to generate atmospheric effects. The common white or cream colour of stuccoed ceilings (in the Villa della Farnesina, for example) suggests solidity, while also producing an airy effect. The plasticity of these ceilings creates light and shadow effects, producing a three-dimensional quality that often contrasts with the two-dimensional wall-paintings positioned below. By introducing picture panels, stuccoed ceilings also contributed to the semantics of a room, while the figural images themselves continued the visual play. Stuccoed ceilings thus enlarged the pictorial space of a room both physically and conceptually.

Referring to the concept of an 'aesthetic cloud', **Arne Reinhardt** compares two very different types of architectural terracotta: high-quality relief slabs of the Campana type, which date to the Late Republic and Early Imperial periods, and bichrome brick façades of the 2nd century A.D. He questions the view that terracotta bore patriotic and traditionalist connotations, instead emphasising the specific aesthetic effects that the material could create. In the case of Campana plaques, this aesthetic varied significantly, since they could be left bare, painted or stuccoed and painted, with each choice also having an effect on the plaque's figurative imagery. During the 2nd century A.D., a group of *mausolea* broke with the established convention of hiding terracotta and brickwork under layers of plaster and paint. The artificial interplay of patterns, colours and polish observed on the exteriors of these buildings can be interpreted as an entirely new expression of this material.

The next two papers build on the performance and social use of building materials by focusing upon their meaning. Here material semantics emerge from the tension between the functional appropriation of a given material and its social esteem.

In contrast to other contributions in the volume, **Dominik Maschek** does not choose a reception aesthetic approach. He claims that reflections on semantics should not be based on literary sources such as Pliny or the potentially manifold perceptions of viewers, but rather on the pragmatic long-term use of materials for prominent public building projects. He argues that this practice must be based on the aesthetic and semantic expectations of the client (meaning his/her vernacular knowledge) and an expert understanding of the (assumed) functionality and workability of materials.

Matthias Grawehr provides a case study for the pragmatic use of a semantically loaded building material: travertine. Travertine was introduced to Rome at the end of the 2nd century B.C., and during its initial fluorescence the material was typically covered under a layer of plaster. It was not until the Augustan period that exposed travertine appeared, and by the Flavian period it had become quite popular, possibly in reaction to the abundant use of marble and other luxury materials during the reign of Nero. According to the criteria of Vitruvius and Pliny, who emphasise the qualities of *firmitas* (endurance) and *utilitas* (workability), travertine was not the ideal building material. But the stone's local availability, as well as its popular semantic associations (it was considered to be 'solid' and 'reliable') made it more attractive during the reign of the Flavians.

The contributions in the book's final section explore the materiality of objects by focussing on the interdependence of aesthetics, semantics and functionality. The first two contributions, from Adrian Hielscher and Ellen Swift, discuss both the interdependency and tension between the aesthetics of a material, its function and its social use.

Adrian Hielscher's case study of four-legged marble tables (*mensae*) from houses in Pompeii examines the relevance of material to an objects' form and function, as well as its aesthetics and semantics. Marble, a fragile material, is technically unsuitable for the production of these tables, which were originally made from wood. Above all, regarding the utilisation possibilities of *mensae* marble lends tables a heaviness (in comparison to light, mobile furniture). Occupying the centre

of the atrium, *mensae* were used to perform actions and to stage objects. Their aesthetic results from the interplay between their linear shape and the specific qualities of the marble (for example, its opacity or translucence). The social meaning of these tables in Pompeian *atria* blurs the line between 'domestic furniture' and 'public object'.

Ellen Swift analyses vessels made of glass, metal and organic materials. Despite its fragility, glass was used to create food and drink containers due to its neutral taste, its transparency, and its workability, the latter encouraging the production of designs incorporating spectacular forms and colours. The opaque character of metal vessels, on the other hand, could be used to surprise the consumer with an image that only became visible when the vessel is emptied. The third category, organic vessels, possessed a specific taste and smell, as well as a characteristic weight and tactile temperature. With respect to this latter group, a relevant point for all object categories becomes evident: all the senses were needed to fully experience the material characteristics of a particular object.

In **Jörn Lang's** phenomenological discussion of Roman cameos, the aesthetic staging of the material comes to the fore. The natural material qualities (*natura*) of a precious stone and the intervention of human workmanship/design (*ars*) are merged in cameos to create a unique visual appearance. The material's aesthetic idiosyncrasies, such as colour, texture or shape could prefigure the artist's approach to producing the decoration. Literary sources tell us that nature could even 'become' art as a stone's natural features could be 'seen as' an image. In the case of agates, this dynamic is reversed, and art is used to change the 'natural' appearance of a stone.

The contributions by Benjamin Engels and Manuel Flecker address a specific aspect of material: intermateriality. Both turn away from the simplistic concept of skeuomorphism and refer to a concept of intermateriality that can be divided into three different modes: material interaction (such as the combination of materials), material transfer (of one material into the appearance of another) and material interference (creating a new aesthetic).

Benjamin Engels chooses a specific material group to discuss transmaterial modes of design: stone urns that imitate wickerwork. These fall into two chronological and regional groups: basket urns from Rome dating to the Late Republic and Early Augustan period; and the 'Aquileia group', produced mainly during the 1st century A.D. The urns are distinguished by differing degrees of proximity to and divergence from basket prototypes. While some marble baskets (exclusively from Rome) appear to invest in a naturalistic *mimesis* of the organic prototype (sometimes even mimicking weaving faults), others (the entire 'Aquileia group') transfer the surface texture into an ornamental order. The urns thus oscillate between a three-dimensional image-object and an ornamented functional object (i. e., an urn) in their own right.

Manuel Flecker broadens the perspective by analysing the phenomenon of intermaterial relationships between different genres of material culture (marble objects, Arretine sigillata, pottery, cameo glass, glazed ceramics) from a diachronic perspective (2nd century B.C. – 1st century A.D.). Each group of materials exhibits specific dynamics in its play with intermateriality. Early marble craters and candelabra incorporate characteristics from toreutic models and fuse them into something new. Arretine sigillata, with its sharp edges and figurative scenes, makes reference to silverware, even though the former was often produced in alterative shapes and larger sizes. From a broader historical perspective, the observations made by Engels are confirmed: references to specific archetypes lose importance over time in favour of a freer adaptation that takes into account the inherent laws of the object group.

All the contributions in this volume bring material and its decorative potential to the fore. The use of particular materials is a result of their (sometimes competing) functional, aesthetic and semantic (communicative) qualities, all of which were highlighted in the colloquium and appear throughout this book. Intentional use (producer's perspective) and perception (perceiver's perspective) are interwoven components of a cultural and social network, and mutually define each other. It becomes evident that materials, just like forms, ornaments and images, are a significant and multi-layered constituent of Roman *decor* and design.

In this sense, materiality (as a specific quality of things) is also subject to the concept of *decorum*, or 'appropriateness', as explained by Vitruvius[148] and his general ideas on *decor* are applicable to the function, semantics and aesthetics of materials, in particular. In terms of functionality, building materials must meet static requirements and be able to withstand various weather conditions (Busen), while glass is considered an appropriate material for the production of tableware because of its sensorial neutrality (Swift). However, this functionality is often undermined by aesthetic preferences and social messages – as in the use of (comparatively soft) marble to decorate buildings (Grawehr) or intricate tables (Hielscher). Such interferences of functional, aesthetic and semantic concepts are particularly evident in the case of transmaterial designs (Engels; Flecker). Furthermore, material appropriateness also becomes apparent in the aesthetic staging of specific material qualities: making marble columns shine (Beck), highlighting the visual qualities of precious stones (Lang) or staging the effects of stuccoed ceilings (Plant). However, it has also become clear that the Roman practice of decoration included a predilection for artificial material effects, such as the imitation or transformation of materials (Lang). It is hardly surprising that faux materials and/or incompetently amended surfaces were criticised as inappropriate (Anguissola). Perhaps most importantly, appropriateness is defined by the (historically changeable) social use of materials. This idea has been discussed intensively in the critique of luxury (Anguissola; Barker). Furthermore, changes in social use become apparent in the appearance of marble first in the public and then in the private realm (Beck; Barker), the demonstrative use of travertine in the Flavian period (Grawehr) and the use of terracotta as a building material (Reinhardt).

Overall, the reflections on the aesthetics, semantics and function of materials presented in this volume are to be understood as a first step towards a cultural history of material that is yet to be written.

Annette Haug
Christian-Albrechts-Universität zu Kiel
Institut für Klassische Altertumskunde/Klassische Archäologie
Johanna-Mestorf-Str. 5
24118 Kiel – Germany
ahaug@klassarch.uni-kiel.de

Adrian Hielscher
Christian-Albrechts-Universitat zu Kiel
Institut für Klassische Altertumskunde/Klassische Archäologie
Johanna-Mestorf-Str. 5
24118 Kiel – Germany
hielscher@klassarch.uni-kiel.de

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148 Haug 2020; for a summary, see Haug 2021,2: 'Form should relate to content, individual decorative or architectural features should fit the appearance of the whole, decoration should be in accordance with traditional concepts of *decor*, architectural spaces and their *decor* should refer to the natural setting (in doing so they should match with modes of use and perception) and finally *decor*-spaces should meet the social needs of their users.'

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Monika Wagner

Surface Matters: 'True' and 'False' Gloss in Architecture

Abstract: In my contribution I examine the interaction of two different materials, marble and glass, taking the example of a famous building of the so-called 'classical modernism', Mies van der Rohe's Barcelona Pavilion of 1929. The gloss of traditional marble was associated with the pomp, splendour and representation of the old regimes and was rejected by representatives of 'Neues Bauen'. In Modernism it appeared as a false lustre. In contrast, the gloss of modern, industrially produced crystal glass, the large-scale use of which was accompanied by new building methods, was charged with the utopianism of a democratic society. This contribution shows what the combination of conflicting concepts of gloss was able to achieve in a specific historical constellation. True gloss and false gloss were less a question of the polished materials than of the socio-political semantics ascribed to them.

The examination of a single avant-garde building from the 20th century in the context of a book on Roman archaeology might seem rather strange. However, an iconic building such as Mies van der Rohe's Barcelona Pavilion may serve as a model for studying the formation of material semantics. The pavilion, in which nothing was exhibited, was created for the World Fair in 1929. As an exhibit in and of itself, the pavilion programmatically staged the glossy surfaces of two completely different materials: marble and glass. In order to reconstruct the contemporary significance of these materials, I will examine their provenance and manufacturing, as well as their traditional uses; I will look also at their contemporary contexts, and analyse the importance of gloss as a social equaliser in the 1920s. By taking these steps I will explore the reception and semantic ascriptions of the famous building and take a brief look at its later life. But first I would like to make a few remarks regarding material, surface and gloss.

Material: To begin with, I do not consider materials to have intrinsic meaning. Rather, every material possesses certain potential, which stems from its properties – hardness or softness, heaviness or lightness, flexibility or rigidity, to name but a few examples – and it is these properties that make the material suitable for particular purposes. But sometimes this potential is ignored. Even the functionality or suitability of a material's properties might not be the deciding factor in its usage. Marble, for example, is by no means best suited for statues, though it has been used for precisely this purpose for thousands of years. Translating bronze statues into marble often required an extra physical support, since the material is not sufficiently resilient to create stable standing figures. But strangely enough, this has not led to aesthetic criticism. Apparently other characteristics of the marble – its good workability, its shine when polished, its translucent qualities or colour – were more relevant for far-reaching aesthetic ascriptions, so that marble became the most famous material used for sculptures.

Material as a general category of analysis has been neglected for a long time in the humanities on account of the privileging of form[1]. Although the long-standing opposition of form and material is often dismissed as outdated today, its longue durée still has an impact[2]. However, today's materials are probably more at odds with ubiquitous reproduction techniques, which translate their physical qualities into sheer visibility, while their somatic properties – their tactility, smell or temperature – fall by the wayside.

1 Panofsky [1924] 1985.
2 Wagner 2013, 38–67.

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As new synthetic materials were developed during the process of industrialisation, 'truth to material' was postulated[3]. The idea was connected with issues of style and served to seal off the new, castable materials which, like vulcanised rubber, the 'monkey among useful materials'[4], could take on any possible shape or colour. New questions arose in the 1960s, when contemporary artists programmatically neglected form in favour of material. Many of them focused on the effects of gravity, worked with predominantly flexible materials and staged their materials' agency[5]. It was precisely during this period that the architectural historian Günter Bandmann published two inspiring articles on what he termed the 'Ikonologie des Materials' (iconology of materials), neither of which received much attention before the 1980s[6]. Since then, the usage and semantics of individual materials has emerged as a topic in art history and cultural history, and their transformations, interactions and respective signification have been intensely investigated in various disciplines[7]. Moreover, material as a category – unlike style – has provided a link for transcultural studies.

Surfaces were considered negligible and superficial for an even longer period. Although Gottfried Semper made surface a subject of the practical arts, it gained little attention before the advent of postmodernism. The subject of surface has only recently emerged, especially in cultural and architectural theory[8]. Surfaces seemed superficial in relation to something like the essence or core of an object. Nevertheless, surfaces have central communicative functions. Through surfaces we relate to the world. As John Ruskin put it in his 'Stones of Venice', surfaces store knowledge about nature and mankind[9]. Like materials, surfaces also communicate aesthetic codes that regulate social inclusion and exclusion. They create atmospheres and indicate what Erving Goffman called the 'sense of one's place'[10].

Gloss (or shine) is neither a material nor a surface. Gloss is ephemeral, unstable and fluctuating[11]. It detaches itself from physical things, although it remains bound to their surfaces. The agency of gloss depends on light[12]. With light, it changes the appearance of the materials, embedding them in their temporal and spatial contexts. Gloss is an instantaneous phenomenon oscillating between the eye of the beholder and a reflecting surface. Although water surfaces or the moist leaves of plants shine under light, most shiny surfaces are not simply the result of natural properties of materials or objects. Timber, stones and even most metals do not shine by themselves, but rather their shine is produced by smoothing and polishing. Such shiny surfaces store labour, which often increases the value of the object in question. In the case of Jeff Koons' controversial sculptures, to mention one extreme example, the polishing of the stainless steel to a high gloss surface takes up to 10,000 hours of skilled craftsmanship[13].

Cleaning: Glossy surfaces need care; gloss calls for constant renewal. Only under these conditions is gloss, as Walter Grasskamp put it so graphically in his 'Anatomy of Gloss', a 'promise of social interaction'[14] with things.

These factors – materials, surfaces, gloss and its maintenance – are reflected in Jeff Wall's lightbox transparency entitled 'Morning Cleaning, Mies van der Rohe, Barcelona', from 1999. The artwork (Fig. 1) presents a photographic slide of the reconstruction of Mies van der Rohe's iconic

3 In the German discourse the term 'Materialgerechtigkeit' (material justice) was used: see Rottau 2012.
4 Semper [1860] 1977, 112.
5 Rübel 2012.
6 Bandmann 1969, 5–100; Bandmann 1971, 129–157.
7 See Kemp 1975; Lyotard 1984; Gumbrecht – Pfeiffer 1988; Raff 1994; Didi-Huberman 1999, 1–29; Ingold 2007; Wagner 2013; Wagner et al. 2016, with comprehensive literature.
8 Leatherbarrow – Mostafavi 2002; von Arburg 2008; Bruno 2014; Wagner 2018; Rathe 2020.
9 Ruskin 1904, 38 f.
10 Goffman 1951, 297.
11 See Grüner 2014, 446–448 on gloss in Vitruvius. I owe the reference to Barry 2020 to Annette Haug.
12 On the light in the Barcelona Pavilion, see Quetglas 2001.
13 Wagner 2019, 178 f.
14 Grasskamp 2012, 39–42.

Fig. 1: Jeff Wall: 'Morning Cleaning, Mies van der Rohe, Barcelona 1999', lightbox transparency.

Barcelona Pavilion, which was completed in 1986. With the window cleaner at his daily work in the pavilion's central space, 'Morning Cleaning' reveals a working process normally completely excluded from the genre of architectural photography[15]. Wall's picture highlights the difference between the clear transparency and soapy glass of the windows, so that transparency is made visible and at the same time raised to a central feature. In any case, the work of the window cleaner, which erases itself if successful, is essential to maintaining the shine and transparency of the surfaces. Thus, Wall's photograph emphasises the conditions under which Mies van der Rohe's 'built manifesto'[16], and modern glass architecture in general, are to be viewed.

Materials for Mies van der Rohe's Barcelona Pavilion

Originally constructed to do nothing more than represent Germany at the Barcelona World Fair in 1929, the flat-roofed pavilion was erected on an open plan. Transparent, partly tinted, and frosted glass panels in combination with polished marble walls, bright travertine floors and two water basins offered a fluid interplay of reflections and refractions between interior and exterior spaces (Fig. 2). The combination of traditional marble and modern plate glass surfaces was extremely unusual for a modern architect in the Weimar Republic. However, the materials, so completely different in appearance, production, usage and semantics, are united by the sheen of their surfaces.

While the ubiquitous Roman travertine floor and the plateau for the pavilion did not attract much attention, the huge marble walls were considered spectacular features (Fig. 3). In the Werkbund-magazine 'Die Form', Justus Bier's review underlined Mies van der Rohe's material regime, pointing out that the preciousness of the selected marbles increased from the exterior to the interior of the building. The dark green marble wall in the water courtyard 'is the simplest, which is surpassed inside by a more noble one [...] of verde antique. The most precious wall is placed inside: a

15 Wagner 2013a, 193–219; Dobbe 2017.
16 Wagner 2013, 196.

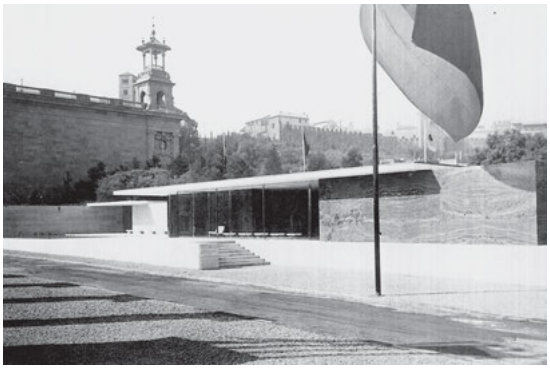

Fig. 2: Mies van der Rohe: Barcelona Pavilion, 1929.

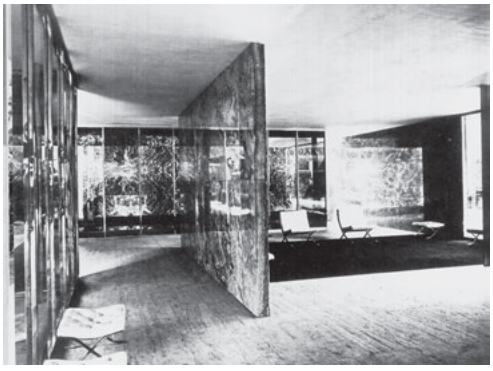

Fig. 3: Mies van der Rohe: Barcelona Pavilion, 1929.

wall of honey-yellow onyx dorée, with a wonderfully animated veining, the only marble block of this type and size found in Europe'[17]. In fact, Mies, who was the son of a stonemason, had carefully selected the different kinds of marble: the dark green lively-veined marble came from the French Alps, the verde antique from the Greek island of Tinos, and the honey-coloured onyx dorée from the Atlas Mountains in Morocco[18]. As the architect later recalled, after searching for some time, he discovered the huge block of onyx during the winter of 1928 in the warehouse of a Hamburg importer[19]. The fact that the onyx was first transported all the way from North Africa to Hamburg before it went back to the Mediterranean area indicates a well-developed transport system and a flourishing trade network.

Due to the time constraints under which the Barcelona Pavilion was being constructed, it was pointless to look for a marble block in a quarry. Mies van der Rohe knew that 'you cannot move marble in from the quarry in winter because it is still wet inside and would easily freeze and break into pieces'[20]. In order to determine the colour of the marble, which is difficult to predict in an unprocessed state, Mies had a piece cut off and polished on site before he bought the extremely precious block[21].

In the Barcelona Pavilion the onyx was not used for cladding a masonry wall. In accordance with the steel construction of the building the slabs were mounted full-height on a metal frame[22]. Originally the honey-coloured and partially semi-transparent veins of the free-standing onyx wall were not arranged ornamentally, as in the reconstruction. Rather, they produced irregular cloudlike shapes, much like a gigantic abstract painting. The difference between the two designs shows how much the reconstruction of surfaces made from natural materials can vary, even in cases like this, where the stones have the same origin.

Marble in Modernity

Marble is rarely found in the modern architecture of the early 20th century. Due to its history of use, marble was associated with the pomp of the old regimes' architecture of power and the overloaded historicism of the new industrial barons. This was exactly what 'Neues Bauen' in the young

17 Bier 1929, 424 (all translations from German by author).
18 Pavel 2006, 24.
19 Carter 1999, 23.
20 Carter 1999, 23.
21 Krohn 2014, 76.
22 The height of the building was twice that of the onyx block: see Tegethoff 1981, 76; Pavel 2006, 24.

democratic nations aimed to overcome. However, an important forerunner for the use of marble in a modern building can be found in the work of the Austrian architect Adolf Loos. Loos created unusual spaces with interesting material combinations even before the First World War, when Austria and Hungary still formed a dual monarchy. His most significant work is the famous Looshaus in Vienna, completed in 1912. The façade of the building's residential and commercial floors is distinguished by a radical split-level surface (Fig. 4). While the upper floors display a completely unadorned white plaster surface, lacking the stucco ornaments so typical for Vienna, the basement and mezzanine are elaborately clad with cipollino marble. The architect emphasised that he had travelled all the way to Euboea and managed to get the ancient quarry of the 'most beautiful and splendid of all marble types' reopened for the first time 'since the fall of Rome'[23]. With the cipollino marble he ennobled the elegant fashion shop located on the ground floor and the related tailoring shop on the mezzanine, the latter being the very epitome of the ephemeral and transient. Cladding a commercial shop front with cipollino marble, a material highly esteemed since antiquity, and combining it with the completely flat plaster façade provoked a public scandal in imperial Vienna[24].

Throughout its long history of use, marble has repeatedly been judged as a luxury material when employed in private houses, and complaints about this phenomenon appear as far back as Republican Rome[25]. In his *Naturalis historia*, Pliny the Elder blamed 'the art of cutting marble into slabs'[26] for the decadent use of the material in public. Cladding allowed the upgrading of low-ranking brick or clay buildings, so that the shiny marble surfaces made an inappropriate claim in the social system, as Pliny feared. He thus transferred the hierarchical order of the materials onto the order of society. The special reputation of marble was recognised up to the 17th and 18th centuries, when architects and art theorists such as André Felibien or Marc-Antoine Laugier emphasised the importance of marble for 'maisons des princes et nos eglises'[27]. As late as the mid-19th century, Friedrich Theodor Vischer (as a professed democrat) demanded that marble be reserved for the highest tasks of architecture[28].

Over time, the cladding of a building with stone slabs became a widespread phenomenon, which was seen on the one hand as an 'upgrade', and on the other as fraud and imitation. In keeping with Semper's 'principle of clothing' (Prinzip der Bekleidung), which Loos also advocated, a marble veneer was considered 'appropriate to the material' (materialgerecht) – to use the much-discussed term from around 1900 – only as long as the cladding was made evident. On the façade of the Looshaus, the architect clearly marked the cipollino as a veneer by demonstrating that he did not use the stone as a load-bearing material (Fig. 5). This is expressed by the horizontal steel beam positioned over the four columns, which marks the modern construction of the building and indicates that the solid cipollino columns are functionally unnecessary. This is likewise indicated by the vertical veining of the marble. As a sedimentary material that develops in stratified layers, marble can only be loaded when laid horizontally. In the Looshaus, the cipollino veneer and the purely symbolic character of the marble columns thus served as a 'visible mask' for a commercial fashion salon.

The urban context made the provocative nature of the façade all the more obvious: Loos' building is located directly opposite the baroque Habsburg residence, with its enormous granite basement, stone ornamentation and inserted niche-figures. On the upper floors of the Looshaus, where apartments are located, the simplicity of the façade emphasises the modesty of bourgeois privacy

23 Loos 1910, as quoted in Explora 2017, 19. In fact, the quarry had been reopened in late 19th century.

24 Rukschcio – Schachel 1987, 152–157.

25 Wallace-Hadrill 2008, 356–440; Lapatin 2015, 321–342. For further discussion of the issue of 'marble luxury', see Haug – Hielscher, Barker and Beck, this volume.

26 Plin. HN 36, 52.

27 Laugier 1755, 101.

28 Vischer 1852, 212.

Fig. 4: Adolf Loos: House at Michaelerplatz, Vienna, 1910–1912.

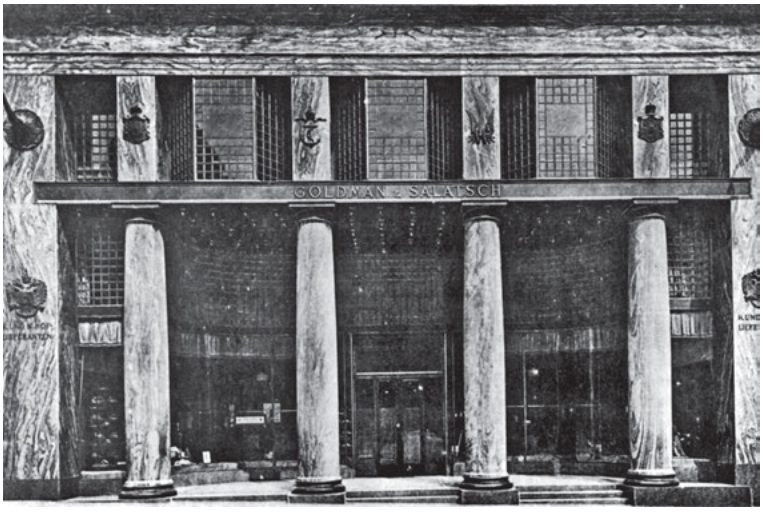

Fig. 5: Adolf Loos: Marble columns of the House at Michaelerplatz, Vienna, 1910–1912.

according to the architect's notorious dogma that 'ornament is a crime'[29]. The natural ornaments in the cipollino marble, however, communicate the claim that bourgeois commerce should be publicly represented. Similar to the criticism in Republican Rome – although for different reasons – here too marble was considered socially inappropriate. It seemed a 'false gloss' that was considered publicly disrespectful to the social order of the Habsburg Empire.

Modern Glass

In the Barcelona Pavilion the prestigious marble walls were embedded in shiny glass panels. While the marble and onyx slabs were the result of thorough, and delicate, traditional craftsmanship, the production of the plate glass was both industrialised and highly standardised. Glass was the future material par excellence in the building industry of the 1920s[30]. In the Barcelona Pavilion the different degrees of transparency and the various colours of the glass panels created changing effects, as a critic in the Cahiers d'Art noted: 'some of the glass planes are of sombre and neutral tint, reflecting people and other objects, and what you see through the glass mingles with what you see reflected on it [...] you immediately feel the shock of, I dare say, metaphysical architecture'[31]. The glossy surfaces together with the two reflecting water basins, the chrome-plated steel girders and the chrome frames of the glass panels created a complex fusion of transparency and reflection that seemed to 'dematerialise' the building (Fig. 6), a term that was among the catchwords of the time[32].

Within the physical world, glass came close to the ideal of a 'kind of immaterial matter', a notion which Georg Friedrich Hegel once reserved for light[33]. The horizontal strip windows prevalent in the new architecture made buildings appear to float. Together with the reflections and refractions of the smooth surfaces, the architecture of 'Neues Bauen' seemed to the Swiss critic Sigfried Giedion to be a dematerialisation of the consolidated (Entmaterialisierung des Festgefügten)[34]. Max Eisler saw the buildings 'dissolving into uncertain light effects'[35]. In 1920, Adolf Behne exclaimed with expressionistic emphasis that 'no material overcomes matter as much as glass [...] glass appears to be extra-human'[36]. Behne's bold phrasing allowed associative charging with both spiritual and technological visions, and this is precisely what made glass one of the most commonly discussed materials of the 1920s. Others considered the subject in a manner that was more 'down to earth' than Behne. The architect and Bauhaus director Walter Gropius noted that 'although known for centuries [...] only the technical age with the help of modern fabrication processes brings glass from the stage of a "poetic utopia" into reality'[37]. In fact, the concepts of the 'Neues Bauen' architects were linked directly to (and inspired by) the possibility of manufacturing large, hitherto impossible panels of perfectly streak-free crystal glass[38]. While Semper, who referred to Pliny as the classical authority on material issues, had praised the 'infinite flexibility of glass'[39], in the 1920s the consistent quality of huge quantities of large-sized glass sheets was also of interest. In 1921, Mies van der Rohe himself designed the first high-rise building with a glass curtain wall in Berlin (Fig. 7).

29 Loos [1908] 1962, 276.
30 Waschke 2020, 92–102.
31 Rubio Tuduri in Carter 1999, 24; for the theoretical context of Tuduri's remarks, see Neumeyer 1986, 23 f. No colour photography of the original pavilion exists.
32 Wagner 2018.
33 Hegel [1942] 1985, 15.
34 Giedion 1928, 85.
35 Eisler 1928, 209 f.
36 Behne 1963, 14.
37 Gropius 1926, 159.
38 Dziewior 2005, 15–17; Waschke 2020, 92–102.
39 Semper [1860] 1977.

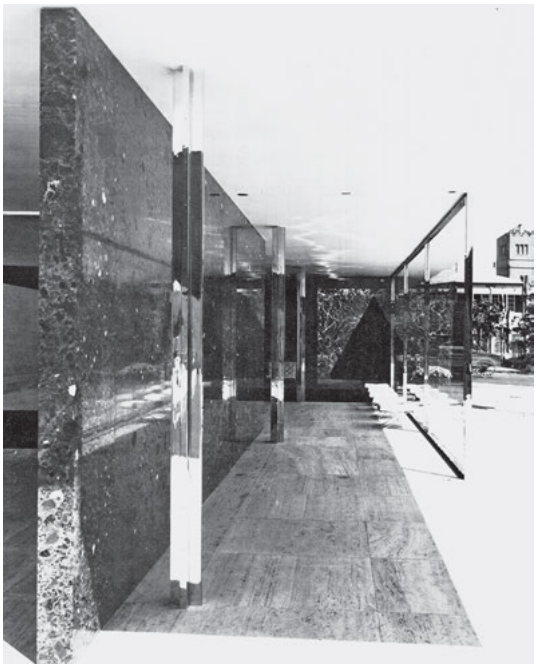

Fig. 6: Mies van der Rohe: Barcelona Pavilion, 1929.

Fig. 7: Mies van der Rohe: Design for a glass skyscraper in Berlin, photomontage, 1921.

Although – or perhaps because – it was never built, the concept of the glass building approximated a visually dematerialised architecture. As the first industrially produced and machine-polished building material, crystal glass promised a hygienic life with light, air and sun. Transparency and shine emerged as the vision of a brighter world.

The Hungarian artist and Bauhaus teacher László Moholy-Nagy even tried to pictorially visualise the sensation of 'dematerialised' architecture. For the last picture of his book 'From Material to Architecture', which appeared in the same year that the Barcelona Pavilion was built, he chose Jan Kaman's photograph of two superimposed negatives of buildings with their architectural structures interacting (Fig. 8). Moholy-Nagy described this permeation of architectural spaces as a vision that future generations might realise[40].

The interaction of real and virtual spaces, already created in the glass room at the Stuttgart Werkbund Exhibition in 1927 that Mies van der Rohe had designed together with his long-time collaborator Lilly Reich, was a prelude to what was achieved in the Barcelona Pavilion. In one of the designs for the building, the envisioned permeation of the glossy and partly transparent surfaces comes to the fore, allowing physical materials and illusionary effects to intertwine indissolubly (Fig. 9). For the visitor, walking through the pavilion was to become an immersive encounter with the interacting surfaces displaying their agency[41].

Gloss in the 1920s

When Mies van der Rohe built the Barcelona Pavilion, shiny surfaces in general had acquired an important social function. The splendour of the 'Golden Twenties' owed nothing to traditional

40 Moholy-Nagy [1929] 1968, 236.

41 In a letter to Lilly Reich, a ministry official reports that people ran into the glass wall and two persons even fell into the water basin: see Dziewior 2005, 69.

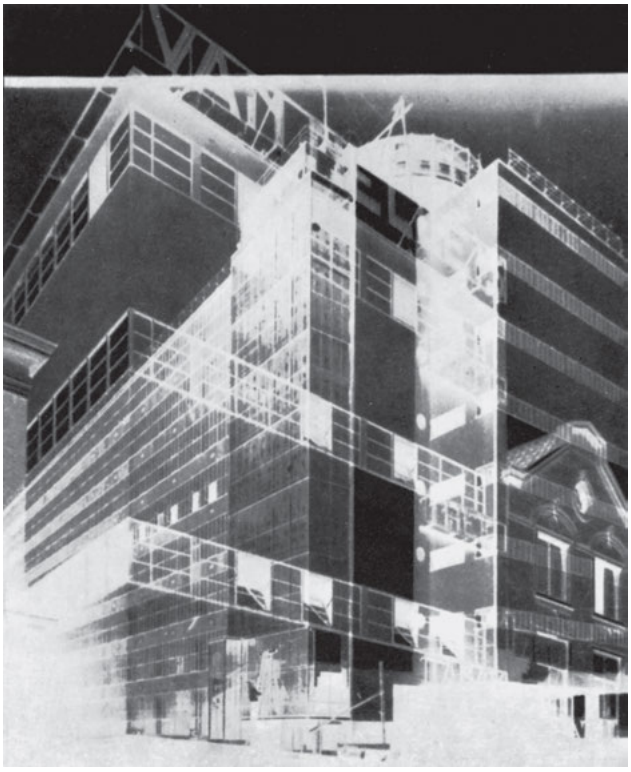

Fig. 8: Jan Kamman: 'Architektur', two superimposed negatives, 1929.

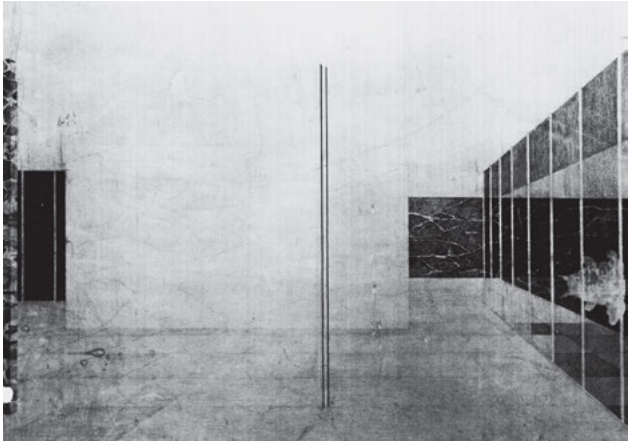

Fig. 9: Mies van der Rohe: Drawing for glass and marble refractions in the Barcelona Pavilion.

material hierarchies, which gold had dominated since antiquity. In the utopian splendour of modern democratic society, the radiant surfaces of new synthetic materials (e. g., Cellon, Bakelite, Ebonite and so on) and cheap galvanised metals outshone the gold of churches and courtyards. The new materials promised the participation of all social classes in the shine[42]. Accordingly, shine permeated every area of daily life: from pomade for fashionable hairstyles, to shiny shampoo, shoeshine and floor polish, from car paint to artificial silk, not to mention all the new appliances with their shiny metallic surfaces like electric vacuum cleaners, hairdryers and toasters. Gloss was impregnated with the pledge of social progress for all[43].

42 Wagner 2021.
43 Maffei – Fisher 2013, 233 f.

Fig. 10: Advertisement for artificial silk, 1920s.

The driving force behind the contemporary euphoria for gloss was the cool aesthetic of the machine. The object of highest desire was the lacquered and metal-armoured car, with no trace of manual labour visible upon its surface. Its immaculate shine was the manifestation of the traceless mechanofacture in an age of 'machine aesthetics'[44]. The automobile seemed to have produced itself. Its surface perfection was a forecast of great things to come, namely the new technology of automation. Gloss was its aesthetic vehicle.

However, too much gloss could be unfavourably revealing, as Irmgard Keun's novel 'The Artificial Silk Girl' (1932) shows[45]. The glitter of artificial silk (Fig. 10) was the embodiment of petty bourgeois glamour and a sign of the social climber unable to afford the more decent 'pure silk'. Although the shiny new material was conceived as a contribution to the vanquishing of old class divisions, its gloss was regarded as 'false' in comparison to the true sheen of pure silk. However, the distinction between true and false gloss collapsed in the face of semi-transparent artificial silk stockings, which conquered western markets in the blink of an eye.

It is within this historical constellation that the glossy surfaces of polished marble and the shiny glass panels of Mies van der Rohe's Barcelona Pavilion reveal their significance. 'Gloss for all' was the socio-economic agenda of the Weimar Republic. Ten years after Germany's defeat in World War I, the German pavilion at the Barcelona World Fair demonstrated the availability of even the most expensive materials from faraway places thanks to flourishing trade and increased economic capacities. At the same time, the pavilion presented the country's industrial aspirations. It

44 Moholy-Nagy [1929] 1968, 13.
45 Keun [1932] 2017.

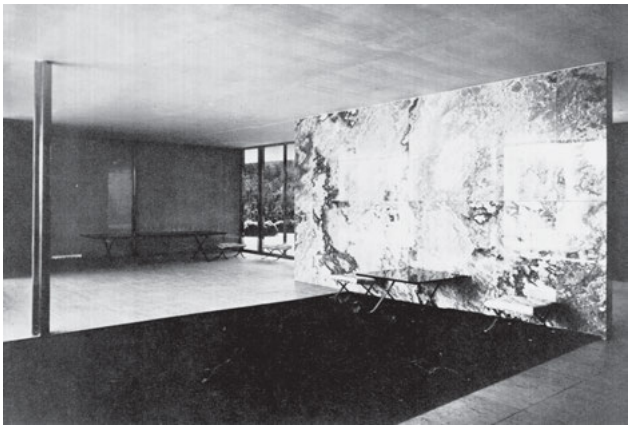

Fig. 11: Mies van der Rohe: Barcelona Pavilion, 1929.

was precisely the combination of industrially produced crystal glass with the precious marbles that reconciled the technical modernity of steel-framed construction with the traditional claim to representation. Continuity and fundamental renewal worked perfectly as an expression of the Weimar Republic, which aimed to balance the social classes. As the German High Commissioner Georg von Schnitzler remarked in his inaugural speech, 'We wanted to show here what we can do, what we are, what we feel and see today. We want nothing but clarity, simplicity, sincerity'[46].

Jeff Wall's 'Morning Cleaning Mies van der Rohe, Barcelona' from 1999 is concerned instead with the later life of the Barcelona Pavilion. The differences between the reconstruction and the original building are most obvious in the pattern on the onyx wall. But the new pavilion also depends on shine and transparency, both of which require constant labour. The focus in Jeff Wall's picture is less on the materials themselves than on the manual work of maintaining their gloss. Wall's photograph shows that the utopian sheen promised by the 1920s cannot arise by itself. It is neither there by nature, nor is it guaranteed by automatic production. Rather, shine must be constantly recreated through perpetual work. In 1929, Walter Benjamin noted that modern glass-iron architecture is strangely resistant to the traces of use[47]. He had the inhabitants and the gradual wear and tear of their habitations in mind, but hardly thought of the dirt left behind by the temporary visitors to the Barcelona World Fair, which deprived the surfaces of their fascinating shine and transparency. In the reconstructed Barcelona Pavilion, the shine is daily re-produced through painstaking removal of all traces of touch. In 'Morning Cleaning' this hidden work becomes visible as an indispensable act that provides the conditions for the perception of the glossy and transparent surfaces that define the pavilion and its numerous relatives.

Mies van der Rohe's Barcelona Pavilion exemplifies the manner in which the aesthetics and semantics of a traditional material can be transferred into a new context. By programmatically inserting marble, which has communicated the splendour of emperors and empires from antiquity onwards, into the transparency of modernity, Mies van der Rohe made the material a signifier for democracy in the 1920s. The precious, freestanding onyx wall is, so to speak, encased in transparency. The material and its traditional semantics are framed by industrially produced glass, which was imbued with futuristic promises at the time of its creation. The vitrification provides a stage for the marble, as if it were a fascinating work of art (Fig. 11). In this way marble, which was bound to authoritarian regimes by its use-history, was rediscovered for the modern age, and in the shine of the glass and marble surfaces these contrasts were reconciled.

46 von Schnitzler 1929, 582.
47 Benjamin 1980, 217.

Monika Wagner
Universität Hamburg
Kunstgeschichtliches Seminar
Edmund-Siemers-Allee 1
20146 Hamburg – Germany
monika.wagner@uni-hamburg.de

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Fig. 1: After Wagner 2018, 159 Fig. 92.
Fig. 2: After Pavel 2006, 21 Fig. 2; c VG Bild-Kunst, Bonn 2021.
Fig. 3: After Pavel 2006, 32 Fig. 11; c VG Bild-Kunst, Bonn 2021.
Fig. 4: After Munch 2005, 35 Fig. 3.
Fig. 5: After Rukschcio – Schachel 1987, 158 Fig. 155.
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Fig. 7: After Scheer 2000, 163, right.
Fig. 8: After Moholy-Nagy [1929] 1968, 236 Fig. 209; c VG Bild-Kunst, Bonn 2021.
Fig. 9: After Pavel 2006, 27 Fig. 5.
Fig. 10: After Wagner 2021, Pl. 2.
Fig. 11: After Tegethoff 1981, Fig. 10, 1; c VG Bild-Kunst, Bonn 2021.

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Anna Anguissola

Ethical Matters: Pliny the Elder on Material Deception

Abstract: This contribution highlights the intellectual dimension of the Roman discourse on materials by discussing the ideological and moral implications of a set of passages from Pliny's *Naturalis historia* dedicated to golden surfaces. In these passages, Pliny explores the ethical implications of golden veneers in interior decoration as well as in the production of vessels and statues both in bronze and in marble. Throughout the encyclopaedia, gold is presented as the foremost 'problematic' substance due to the conflict between its intrinsic, natural qualities and its economic value. By highlighting the inconsistencies in human appreciation of gold, Pliny exploits the potential of materiality to develop his view of the contemporary society, as well as of the Roman political past and present. In particular, Pliny addresses the issue of gilding and, in general, the practice of disguising the material layers of an object in light of his views about memory and technological progress.

The study of decorative systems, defined as environments in which individual elements (such as floors, walls, furniture, sculpture, tableware, etc.) coexist and interact according to prevailing, time-specific principles, requires consideration of the intellectual dimensions of ancient discourses about materials and, especially, the disentanglement of their aesthetic and moral implications. For centuries, historians of Classical art have relied upon Pliny the Elder's 1st-century A.D. encyclopaedia as the foundational text of their discipline. In the dense chapters dedicated to the figural arts, which are clustered mainly in the final five books, Pliny introduces crafts, individual artists and artworks according to the raw natural materials each one utilises. Yet Pliny's interest in the physical and symbolic qualities of materials has so far remained relatively neglected in the scholarly literature, which mostly reflects a centuries-old tradition of reading the *Naturalis historia* as a collection of excerpts about legendary masterpieces and the lives of their makers[1]. Only in recent years have scholars highlighted Pliny's political perspective and begun to understand his statements and narratives about the visual arts as part of a broader discourse on the merits of his Flavian patrons, and of Roman imperialism[2]. While these approaches have greatly advanced our knowledge of Pliny's subject matter and cultural environment, they nonetheless elude questions about the significance of the encyclopaedia's organising criteria and about its engagement with the physical and sensual qualities of artistic materials.

This contribution argues that by considering the ways in which substances and artistic processes are constructed in the *Naturalis historia*, the material and performative aspects of artistic creation emerge not only as essential preoccupations in Pliny's treatise, but also as important tools to construct and explain the author's view of Rome's history and society. Nowhere does Pliny explore this line of thought as consistently as he does in discussing the uses, meaning and value of gold. In the *Naturalis historia*, gold occupies an ambivalent position as the chief unit for measuring the price of all natural and artificial goods, while also being the unsurpassed cause of greed (*avaritia*) and an instrument for extravagance (*luxuria*). In particular, it is through the relationship between gold

1 The bibliography provided in this article makes no attempt to be comprehensive, but rather acknowledges the works to which I have resorted directly for specific arguments or information. Aude Doody provides an excellent account of the extensive scholarly literature on the life and work of Pliny the Elder in a dedicated *Oxford Bibliography* (https://doi.org/10.1093/OBO/9780195389661-0194, October 26th 2020). The indisputable relevance of the anecdotes about artists and artworks within the *Naturalis historia*, which has its roots in the Hellenistic tradition of a discourse about the visual arts constructed as a sequence of increasingly naturalistic achievements, emerges from recent investigations into the topic. See, for instance, Rouveret 1996; Naas 2012; Darab 2014; 2014a; Platt 2016.

2 Most notably, see Naas 2002; Carey 2003; Murphy 2004.

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and other materials – painted plaster, other metals and stone – that Pliny articulates his ethical standpoint, characterising both broader social behaviours and historical individuals in terms of their taste for different substances. I argue that the ethical problem involved in the association of gold with other materials is twofold. On the one hand, economic and aesthetic considerations seem to conflict in Pliny's account of gold, the appreciation of which mainly relies on its price. More modest materials, escaping the trappings of greed, may reflect the artists' creative and cognitive processes more expediently. On the other hand, the taste for disguising less expensive substances under a layer of gold is at odds with both traditional practices and the deference, intrinsic to Pliny's Stoic attitude, towards the unadulterated work of Nature[3]. By investigating Pliny's view on the use of gold in interior decoration, sculpture and gold smithery, I examine the place of artistic materials within the *Naturalis historia's* literary, moral and epistemological fabric.

Gold and Gilding: Value and Deception

The concerns that I have raised about the *Naturalis historia*'s internal hierarchies hinge upon issues of how we understand Pliny's criteria for classifying artists, artworks and their display contexts. Indeed, Pliny's presentation follows a desultory logic, which traces intertwining ethical, political, historical and economical lines of reasoning[4]. In a 37-volume compendium of the natural world, which relies throughout on the notions of *auctoritas*, *dignitas*, *gratia*, *gloria* and *nobilitas* for assessing individual objects, we would expect to find an eloquent account of these concepts, as applied to artworks, artists, techniques and materials[5]. Yet Pliny provides neither an explicit nor coherent description of these elusive qualities and their implications.

Running throughout the encyclopaedia are implicit tensions between the factors that determine an artwork's authority: the intrinsic worth of materials, which is based on features including colour and reflectivity, texture, hardness or malleability, brittleness or durability, and the extrinsic qualities, such as monetary value, historical circumstances, utility or artistic merit. While the account of gems and precious stones in Book 37 relies largely on the evaluation of natural characteristics, in the chapters dedicated to metals, pigments and sculptural stones (Books 33 through 36), Pliny emphasises accessory features[6]. The itemisation of natural characteristics, thus, seems to provide a device for counterbalancing the paucity of other, easier-to-grasp categories, since Pliny could not resort to the taxonomy provided by modern petrography and crystallography. Instead, in the remainder of the treatise the various external factors that account for *auctoritas* provide Pliny with a loose conceptual framework for encapsulating his protean subject. Indeed, Pliny relies heavily on instances of extravagant pricing to organise a hierarchy of artworks, and to help arrange his

3 The word Nature is capitalised here to convey the sense of the natural world in the context of Pliny's work, as opposed to our own modern conception of 'nature'.

4 The hierarchies of substances in Pliny the Elder's *Naturalis historia* are addressed in Anguissola – Grüner 2020.

5 On the concept of *auctoritas* in Roman discourses on the figural arts, see Robert 1995. An insightful discussion of *auctoritas* in the thought and work of Cicero is found in Goodwin 2001.

6 Pliny makes the exceptional status of gems unequivocal. The section opens with a statement that sets these stones apart in the economics of artistic materials (Plin. HN 37, 1). Alone among all substances, gems are so highly regarded on the basis of their visible and intrinsic qualities (*varietas*, *color*, *materia*, *decor*) that it is sometimes considered inappropriate – almost sacrilegious (*nefas*) – to carve them (the concept of the untouchability of Nature's perfect products returns in Plin. HN 37, 28, regarding rock crystal). Required to classify hundreds of precious and semi-precious stones based on optical and physical qualities alone, Pliny grounds his scale of value on three main surface features: transparency, clarity and brilliance. Nouns such as *nitor*, *splendor* and *fulgor*, verbs like *tralucere*, *translucere*, *nitere*, *fulgere*, *refulgere*, *radiare*, *exardescere*, *repercutere* and other compounds like *allucere*, *perlucere*, *collucere* and *relucere* crowd the text. The elaborate description of emeralds is exemplary of Pliny's challenges and of his approach to the description of gemstones and their *auctoritas* (Plin. HN 37, 62–64). The concept of *color* as a means of assessing the quality of a gem is explored by Bradley (2009, 101–106).

subject historically[7]. Nonetheless, he cannot fail to find the evaluation of art based on commercial desirability to be at odds with his Stoic outlook[8]. This antagonistic dimension between competing concerns is occasionally made explicit, as Pliny decries the increasingly prominent interest in economic value as responsible for the degradation of art's position within society, that is, the degradation of its authority (*cum ad infinitum operum pretia creverint, auctoritas artis extincta est*)[9].

Unsurprisingly, Pliny comes closest to actually discussing the relationship between natural qualities and monetary value in the passage where he also discusses the provenance, methods of extraction, technologies and uses of gold[10]. Being the standard of value for all other materials, gold holds a special place in Pliny's construction[11]. He explains that the chief popularity (*gratia*) of this substance (*materia*) has been won not by its colour (*color*), that of silver being brighter (*clarior*) and more like daylight (*magisque diei similis*). Along the same line of reasoning, 'nor is it its weight (*pondus*) or its malleability (*facilitas*) that has led to it being preferred to all the rest of the metals (*praelatum est ceteris metallis*), since in both qualities it yields the first place to lead'. The position of gold in the hierarchies of materials (*causa pretii maior*) depends on the consideration that 'gold is the only thing that loses no substance by the action of fire (*nihil igne deperit*)' and that 'it gets extremely little worn by use (*quod minimi usus deterit*)'. The decisive *natural* property of gold is its durability. This is a treacherous concept in itself, since it pertains in turn to the quality of retaining shape, as well as to its associated economic value. The boundary between intrinsic and extrinsic value is, for this reason, particularly unstable in the case of gold. What really matters about the qualities of this metal is their *reliability* (and thus, the stability of its economic value) rather than their relative *superiority* as compared to other substances.

A further and subtler layer of criticism applies to the practice of gilding, i. e., concealing other substances under a thin layer of gold[12]. In Pliny's view, gilding falls under the category of 'compounds', which constitutes an inherently questionable material classification[13]. The production of a compound is in itself considered to be an extravagant display of luxury, since it entails the manipulation of the products of Nature, which are in themselves perfect. The ideological dimension of such an antithesis between (deceptive) *ars* and (genuine) *natura* is apparent in the types and uses of wood. In this field, extravagance takes the form of a reprehensible taste for veneer; that is, the deceitful act of 'making an outside skin for a cheaper wood out of a more expensive one'[14]. Not unexpectedly, artificial concoctions that undermined the natural relationship between materials and value allegedly had their heyday during the rule of Nero, who, as I will argue in the following

7 On the relationship between *auctoritas* and price in the *Naturalis historia*, see esp. Papini 2020.

8 Pliny's criticism of luxury targets in particular the private enjoyment of artworks and eccentric furnishings. For his criticism of greed and extravagance (*avaritia* and *luxuria*) and its roots in Flavian political culture, see Wallace-Hadrill 1990, 85–92; Isager 1991, 52–55. 70–73; Carey 2003, 76–79; Cotta Ramosino 2004, 251–270; Naas 2006. For Pliny's place in Roman moralising discourse, see Citroni Marchetti 1991.

9 Plin. HN 34, 5.

10 Plin. HN 33, 58–60.

11 See Dauzat in Dauzat – Zehnacker 1999, 169 f.

12 The literature on gilding in ancient bronze and marble sculpture is presented and discussed in Faedo 2020. For an individual case study about the semantics of gilding in Late Hellenistic marble sculpture (the Delos Diadoumenos at Athens, National Archaeological Museum), see Anguissola 2019.

13 The criticism of compounds is clear in Plin. HN 9, 139; 13, 1. 17 f.; 14, 2 f.; 22, 118; 24, 4 f.; 29, 24 f.; 33, 49. Pliny comments negatively about the practice of dipping cloth in two different shades of purple dye (a *luxuria duplex*), as well as the expensive and elaborate metal alloys used in his times (Plin. HN 9, 139: *adulterare adulteria naturae*): see Citroni Marchetti 2011, 181. Perfumes are presented as objectionable compounds of natural odours (Plin. HN 13, 1. 17 f.). This criticism culminates in the passages devoted to medical drugs, overingenious compounds that relied heavily on expensive ingredients imported from the east and from India (Plin. HN 22, 118; 24, 4 f.). The best-known instance of this interest in unnatural compounds is Mithridates' *theriake*, with its 54 ingredients (Plin. HN 29, 24 f.: *excogitata compositio luxuriae*). For Pliny's passages on eastern perfumes and the Mithridates anecdote, see Beagon 1992, 228 f.; Jones-Lewis 2012, esp. 61–66.

14 Plin. HN 16, 232 f.

sections, Pliny depicts as the pivotal example for the 'improper' use of materials. According to Pliny, at that time the taste for counterfeits even extended to the manufacture of wooden panels out of tortoiseshell – an egregious feat of deception. A rare and costly material (the shell of tortoises) was painted so as to lose any semblance of its authentic self (*ut pigmentis perderet se*), thereby imitating the ordinariness of wood, and embracing strategies of illusion that were both visual and intellectual. Wood, which had come to be seen as second-rate owing to its availability, was back in vogue as a fabrication (*modo luxuria non fuerat contenta ligno, iam lignum et e testudine facit*).

These comments highlight a consistent preoccupation with material integrity in the *Naturalis historia*, one that appears to only be explicitly discussed in the encyclopaedia's last book. This book is dedicated to gemstones, exceptional items able to provide 'a supreme and perfect aesthetic experience of the wonders of Nature'[15]. As the perfect product of Nature, gems and other rare stones such as rock crystal defy the bounds and preoccupations of human economy, and do not require engraving or other human intervention to enhance their value[16]. Among the primary concerns pervading Pliny's narrative is the delicate balance between acknowledging Nature's (inviolable) perfection, and the recognition of human ingenuity. In a broader perspective, the negative comments on corrupting substances (such as gold) and on deceptive 'unnatural' practices (such as gilding) are rooted in Pliny's wholesale denunciation of what he perceives to be the moral decline of his time. Importantly, the effects of this decline become apparent above all in the perverse evaluation and use of artistic materials. Since gold was used to determine the commercial value of other materials, the taste for it expresses aesthetic choices that privilege financial concerns over artistic merit. As a consequence, the technique of disguising other materials with gold determines the subversion of natural hierarchies and affects the correct evaluation of both natural properties and legitimate artistic skill.

Gilded Walls: The Aesthetics of Ambiguity

In a well-known passage from Book 35, which most scholars have regarded simplistically as yet another example of Pliny's grievances regarding the moral deficiencies of his epoch, Pliny interprets the emergence of gold in interior decoration as the culmination of a progression towards increasingly deceptive practices[17]. In the opening paragraphs of his book on pigments, Pliny bemoans the decline of painting, castigating the coarsening taste of his contemporaries, who seem to be less interested in figural painting than they are in marble veneers, to the point that they even cover the latter in gold[18]. Painting (*pictura*) is said to have once been illustrious (*arte quondam nobili*) at the time 'when it ennobled others whom it deigned to transmit to posterity' (*et alios nobilitante, quos esset dignata posteris tradere*). On the contrary, in Pliny's world it 'has been entirely ousted by marbles, and indeed finally also by gold' (*nunc vero in totum marmoribus pulsa, iam quidem et auro*). These two materials have come to cover the entire wall, leaving little or no space for the formerly acclaimed, earnest art of plasterwork.

A passage on metals from Book 33 clarifies that Pliny's objection is not aimed at the practice of gilding in itself, but at certain **contexts** and **associations** of its employment (although he is well-aware of this distinction's thorny nature)[19]. Here, Pliny describes a transition in the application of this technique from the public (sacred) to the private sphere, detailing gilding's stages of the introduction into the Roman world: from the roofs of temples to the ceilings (*laquearia*), vaults

15 Plin. HN 37, 1.
16 Plin. HN 37, 1. 26. 28.
17 Plin. HN 35, 2 f.
18 For archaeological commentaries on this passage, see Croisille 1985, 132–134 and Corso in Conte 1988, 293. 295. 297.
19 Plin. HN 33, 57.

(*in camaras*) and walls (*parietes*) of houses (*in privatis domibus*)[20]. This shift in decorative fashion mirrors the progression described in the opening paragraphs of Book 35 and is linked to an opulent 'aesthetic of ambiguity'. According to Pliny, this revolution of taste in interior decoration began with the introduction of marble *crustae* on walls, which subverted the relationship between *natural* landscapes and *artificial* indoor spaces (*spatia montes in cubiculo dilatantia*)[21], then moved towards deceptive strategies such as the use of golden veneers, before finally culminating in the imitation of painted images by means of stone inlays (*lapide pingere*)[22]. Using gold leaf to conceal marble implies a double layer of fabrication: modest plaster is hidden beneath slabs of lavish marble, which are in turn disguised by gold. The same concept applies to the creation of 'painted images' by means of marble, which simulate the visual effects of pictures with more expensive materials and a radically different technique. Pliny again identifies this change in decorative taste as emerging immediately before and during the reign of Nero, and thereby connects, in a chain of effects and their causes, certain elements of *decor* with particular ethical approaches and preoccupations, as well as with Rome's political landscape.

The criticism of golden surfaces in interior decoration is rooted in a broader discourse regarding the semantics of materials as components connected with social behaviour, and is especially clear when we compare the passages examined thus far with others that discuss solutions from the religious sphere and the distant past. When describing the interior of a shrine at Cyzicus[23], for instance, Pliny praises the insertion of thin gold threads into the vertical joints of the stonework. This technique created spectacular visual effects by allowing fine filaments of light to shine through the interstices, providing a warm, gentle reflection that danced upon the surface of the cult statues (*lenique adflatu simulacra refovent*)[24].

Significantly, the architect who devised this method and the sculptor who dedicated an ivory statue of Jupiter and a marble Apollo within the shrine were, in fact, the same person. The result was a Gesamtkunstwerk that broadcast its maker's ingenuity (*ingenium*) through the use of prestigious materials (*materia*) such as gold, precisely because the latter remained cleverly concealed. The

20 Cf. Vitruvius' famous discussion (Vitr. De arch. 7, 5) on the appropriateness of wall decoration relating to the reasonable choice of subjects and consistency with the function of a given space. While Pliny makes a clear distinction between *usus* and *luxuria*, allowing for the use of certain materials due to their natural properties (as is the case for marble columns in temple architecture, which are employed for higher stability: see Plin. HN 36, 45), he is aware that the introduction of new technologies in the public sphere had often been a cover for private exploitation (Plin. HN 36, 5 f.). In Plin. HN 37, 18, he details a similar trajectory for myrrhine vases, introduced to Rome as war booty and sacred dedications before passing into private use (*quae protinus ad hominum usum transiere*).

21 It is no surprise that in referring to the domestic sphere, the *cubiculum* (a bedchamber, the most private space in the Roman house) is used as a pars pro toto. The reference to a *cubiculum* in a negative sense – as a space for selfish indulgence, in contrast with the openness of the city – is central to the passage (see infra) about Tiberius' removal of the Apoxyomenos from public view. It returns in a passage (Plin. HN 35, 70) about a painting by Parrhasius that Tiberius loved (*amavit*) to the point that he locked it (*inclusit*) in his bedchamber. When describing Nero's misuse of art in his Domus Aurea and his equally predatory disposition towards it, Pliny employs the word *sellarium* or 'private parlour' instead, highlighting the subversively disproportionate size of Nero's abode (Plin. HN 34, 84; 36, 11). The term *sellarium* does not occur anywhere else in the *Naturalis historia*. Significantly, it appears in Suetonius' 'Life of Tiberius' (Suet. Tib. 43) regarding the rooms in the emperor's villa at Capri that were designed for sexual encounters and the enjoyment of erotic paintings and statues.

22 In Plin. HN 22, 4, Pliny reiterates his preference for walls adorned with vegetable pigments (*herbis tingui parietes*) over those painted 'with stone' (*pingi lapide*). In fact, the development of mosaics seems to follow a similar 'topographic' transition, from the floor of a sanctuary to the ceilings of (presumably private) buildings (Plin. HN 36, 189).

23 Plin. HN 36, 98.

24 Although the account of this temple at Cyzicus depends upon sources whose reliability is hard to judge, Pliny must have had direct experience of a building in Rome that evoked similar impressions (Plin. HN 36, 163). During Nero's principate, Pliny informs us that a new type of hard, white and translucent (*lapis duritia marmoris, candidus atque translucens*) stone was discovered in Cappadocia. This material was used to rebuild a temple of Fortuna – an older temple originally consecrated by Servius Tullius and later incorporated (i. e., appropriated) by the emperor into his Golden House (*amplexus aurea domo*). On this temple, see Corso in Conte 1988, 701.

success of this project rests on the choice to exploit the physical properties of gold alone – colour, brilliance, and malleability (returning to the vocabulary employed by Pliny, its *color*, *fulgor* and *facilitas*[25]) – instead of highlighting its monetary value. As is to be expected, the paradigm for the 'correct' use of natural materials refers specifically to the sphere of cult practice, and to venerable antiquity, as opposed to nefarious contemporary use within the private domain.

Gilded Vessels: An Anonymous Art

At the beginning of Book 35, Pliny expands his discussion of gilded walls by making a similar point with regard to metalwork[26], comparing the former with the engraved bronze shields (*aerei ponuntur clipei*) covered in silver (*argentea facie*) that were set up in public locations[27]. Here, too, a relatively modest substance (bronze) is disguised underneath a material layer that is more appealing from a commercial standpoint (silver). Both the purchasers and viewers were apparently indifferent to the 'rough characterisation of the figures' (*surdo figurarum discrimine*)[28] on these shields, demonstrating that the display of material (*materiam conspici*) alone was valued over artisanal expertise and finesse[29]. This point is made explicit in the case of silver vessels plated or inlaid with gold[30]. According to Pliny's ideologically partisan account, this disingenuous practice was so popular in his day that gilded pieces had come to garner a higher price than those cast in solid gold (*pluris veneunt inaurata quam aurea*) – a subversion that parallels the extravagant practice of painting rare and costly tortoiseshell to imitate easily available and humble wood, as described above.

Technical skill (*ars*) and ingenuity (*ingenium*) are arguably the most ambiguous categories in Pliny's account of the figural arts. Indeed, the relationship between material and craftsmanship is rarely straightforward in the *Naturalis historia*, rooted as it is in an ambivalent ethical and intellectual programme. On the one hand, technological advancements mirror the glory of Rome under Pliny's Flavian patrons. The introduction of hitherto unknown or unattainable goods and new technologies was made possible by the almost boundless expansion of the empire. On the other hand, innovation and the availability of resources might threaten the survival of Rome's venerable traditions. From this perspective, gold is presented as a 'problematic' substance and likewise gilding as a 'problematic' technique. The new style of interior decoration with its layers of marble and gold, which Pliny criticises in the opening of his book on pigments, is claimed to be detrimental to the art of painting, once a propitious vehicle for craftsmen looking to attain durable celebrity. Both gold as a material and gilding as a practice pose an insurmountable obstacle to the display of *ars* and *ingenium*, and thus to achieving fame as a craftsman.

25 Plin. HN 33, 58.

26 Plin. HN 33, 57: *iam et ipsi tamquam vasa inaurantur.*

27 Plin. HN 35, 4.

28 Harris Rackham translates this passage as 'with only a faint difference between the figures'; see also Croisille: 'la distinction entre les traits individuels est ignorée' (Croisille 1985); Mugellesi in Conte 1988: 'senza alcuna sensibilità nel differenziare le figure'. In a forthcoming paper, Lucia Faedo explores the problems that gilding – and in general overlapping layers of different materials – pose to experiencing and understanding the formal characters (e. g., surface treatment, contours, quality of carving) of both bronze and marble statues. On the issues regarding vision and the senses in the perception of bronze and stone artworks, see Anguissola – Faedo, forthcoming.

29 In Plin. HN 34, 5, Pliny one again explores this concept with reference to bronze sculpture. He explains that technique (*ars*) was once held in higher esteem (*pretiosor*) than the substance (*materia*), notwithstanding the fact that copper used to be blended with gold and silver; but in his times, *cum ad infinitum operum pretia creverint, auctoritas artis extincta est*. The main point in this discussion, which provides one premise for the presentation of Corinthian bronze, is that now not even chance (*fortuna*) is able to produce fine artworks in bronze, such is the pre-eminence of matter and its monetary value over any concern about craftsmanship.

30 Plin. HN 33, 49.

Implicitly, then, and in contrast to painting, the new fashion for covering walls and metal surfaces with more costly materials required less skill on the part of its practitioners than if less expensive materials and traditional methods had been used. The same contrast emerges between the two most precious metals, gold and silver. Such is the appetite for gold, in Pliny's narrative, that fervour towards the bare material has overtaken any admiration for the technical skill involved in its associated craft. Indeed, Pliny purports that it has become virtually impossible to achieve fame as an engraver of gold. The opposite is true for silver, which was the material of choice for many excellent craftsmen[31]. Pliny sees the artistic landscape of his time as defined by the loss of craft and technical knowledge; a loss that gives way to an 'anonymous art' that variously neglects names, artists and technical expertise. Mnemonic oblivion of artists' names, such as those of the craftsmen who worked with lavish gold rather than engaging in the 'formerly illustrious' art of painting, coincides with forgetfulness about material identities. It is around this same point in Book 36, which focuses on sculptural and building stones, that Pliny is unable to attribute a marble statue of Janus to a specific master, due to the fact that the craftsman's hand (*manus*) had been masked by a veneer of gold (*auro occultatus*)[32]. In severing the *physical* connection between the two original agents of a man-made object (Nature, as the maker of all substances, and the human artisan), the act of veneering is blamed for populating the Roman world with disconnected, 'anonymous' artefacts, objects absent of genealogical relations and therefore considered to be *inexplicable*.

Gilded Statues: Material Appropriations

The values and semantics attached to gold are crucial to understanding Pliny's comments on the use of this substance for the purpose of 'enhancing' the monetary value of sculpture. The aesthetics and, more importantly, the ethical challenges of gold emerge in the dense section regarding the 4th-century B.C. sculptor Lysippus and his bronze portrait of Alexander as a boy[33]. In Pliny's account, Nero was enamoured with this statue (*delectatus admodum illa*) and ordered that it be gilded (*statuam inaurari iussit*), thereby compromising its artistic merit by increasing its monetary value (*cum pretio perisset gratia artis*)[34]. However, it was the choice to remove the golden layer (likely after the emperor's demise) that actually ended up *increasing* the value of the statue (*pretioque sorque talis existimabatur*), even if, or rather because, its surface was beset with scars and incisions. In other words, in the case of a centuries-old masterpiece, the addition of an expensive material did little to enhance the work's overall significance, which rather benefitted from the visible traces of its history.

The unfortunate decision to conceal Lysippus' bronze surface under a coat of gold was the result of Nero's infatuation with the piece. One cannot fail to notice the similarities in content and language with the presentation of another statue by Lysippus, his famous Apoxyomenos, which Pliny mentions immediately before the portrait of Alexander *puer*[35]. Indeed, such was Tiberius's fondness (*mire gratum* [...] *adamatum*) for the Apoxyomenos that he had the statue installed in his bedchamber, putting another in the original's place (*alio signo substituto*) at the Baths of Agrippa

31 Plin. HN 33, 154.

32 Plin. HN 36, 28. On this passage, see Faedo 2020; Anguissola – Faedo, forthcoming.

33 Plin. HN 34, 63.

34 A later Greek source, a discourse by Julian the Apostate (2, 4, 54 B–C) includes a similar anecdote about the marble statue of Eros at Thespiae that was carved by Praxiteles. According to this account, the decision to have its wings gilded reduced the accuracy of the artwork (τὴν ἀκρίβειαν ἀφελεῖν τῆς τέχνης). Significantly, the history of this statue is also one of human *avaritia*. According to Pausanius (9, 27, 4), after being carried off to Rome by Caligula it was restored to its original location by Claudius and then stolen again by Nero. On the meaning of χάρις/*gratia*, see Pollitt 1974, 297–301. 380 f.; Moussy 1966, 407–435.

35 Plin. HN 34, 62.

in the Campus Martius. However, owing to public pressure, the original was eventually returned to its former location. Tiberius, who the *Naturalis historia* casts in a largely unfavourable light, was unable to resist his capricious passion for the statue[36]. Pliny presents this anecdote as an example of the illegitimate use of art, which in this case was transferred from the domain of collective utility to one man's *cubiculum* – a private space for total self-indulgence. The appropriation of art and its removal from the public sphere reflects again the prevailing patterns of behaviour in contemporary Roman society, which Pliny depicts as ruled by man's insatiable desire and uncontrolled consumption of natural resources: *avaritia* and *luxuria*.

This abuse of art constitutes a leitmotif in Pliny's criticism of historical emperors. Whereas Tiberius is depicted as an insatiable collector, doting on his masterpieces in the impenetrable privacy of his *cubiculum*, Nero's entire Domus Aurea, which loomed over the city as a menacing border[37], is presented as a veritable prison for the art of its decorator (*carcer eius artis*), the Roman painter Famulus[38]. Obviously, Nero's destructive attitude poses a much greater danger to the integrity of a work of art than Tiberius's mere selfishness. While Tiberius' transgressions were limited to the removal of artworks from public spaces, Nero's fervour extended to the point of altering their material identity. Nero patently mistook a work's *auctoritas* for its *pretium* (the latter being, at most, a function of the former) and thereby failed to recognise the importance of natural properties and technical skill (*ars*) in the viewing and understanding of art.

It is not surprising that the reign of Nero allegedly coincides with questionable developments such as the practice of covering interior walls with a double coating of marble and gold. The point in question is a matter of misplaced judgement as much as illegitimate appropriation. Most criticisms of gilded surfaces within the private spaces of personal residences fall within this category. For although the gilding of both inner environments and statues appears to be a permissible practice in the sacred sphere and is, more importantly, traditional[39], its use as a means for emphasising private ownership and dominion over Nature emerges as a testament to moral corruption.

As several scholars have observed, Nero and Caligula are the figureheads around whom Pliny's narrative of corruption and immorality unfolds, as opposed to the reinstated *mores* of Flavian Rome[40]. Unsurprisingly, the similarities between Nero and Caligula include both emperors' immoderate appetite for gold[41]. Pliny constructs Nero's character through the progressive misuse of natural substances, from relatively harmless displays of wanton recklessness, to permanent damage that still does not preclude the object's preservation, to final wholesale and irreversible destruction[42]. The *Naturalis historia* depicts Nero, at the very end of his reign, smashing two precious crystal vessels in a narcissistic fit upon receiving a message that all was lost ('to make it

36 Anecdotes about Tiberius' erotic misuse of art seem to have been quite popular and are by no means limited to the *Naturalis historia*: see, for example, Suet. Tib. 44, 2. For Pliny's comments on Tiberius, see Baldwin 1995, 64–66.

37 Plin. HN 36, 111.

38 Plin. HN 35, 120. The contrast with the ethics of Flavian emperors is apparent in Pliny's narrative (Plin. HN 34, 84) about Vespasian's public restitution of many artworks despoiled by Nero (*violentia Neronis in urbem convecta*) and held captive in his palace (*in sellariis domus aureae disposita*). On the Flavian emperors' engagement with the artistic and monumental landscape of Rome, see Baldwin 1995, 59 f.

39 Pliny mentions the gilded ceiling of the Temple of Jupiter on Capitoline Hill (Plin. HN 33, 57), and the gilded *simulacrum* of Fortuna at Praeneste (Plin. HN 33, 61).

40 Pliny's attitude towards earlier Roman emperors is explored by Naas (2002, 98 f.); see also Baldwin (1995, 67. 73–75) for his stance on the recent Neronian past. In the book on anthropology and human physiology (Plin. HN 7, 45), Caligula and Nero are dismissed as 'the two firebrands of mankind' (*faces generis humani*), and Nero again in Plin. HN 7, 46 as an 'enemy of mankind' (*hostem generis humani*).

41 See Plin. HN 33, 79 on Caligula: *avidissimum auri*.

42 Nero's destructive attitude finds a parallel in Caligula's act of vandalism against the wall paintings of Helena and Atalanta at Lanuvium (Plin. HN 35, 17 f.), which had ignited his lust (*libidine accensus*) to such an extent that he attempted to tear them off the wall and remove them from the sanctuary. In this case, Pliny creates an extraordinary story of 'material resistance', as Caligula's attempt is frustrated by the tenacious defiance of the plasterwork itself, which could not be detached from the wall (*si tectorii natura permisisset*).

impossible for any other man to drink from those cups')[43]. As mentioned before, the presentation of rock-crystal in the last book of the encyclopaedia revolves around its peculiarity as a supreme, rough product of Nature, one that surpasses the work of any craftsman. Once it is broken, as Pliny remarks in explaining the significance of Nero's transgression, this substance 'cannot be mended by any method whatsoever' (*fragmenta sarciri nullo modo queunt*).

Returning to the statues by Lysippus that were removed or altered by Tiberius and Nero, it seems important to highlight Pliny's interest in the consequences of these incidents and the role that public opinion played in reversing the emperors' reckless decisions. The statue of Alexander had survived Nero's violation but was forever altered thanks to the removal of the gold layer. However, the marks and scars on its surface, which replaced both the smooth, shiny patina of Lysippus' bronze and the glossy, gilded surface that had formerly adorned it, ended up *increasing* the artwork's value. Clearly, the performative traces of Nero's offence, and of its removal, added to the statue's significance by rendering it an effective reminder of both imperial abuse and, more broadly, the consequences of the illegitimate use of art[44].

After all, it is through this inherent tension between *forgetting* and *reminding* – or more precisely, between *deleting* and *reminding* – that Pliny considers Nero's monumental and artistic heritage. While the meaning of Nero's most famous gilded artwork (his own colossal statue, displayed in the vestibule of the Domus Aurea) was 'corrected' by reimagining the figure (Vespasian had the statue changed to depict Sol)[45], in order for the statue of Alexander to be removed from the shade of a disgraced emperor, it was necessary to restore its material identity. In the case of the famous Colossus, a new interpretation of the figure could be provided simply by playing on the statue's original double entendre, which referred to both an emperor and a god. However, in the case of Lysippus' Alexander, reminders of Nero's vandalism and its embodiment of his moral corruption were kept alive by the removal of its materiality and by directing attention to the vestiges of the same. According to visual strategies familiar to the Roman public[46], the restoration of the statue's bronze surface was not intended to prevent the recollection of Nero's behaviour, but rather served to highlight the *conscious return* to a moment before his reign, as well as the *collective consensus* regarding this effort. The piece's value did, in fact, increase following its restoration.

Conclusions

The unstable, tenuous border between human ingenuity and impudence reflects a conflict that is inherent in Pliny's understanding of political expansion and economic growth[47]. In the *Naturalis historia*, technological progress as mirrored by the discovery of new substances and the taste for 'inexplicable mixtures' (*compositiones et mixturae inexplicabiles*) reflects the exceptional availability of resources, the knowledge brought about by Rome's hegemony over a vast empire, and the gradual loss of traditional wisdom, which often involved the use of humbler materials and less

43 Plin. HN 37, 29. A slightly different version of this anecdote appears in Suet. Ner. 47, 1; see Sansone 1993, 187 f. for the sources of this Suetonius passage.

44 I borrow the concept of 'performative traces' from a paper ('Periferie, epitomi, residui: strategie dell'attenzione') delivered by Salvatore Settis at the Kunsthistorisches Institut of Florence, as part of the symposium 'Detail und Aufmerksamkeit' in honour of Alessandro Nova (May 2014).

45 Plin. HN 34, 45. For the colossus of Zenodorus, see Ensoli 2002; 2007, 409 f. 416 f. On the relationship between gold and Nero's solar imagery, see Bergmann 1994, 5 f.; 2013, 342–351.

46 E.g., the widespread practice of reworking the portraits of those emperors who had suffered *damnatio memoriae* – notably Caligula and Nero at that point in time – ultimately played on the same visual strategies of 'visible effacement'.

47 Lao (2011) explores the connections between Pliny's attitude towards *luxuria* and the economic and retail landscape of his time. Healy (1999), Beagon (1992, 57–68), Isager (1991, 33–42) and Citroni Marchetti (1991, 202–204. 230. 237) all engage with Pliny's ambivalent concept of progress and man's relationship with Nature.

elaborate techniques[48]. Expansion, based on Pliny's argument, is about *oblivion* as well as *growth*. The increasing accessibility of new information and the simultaneous decline of traditional knowledge determined by Rome's expansion ultimately provide the encyclopaedia's raison d'être, which in Pliny's words is about lending 'novelty to what is old, authority to what is new'[49]. According to this historical perspective, Pliny's task is, first and foremost, to explore the causes and mechanisms for the formation of memory and its erasure.

Within this ideological framework, the problems regarding the visibility and integrity of surfaces occupies a central place. Surfaces can either expose or disguise the material truth of an object and consequently its position within the natural ranking of substances, as well as the correct (albeit artificial) ranking of human skilfulness. In light of these comments, it becomes clear why, according to Pliny, alteration of an artwork's surface (for instance, by means of gilding) also resulted in damage to the *gratia artis* – it obliterated the unique marks of the artist's skill. The alterations, therefore, testify to incompetent judgement and endanger the viewer's ability to correctly evaluate the work. This proves all the more true when the material that is chosen for the outer layer is gold: gold is a substance that fundamentally lacks natural excellence, and owes its place in the hierarchy of materials to its monetary value alone.

By dismissing the statements about gold scattered through the *Naturalis historia* as yet another instance of Pliny's conventional moralism, we would fail to recognise the relevance of the discourse on artistic materials and the articulation of crucial ideological and ethical points. The material and performative aspects of creation occupy a central position within the lengthiest and most detailed account of the visual arts passed down to us from classical antiquity. Most importantly, these preoccupations provide Pliny with fundamental means for constructing and explaining his view of Roman history and society, as well as his understanding of the intellectual work and, more specifically, his own strategies as a chronicler and collector of the memorable facts of Nature. Artistic materials (gold), techniques (gilding), the relationship between different substances (gold and plaster, marble, bronze and silver) and the visual effects of entire decorative systems (such as the walls embellished with paint, stone veneers and layers of gold) participate in a broader discussion about collective taste, economy, social dynamics, history and competing moral standards. As is clear in Pliny's account of visual culture, artistic materials provided an efficient symbolic tool for the Romans not only to represent themselves but also (and more subtly) to reflect upon their identity, past and present.

Anna Anguissola
University of Pisa
Classical Archaeology
via dei Mille 19
56126 Pisa – Italy
anna.anguissola@unipi.it

48 Plin. HN 24, 4 f. See also Plin. HN 14, 2 f., as well as the comments in Citroni Marchetti 1991, 225 and Murphy 2004, 68–71. Pliny's perspective on Rome's empire and its social, economic and ideological consequences is explored by Laehn (2013).

49 Plin. HN Praef. 15.

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Materiality of Architecture: Aesthetics

Tobias Busen

The Humble Material: Masonry and Meaning in Roman Architecture

Abstract: This paper discusses how exposed masonry in Roman architecture served not simply as the functional shell for the decorative layers that covered them in the final stage of a project, but could also contain further levels of meaning (Bedeutungsebenen) beyond their practical role. Even in a temporary state, the material could inherently convey aesthetic or semantic content, either via the construction technique and the material employed, or presence of the ongoing construction site; it could even be intentionally used to communicate messages. Using several general examples from the Roman world, and a quite specific one from the Casa del Citarista in Pompeii, this paper considers the parties involved in the building process – from the builder to the property owner – who might have had an interest in taking advantage of this temporary state of construction, and to whom such forms of communication were directed.

When writing about the different materials used in building construction in Book 2 of his *De architectura libri decem*, Vitruvius was concerned primarily with describing their physical characteristics, practical merits and use, rather than reflecting upon materials' aesthetic or semantic value. At the same time, a large part of Book 7 is dedicated to methods for covering building construction with stucco decoration and is thus likewise mostly focused on technical aspects of production and application. With this, two important aspects are already marked out: first, the importance of the functional (that is to say, technical) aspects of materials when erecting the structural parts of buildings, and second, the significance of the fact that by the end of the Republic the majority of built structures were covered with layers of other materials, making the actual construction imperceptible beneath the final surfaces of the spaces created. However, various examples suggest that even raw, unfinished building structures were utilised in different ways as a medium to communicate further content.

Therefore, this paper initially examines how and why building materials were primarily chosen for their physical properties and applicability with respect to certain construction techniques. In a second step it will be shown that these materials could inherently possess, or rather incorporate, aesthetic and semantic aspects, even though they were intended to be covered by additional decorative layers in the final stage of a project[1]. In this regard, it is particularly interesting to focus on their temporary visibility during and after construction, as well as on their potential agency, while in each case the intentions of the various parties involved in the building process must also be considered. Finally, these considerations will be illustrated by some well-known examples and a less well-known case study.

Aspects of Material in Construction

In the realm of architecture, more than in any other creative genre, material is inextricably tied to the process of creating stable structures. It is impossible to create usable architecture without respecting the specific physical characteristics of one or more materials. Any attempt to add further aesthetic or semantic value is limited to what is structurally feasible: necessary quantities

1 This paper contrasts with the other contributions in this volume regarding the transformation of surfaces (via wall revetment, plaster or stucco decoration).

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and dimensions can be exceeded, but can never be reduced without risking the stability of the building.

Different materials, because of their properties, lend themselves to being used in different parts of a structure: wooden beams are employed for lintels because of their deflective capacity and stone blocks for walls due to their compressive strength[2]. The appropriateness of materials in construction is in large part determined by their primary function, that is, their ability to satisfy different structural necessities[3]. Moreover, the applicability of materials to particular building techniques varies and in the best case results in structural advantages. Vitruvius describes one such case with regard to the sheathing of *opus caementicium* walls. When talking about *opus incertum* and *opus reticulatum*, he states that the stone material employed is advantageous for the curing of the mortar within the wall's core[4].

When used to fulfil a specific building technique, the material employed determines what can and cannot be constructed. The potential span of roofs (which limits the maximum dimensions of covered spaces) and the maximum vertical or horizontal load a wall can bear (which determines, for instance, the number of storeys that can be supported or whether it is possible to build vaults) represent two good examples of this phenomenon. For our purposes, then, the question of whether material follows function must be considered in the context of the building technique.

Apart from structural needs, the choice of materials and techniques in historic building construction greatly depends on the availability and quality of material, craftsmanship, tools and construction equipment. Natural resources have to be extracted or collected at their source, then shaped or transformed into building material, transported to the construction site, and finally must be adapted to and integrated into the building fabric. All these steps create costs that the owner or another party must meet. Vitruvius therefore considered it absolutely necessary to use stone material from the proximate quarries, regardless of the architect's opinions[5].

In contrast to other creative sectors, it is not easy to evade the necessities of the choice and appropriateness of materials: first, because overly daring experiments risk the structural stability of the whole building and consequently the health, if not the actual lives, of the inhabitants or occupants; second, the sheer quantity of resources – and therefore the economic investment needed for building construction – makes it difficult to ignore the advantages of a rationalised workflow, primarily determined by the material's properties. We must presume that it was always planned to keep costs as low as possible while guaranteeing the intended result – unless spending more money than was actually required was meant to be a message in and of itself.

The Visibility and Perception of Building Materials

Of course, the craft of building cannot be limited merely to its functional and pragmatic aspects. These determining factors can be enhanced by intentionally investing more money, time, labour and so on, in order to create 'something more', something we might eventually call architecture[6].

2 Vitr. De arch. 2 pref. 5: *de materiae copiis, e quibus conlatis aedificia structuris et materiationibus perficiuntur, quas habeant in usu virtutes*.

3 Vitr. De arch. 1, 3, 2: *firmitatis erit habita ratio, cum fuerit fundamentorum ad solidum depressio, quaque e materia, copiarum sine avaritia diligens electio*.

4 Vitr. De arch. 2, 8, 2. Most probably, Vitruvius is referring to volcanic tuff or another porous material. In the course of the discussion he also notes that the use of stone can become a disadvantage – if the stones are too big in comparison to the quantity of mortar in the core, the *caementicium* can dry too fast and soon become ruinous.

5 Vitr. De arch. 2, 7, 5; 6, 8, 9. Even though this concerns the desired building technique, the potential influence of the owner is also noted.

6 This is not the occasion to discuss the dissimilarity or equality of the terms 'building' and 'architecture'. For a history of architectural theory, see, for instance, Kruft 2004.

Moreover, materials and building techniques can possess inherent aesthetic value[7]. The outer face of an ashlar wall, by virtue of its individual elements and their arrangement, is subdivided into regular horizontal bands by bed joints and structured rhythmically by vertical joints. By smooth-facing the exterior, the joints are camouflaged and the multiple faces become one surface. The visible structure of the stone itself (whether homogeneous or composite, layered, veined or monochromatic, etc.) can fortify or contradict the intended appearance. It is obvious that ashlars were also regarded as aesthetically superior in ancient Italy, a conclusion that is evident in Pompeian houses from the 3rd and 2nd centuries B.C., where this technique was used primarily for the façade and walls of the atrium, while other walls were built in *opus africanum* and typically covered with plaster[8]. Although the layered structure of the local Sarno limestone lent a strong horizontality to the façade (which at the same time obscured the bed joints), this was not the case for the more homogeneous Nocera tuff.

An example referring to the aesthetic value of a construction technique (without reference to a specific material) is given by Vitruvius, when he contrasts the beauty and stability of *opus reticulatum* and *opus incertum*: the latter was stronger, but not beautiful, while *opus reticulatum* had a beautiful texture that often caused it to crack[9].

These two techniques (ashlar vs. concrete masonry) illustrate the different relationships between load-bearing materials and finished surfaces, as ashlar walls were not intended to be covered by other layers. Improvements to their appearance could be achieved only through the embellishment of the material's surface, potentially taking advantage of its natural structure and colour. This becomes even more evident when considering architectural orders, such as the fluting of a column cut directly into the material constituting the shaft. In cases where the building material itself did not provide the necessary quality (i. e., the density and homogeneity that would permit precise work) or where embellishment could not bring about the intended result, a stucco coating or other form of revetment might be applied. Cladding could also be used to simply improve the final quality of a previously sculpted surface. This might occur, for example, when a layer of stucco was applied to a fluted column made of porous shell limestone, in order to eliminate the visibility of its natural structure, which did not provide the desired appearance.

On the other hand, in the case of walls intended to be plastered or otherwise covered, any efforts to improve their appearance were rendered obsolete. This enabled builders to make full use of the pragmatic-functional logic of building processes, while the task of creating an aesthetically improved appearance or communicating on a semantic level was rendered completely independent[10], and was consequently consigned to craftsmen other than those tasked with erecting the load-bearing structure.

The Humble Role of the Builder

This tendency, of course, must have affected the role and perception of the construction team. Indeed, when discussing how the architect, builder, and owner should be honoured at the conclusion of a project, Vitruvius does not differentiate between the various crafts involved in the building process: the architect should be praised for good proportions and symmetry, the builder for

7 For semantic aspects of building materials in Late Republican architecture, see Maschek, this volume.

8 Pesando 2012, 70–76; 2013, 121–123.

9 Vitr. De arch. 2, 8, 1. On the potential structural disadvantages of *opus reticulatum*, see Rakob 1983, 364.

10 It cannot be ignored, however, that the plaster also served a protective function, preventing the building material from erosion, humidity, weather and so on; the protection was especially useful, if not actually necessary, in the case of clay brick or porous stones such as yellow tuff.

the accuracy of the construction and the owner for the magnificence of the building[11]. In fact, the person who commissioned a building was required to invest more resources than structurally necessary in order to fulfil the respective social norms and thus achieve a building with an appearance regarded as magnificent. The builder must certainly have received a share of the praise in those cases where the accuracy of workmanship remained visible. The precise sculpting of blocks used in architectural orders (such as bases, capitals, column drums and the entablature) and the preparation and assembly of the voussoirs that formed the arches of vaults were aspects that depended on the ability and precision of the builders responsible for their construction.

However, when it came to forms of architecture in which the masonry or other features were to be covered by external layers (for example plaster, stucco or revetment), the builder had little to exhibit once the building was finished. His contribution was only temporarily visible unless it could be identified through other indicators, such as the size or typology of certain architectural forms (for example huge rooms, vaults or domes) that tacitly proved his capacity to realise the project with the necessary precision.

Material Agency During Construction

Similarly, the building material lost most of its aesthetic and semantic potential as soon as it was covered and thus became hidden. Consequently, it is worthwhile to have a look at the different phases that preceded the finished building. Ongoing construction sites have always been an omnipresent phenomenon, especially in densely populated cities. We can differentiate between large-scale public projects, highly concentrated in certain urban spaces, and private, smaller scale projects that were more widely distributed[12]. Again, in contrast to the creation of objects, which could be produced within a workshop and subsequently moved to their final destination, construction had to occur on site. It was impossible to hide the process of building during the construction phase, which could cover a significant timeframe.

Construction included the transport of material, the actual act of building on site and the state of the project during which the building was finished but not yet decorated. In each of these phases, the material continuously emitted messages. During transport from a quarry or storage area through the streets of a city, large blocks of locally or regionally sourced building stone would have been perceived by observers as part of their local identity[13] and implicitly demonstrated the financial and political power of the nascent building's owner through the sheer quantities and kinds of material being delivered, as well as the (negative) effects on the local traffic system[14]. While the material was then adapted and assembled on site in order to create the building, the process was at least partially visible via the equipment (such as cranes and scaffolding) employed; it was also audible due to the sounds of construction, and was perhaps even perceivable by smell. Site fences and perimeter walls could have been used to prevent the external observer from 'seeing behind the curtain', if this was desired. However, making the construction process visible to the public must have been a useful way of showing the capabilities of both the builder and the property owner.

In the second part of this paper, I will illustrate and reflect upon the matters raised up to this point by presenting some examples of building measures that were intended to be visible during

11 Vitr. De arch. 6, 8, 9: *cum magnificenter opus perfectum aspicietur, a domini potestate inpensae laudabuntur; cum subtiliter, officinatoris probabitur exactio; cum vero venuste proportionibus et symmetriis habuerit auctoritatem, tunc fuerit gloria architecti.*

12 As Favro and Yegül (2019, 183) have recently pointed out, a 'finished building was certainly a cause for pride and celebration; one under construction or waiting for construction could be a cause for perpetual pride and celebration connecting the past and the future.'

13 In contrast, for instance, to the transport of more exotic imported material such as marble, see Beck, this volume.

14 See Rheidt – Lorenz 2018, 9, with reference to large-scale construction sites.

or after construction. First, we shall examine the well-known phenomenon of polychrome *opus reticulatum*, before considering a more specific example of faux masonry from Pompeii.

Material Follows Function? Playing with *Opus Reticulatum*

Opus reticulatum, one option for the cladding of *opus caementicium* walls, gave builders a certain flexibility during construction, because the core, rather than the visible facing, bore the load of the wall[15]. Moreover, masons were free to produce *opus reticulatum* from a range of materials, perhaps because they were at hand on the construction site, or because the masons intended to create polychrome patterns and effects on the wall's face, or a combination of both these factors. In the first case discussed here, the functional aspect of material availability prevailed. However, all the other examples considered below convey either aesthetic or semantic intentions.

Examples of ornamental designs in *opus reticulatum* can be found not only in the Vesuvian cities[16], but also in villa substructures and public buildings, for instance at Terracina and Chieti. Given that in many of these cases the remains of plaster exist atop the masonry, several scholars have concluded that *opus reticulatum* walls were usually covered in their final state[17]. Ornamental patterns on walls destined to be covered have thus been interpreted as the result of creative experimentation by the workmen with their material[18]. While this might have been the case for small surfaces, it is not convincing for larger public building projects, such as the temples in the forum at Chieti. We must then conclude that first, the delivery of different materials to the construction site was not a coincidence, and second, that these materials were intended to add aesthetic value to the building while it was being erected but before it was covered by other layers. Indeed, sometimes these materials may even have been intended to remain visible.

As Fabrizio Pesando has pointed out, in the case of two symbols integrated into the *opus reticulatum* employed on the east wall of the Casa del Salone Nero (VI 11–15) in Herculaneum, the grid structure of *opus reticulatum* wall faces lent itself to communication of further semantic content. Pesando argues that the two signs, which are usually interpreted as letters (V and A), might instead represent typical instruments used on a building site – a (folding) rule (*regula*) and a mason's level (*libella cum perpendiculo*)[19]. The *regula*, in particular, is depicted with two of its brackets opened, each two Roman feet long and outlining a triangle that contains further multiples of the Roman foot. Pesando interprets these representations of tools on buildings as a kind of signature by the builders involved in the construction. This particular case represents a rather elaborate way of using polychrome *opus reticulatum*, which communicates semantic, rather than aesthetic, content on two different levels. A certain number of observers might have recognised the signs as tools, while the visual play with the Roman foot was presumably intended as a message to someone well-versed with measures and construction practices. This is even more remarkable, as the message was only temporarily visible.

Both the ornamental examples and the figurative design from Herculaneum have one thing in common: provided that various stones or ceramic materials were available, the integration of patterns or signs in the polychrome *opus reticulatum* did not cost the builders much extra work. Either way, they had to apply the stone pieces to build the wall, and mixing the different materials

15 Proof of this may be found in many examples of irregularly produced *opus reticulatum* (commonly called *quasi reticulatum*) or walls that have lost most of their original exterior because of erosion or spoliation.

16 On the walls of the *taberna* VIII 2,31, to name just one example.

17 Mau 1879, 9–12; Lugli 1957, 487–490; Adam 1984, 146 f.; Bianchini 2010, 266 f.

18 von Gerkan 1958, 192.

19 Pesando 2010, 62–66; as an additional reference, Pesando discusses the two identical representations of *libellae* on the side walls of the path leading up to the Temple of Apollo at Cuma. The paper argues that mason's marks were signs for the different tools used during the extraction and building process.

during this process required a bit more concentration, but no additional resources. In the case of ornamental patterns, this extra effort further augmented the aesthetic potential inherent in the regularity of *opus reticulatum* wall faces. In the case of signs or symbols, the wall area was used as a uniform background for messages integrated into its texture.

The genesis of *opus reticulatum* has often been connected to 'industrialisation' processes in the Roman building industry during the Late Republic[20]. The production of standardised construction materials facilitated the development of highly rationalised building procedures, because neither the fabrication nor application of *opus reticulatum* stones required specialised workmen or equipment (unlike the erection of ashlar walls, as Friedrich Rakob has pointed out)[21]. Tuff was typically used in the first varieties of *opus reticulatum*. Being a soft and highly porous stone, tuff was easily carved into pyramid-shaped *tesserae* that were well-suited for connection to the *opus caementicium* core. In the case of other materials, such as lava, limestone[22] or brick, the appropriateness of the base material was ignored, it being chosen not for functionality, but other reasons[23]. While in the case of hard stones the difficulty of the material produced less regular results[24], *tesserae* made of brick might be interpreted as an attempt to carry the regularity of *opus reticulatum* to an aesthetic perfection that could have created a surface worthy of being left visible.

Construction Follows Function? The 'Window Wall' in the Casa del Citarista at Pompeii

Let us now turn to a unique case from the Casa del Citarista (I 4,5.25.28) in Pompeii, where both aesthetic and semantic aspects added to a bare building structure. This house can be counted amongst the largest *domūs* within the walls of Pompeii, covering an area of more than 2,700 m². It is unique not only for a sequence of three separate, spacious peristyles (each measuring between 270–330 m²), but also for a wall that divides the middle (17) and the southern peristyle (32) (c. 19 m long; Fig. 1)[25]. It is pierced by six tall windows, distributed at irregular intervals, and flanked by a doorway at each end (Fig. 2). Both thresholds function as steps leading down from the slightly elevated middle peristyle to the southern one. These spaces were constructed as extensions of the original (much smaller) house at I 4,5[26], most probably during the late 2nd or 1st century B.C. They occupy the plots of at least two older houses, which were aligned in a north-south direction, and were accessible from the street running along the south side of the *insula*, the Vicolo del Menandro.

From the Plastico di Pompei and other sources we know that in the last phase of the house, before the eruption of Mount Vesuvius, the dividing wall was plastered and decorated with Fourth Style paintings on both sides, of which only some unrecognisable fragments have survived. The wall is

20 von Gerkan 1958, 192; Torelli 1980, 156–158.

21 Rakob 1983, 363. 367. At the same time Rakob insists that this cannot have been the only reason for its emergence, and marks *opus reticulatum* as an invention explainable only by the building culture in the city of Rome.

22 In the Villa of Capo Sorrento on the Bay of Naples, where limestone as well as grey tuff were at hand, the latter was used for *opus reticulatum*, whereas the former was used for walls built in *opus incertum*.

23 Rakob (1983, 366) explains the use of this technique in areas outside Rome and Campania either with the presence of imperial construction teams and/or as an imitation of a technique, typical for the heartland of the Roman Empire.

24 In the Roman colony of Grumentum, for instance, the *reticulatum* façades are in fact rather irregular because of the hard and difficult-to-work base material.

25 On the Casa del Citarista in general, see Fiorelli 1873, 65–69 Pl. 12; Overbeck – Mau 1884, 359–366; Dwyer 1982, 79–108; PPM I (1990) 117–177 s. v. I 4,5.25, Casa del Citarista (M. de Vos); Pesando 1997, 27–34; Nappo 1998; Tommasino 2004, 24–26.

26 The Second Style mosaic floors of the rooms (33–37) adjoining the southern peristyle (32) represent the earliest datable remains: see Pernice 1938, 68 f.; PPM I (1990) 117–177 s. v. I 4,5.25, Casa del Citarista (M. de Vos) 117; Pesando 1997, 28; Dickmann 1999, 315 f. 362.

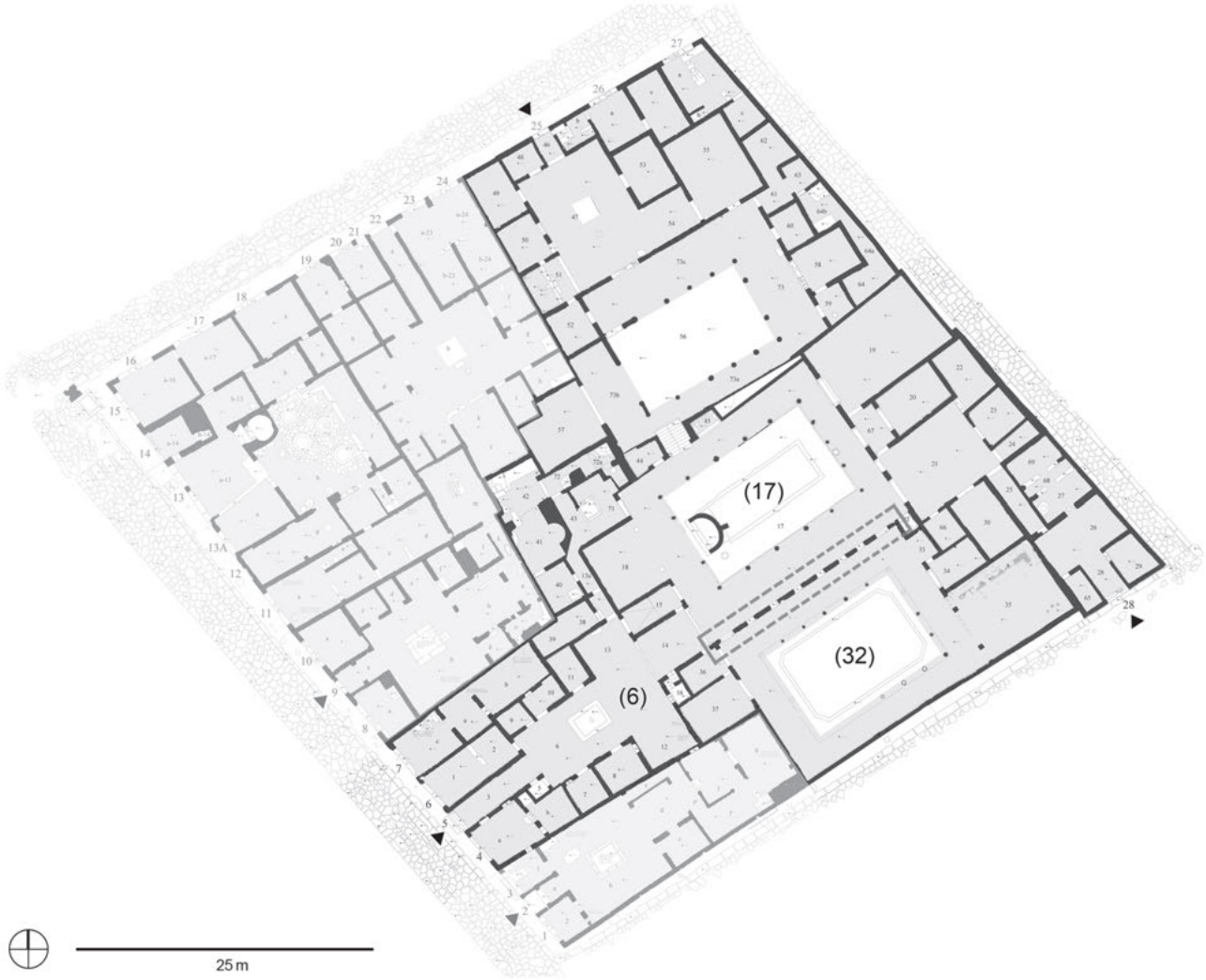

Fig. 1: Pompeii, Ground plan of the Casa del Citarista, dividing wall between the peristyles (17) and (32) highlighted.

constructed in *opus incertum*, mostly made of local Sarno limestone, while larger blocks of the same material were employed for the door and window jambs. The depth of the blocks equals the wall thickness of 40–42 cm, and they vary significantly regarding their installation format and orientation (Figs. 3–4). These stones probably originate from the houses that had to be dismantled prior to the creation of the two peristyles. The largest pieces (140 × 75 cm) represent typical ashlar formats used in the *opus quadratum* of Pompeian house façades[27]. While the blocks had been employed horizontally in the original masonry, in this secondary application they stand mostly upright on the lower part of the dividing wall, constituting the window jambs. Older plaster layers still adhere to some of the blocks flanking the entrance to room (37) nearby, which was probably created during the same building phase. They are now part of the horizontal bed joints, which proves that the blocks are reused material. In the case of the short wall segments of the 'window wall', only a bit of space remained between the jambs, and this was filled with *opus incertum*.

The reuse of the material already available on the ground represents a fine example of pragmatic and economically driven building logic. Simon Barker has shown that for Roman construction sites, this method saved up to 80 % of cost and labour in comparison to the use of completely

27 Nissen 1877, 50.

Fig. 2: Pompeii, Casa del Citarista, 'window wall', view from south-west.

new building material[28]. In this specific case, the decision to make use of the recycled material must have been even easier, since the older houses existed on the very same spot and had to be dismantled in any case. Material could certainly be sold to other interested parties, and this might have happened here, as well, but not without first taking advantage of that which was necessary for the new building project on site. For structural reasons, it made no sense to cut the large rectangular blocks into smaller pieces. Indeed, the size of the blocks enhanced the stability of the wall segments between the windows[29]. The short transport distance between their original position and the new wall also required no fragmentation of the material. At most, it may have been slightly adapted for easier integration into the new wall.

Rather than attempting to produce a standardised appearance, in which the wall was subdivided by the vertical window and door openings, thus forming a symmetrical composition, the various materials and construction techniques created a rather heterogeneous appearance. This effect was intensified by the older ashlar wall pillars that were integrated into the wall's eastern section. The jambs of the easternmost window were, in fact, produced with smaller, horizontal blocks.

At first glance, none of this would be cause for concern, as it can easily be explained by the economics of building construction and the practical advantages of reusing and integrating pre-existing materials and structures, as described above. Plus, the wall would have been plastered and decorated in any case. There are some conspicuous marks on the reused ashlars that demand attention, however. Horizontal and vertical lines are roughly cut into the outer faces of the soft stone, while some areas are further subdivided by polygonal patterns (Figs. 5–6; grey lines in Figs. 3–4). On closer inspection, it becomes apparent that the pattern carved on the larger blocks continues the structural division of the other wall sections: the smooth parts form a succession of vertical and horizontal panels resembling the typical arrangement of *opus africanum* posts, while the structured parts imitate *opus incertum* and thereby unite visually with the adjoining facing of the same type[30]. The fact that the preserved plaster fragments overlap the marks at several points confirms their antiquity.

28 Barker 2010, 140. On the legal aspects of demolition, see Barker – Marano 2017, esp. 834–836.

29 The ratio of the length of the wall segments (160–170 cm) to the width of the windows (80 cm) is approximately 2:1.

30 In two instances on the south side of the wall, the stones present a vertical offset of several centimetres. It is not completely impossible that they are vestiges from the primary use context. More probably, however, they were made after the blocks had been integrated into the new wall in an effort to level damages that had occurred during transport. The surfaces might have been overlapped by material that is missing today, such as flat pieces of *incertum* or mortar.

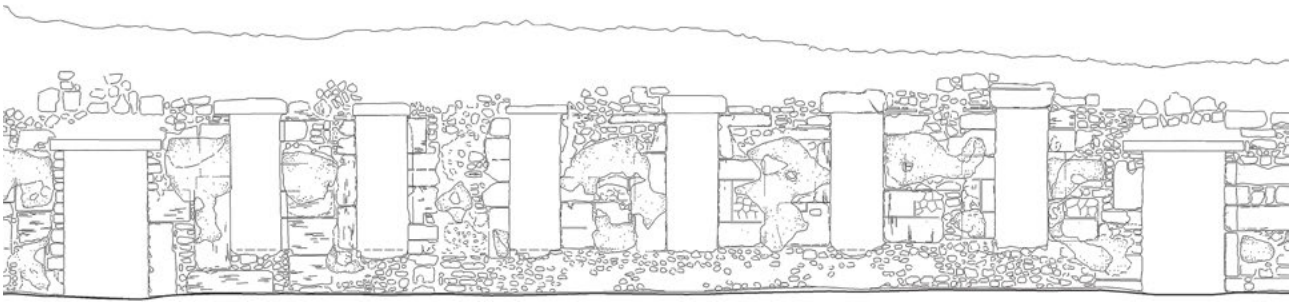

Fig. 3: Pompeii, Casa del Citarista, 'window wall', north elevation.

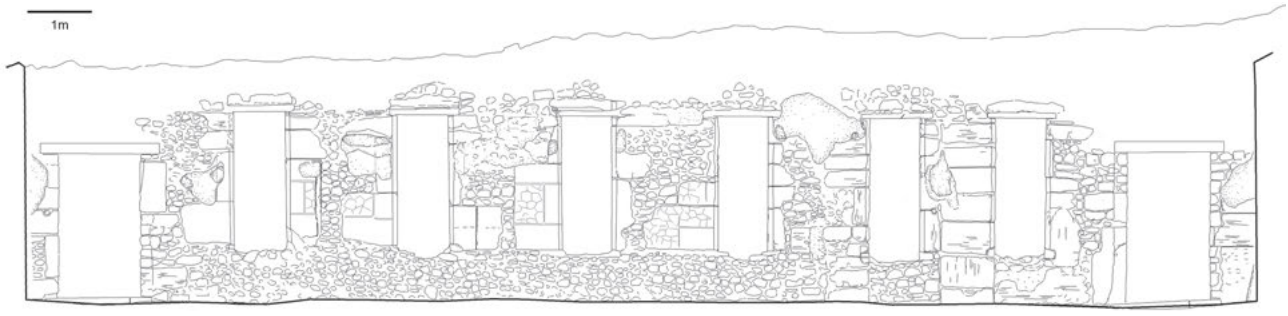

Fig. 4: Pompeii, Casa del Citarista, 'window wall', south elevation.

This means that a more regular construction technique was imitated on the surface of the irregularly constructed wall, a deception that at the same time concealed the real size of the large ashlars (Fig. 7). Even though the efforts made cannot be described as overtly excessive, manpower, tools and time were still invested in this exercise without any advantage in terms of construction or stability. On the other hand, we must keep in mind that the masonry was visible only during the period between the completion of the wall's construction and the initial stages of decoration, and thus the humble carvings applied to the *opus africanum* and *incertum* were therefore intended to be temporary. For how long the wall remained undecorated, we can only guess. The longer the period, however, the more this 'investment' would have paid off[31].

If the faux *opus africanum* served no structural purpose, then the intention(s) behind its creation must be sought elsewhere. Its presence certainly made the wall more standardised and thus more pleasing from an aesthetic-perceptive point of view. As an isolated argument, however, this is not very convincing, because the work was not executed with particular rigour or precision; in the eastern section especially, the wall was left a 'patchwork'. At other points, the idea of merging real and fake construction techniques did not go as planned, for instance where the carved *opus incertum* was not framed by a post, but rather continued to the window frame[32].

Any attempt to understand the semantic aspects of these measures must on the one hand consider who was responsible for the work, and on the other, reflect upon who it was intended to address and which messages were being communicated. In order to address these questions, we must first clarify whether the carved masonry was actually intended to deceive the observer. Regarding this problem, the loss of most of the painted plaster on the wall is rather advantageous. Although the structure has undergone restoration more than once since its excavation in the 1850s

31 Since the last decorative phase was certainly applied many decades after the erection of the wall, there is no evidence of the earliest plasterwork.

32 This regards the fourth window (counting from west), more precisely the lower part of its western jamb.

Fig. 5: Pompeii, Casa del Citarista, 'window wall', south side between the 1st and 2nd window from west.

Fig. 6: Pompeii, Casa del Citarista, 'window wall', south side between the 2nd and 3rd window from west.

and 1860s, and the joints are partially covered with new mortar, even now – and especially on sunny days when shadows are cast upon the wall – the real and imitated joints between the limestone blocks are difficult to distinguish. Only observation from close proximity reveals the truth about the wall's composition. We must imagine that this homogenising effect was further intensified by the similar colour of the granular mortar and yellowish limestone. Thus, the carvings might have been intended as an actual illusion, even if this trompe l'œil collapsed under the closer inspection of an expert[33].

The effort required to create this effect would not have been unduly high. Assuming that it was not simply a consequence of the construction workers playing around with their tools, potential groups of recipients must also be discussed. The mock masonry could have been intended to address either external guests who visited the undecorated peristyle area or the owner himself and/or his representatives, for example the procurator of the construction site.

Whoever glanced at the wall before it was covered in plaster might have read it as a bricolage rather than the result of a rational building process utilising the existing resources in the best manner. This could have compromised the homeowner and his financial and political status. By creating the illusion of a regular *opus africanum* wall instead, he was not only showing his ability to pay for a 'properly' constructed wall: *opus africanum* was already an old-fashioned construction technique by the 1st century B.C. and was no longer used for new buildings in Pompeii. Its application in the new wall can also be interpreted as a reminiscence upon older building traditions,

33 The lack of perfection that one can observe in the final result, which could be interpreted as inconsistence on the part of the builders, might also have been 'part of the plan', since real *opus africanum* wall were not made from blocks of consistent dimensions, either.

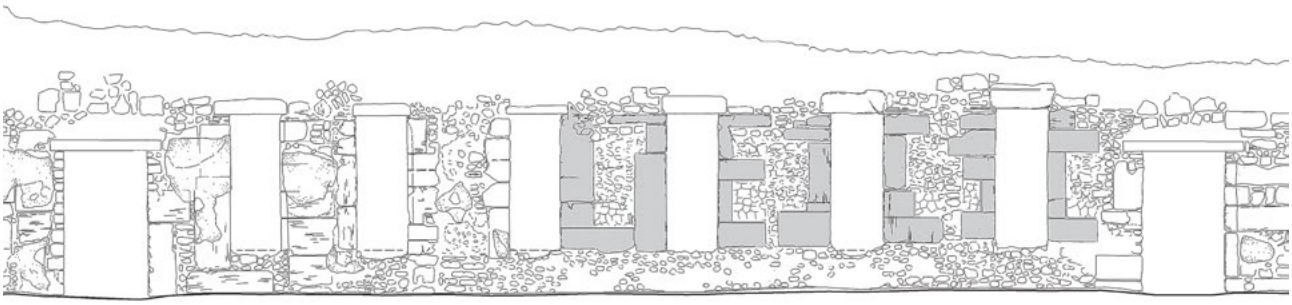

Fig. 7: Pompeii, Casa del Citarista, 'window wall', north elevation with the real and faux *opus africanum* posts highlighted.

intentionally commissioned by the homeowner[34]. It is certainly worth considering whether the illusory appearance of the 'window wall' (quite apart from its actual construction) would have convinced anyone visiting the house of its veracity, or if this message was rather intended in a symbolic way.

One must presume that the original part of the house, which was centred around the atrium (6), was intact and functional during the construction taking place in the peristyle area and thus the transition between the two zones was probably somehow obstructed. We have no way of knowing whether this included setting up a visual barrier, or whether the construction site was partially visible from the atrium, across *tablinum* (14). In the latter scenario, the undecorated wall might have been visible for quite some time, making the owner's intentions with respect to the faux masonry more comprehensible[35].

Beyond the aesthetic appeal of the wall's visual regularity, the final result also suggests that the builder employed higher precision and levels of accuracy than in the 'real' construction, which was a composite of recycled ashlars, *opus africanum* jambs and irregularly shaped sections of *opus incertum*. After the 'treatment', the windows were for the most part framed by pillars of *opus africanum*, consisting of either two or three horizontal blocks alternating with vertical posts. The incised construction might actually have suggested greater stability than the real structure, at least to non-professional observers. Thus, we might presume that the builder, in order to deliver an accurately (*subtiliter*[36]) constructed wall, decided to rework the masonry to appear more regular and precise. Based on the above considerations, we cannot exclude the possibility that these efforts were intended to deceive the homeowner or his representative.

In comparison to the examples of *opus reticulatum* described above, in the Casa del Citarista the main issue was not the augmentation of the aesthetic potential inherent to a certain material or construction technique, but rather the deliberate change of the wall's structural appearance, which was obviously considered insufficient in terms of self-representation. While the previous cases can be interpreted as signs of proud craftsmanship, the forgery of an older construction technique on a wall built partly of second-hand material certainly seems like a desperate attempt to hide something about which the craftsmen were not particularly proud.

34 On the other hand, by concealing the large blocks quarried from the houses that originally existed on the site, all memory of them was also eliminated. It is thus all the more remarkable that in the southern perimeter wall of peristyle (32), a section of the old ashlar wall was left completely intact. Of course, the wall was later plastered, rendering this material invisible.

35 It is highly speculative to suppose that this could also explain why only the western part of the wall, being nearer to the atrium and *tablinum* area, had been reworked. By this logic, one might question why the south side of the wall was treated at all, as it was only possible to see this area from the interior of the southern peristyle.

36 Vitr. De arch. 6, 8, 9.

Conclusions

As this paper has demonstrated, building material (even if it was intended to be covered during a project's final stage) was not simply a structural component employed in particular construction techniques. During construction, and prior to the addition of a decorative veneer, the masonry was sometimes used to supply either aesthetic value or further levels of meaning, directed towards various groups of observers, as well as individual parties. The numerous cases of polychrome *opus reticulatum* can be interpreted as signs of proud craftsmanship or efforts to intentionally augment the aesthetic quality of the wall face during and after its erection. The mock *opus africanum* wall in the Casa del Citarista, on the other hand, reveals different possibilities about who might have commissioned its production and their intentions in doing so. These possibilities include a practice particular to the builders employed, a desperate attempt to hide something about which these same builders were not proud, the homeowner's attempt to create an illusion or simply an homage to older building techniques.

To conclude, something that must have seemed like nonsense and/or a waste of time and energy was instead a humble effort by the parties involved in the building process to produce more than just an undecorated shell, and to exploit the period of construction as another (and perhaps their only) medium of self-manifestation.

Tobias Busen
Deutsches Archäologisches Institut, Architekturreferat
Podbielskiallee 69–71
14195 Berlin – Germany
tobias.busen@dainst.de

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Simon Barker

Marble Wall Revetment in Central Italy during the First Century A.D.: Aesthetics and Decorative Effects

Abstract: Marble was a characteristic part of the decoration of Roman public and private buildings. It was used in imperial residences in Rome as well as in private houses and villas. From the Late Republican period onwards in central Italy, as the taste for coloured marble in interior decoration grew, elite patrons began to exploit marble for wall revetment. By the end of the mid-1st century A.D., literary and archaeological evidence indicate that marble revetment had replaced wall painting as the most prestigious form of elite wall decoration. To examine this change, the paper focuses on two aspects of marble – its aesthetic dimensions and the specific decorative qualities it offered. To this end, the first part of the paper examines the ancient perception of marble as a material and the technical requirements for its use as revetment. In the second part, it examines revetment schemes in the Vesuvian area, initially by looking at the sizes of slabs, the marble types and their organisation within schemes, and then by looking precisely at the decorative effects of wall revetment in specific settings and in relation to other decorative features to understand how revetment helped create different room atmospheres.

Introduction

> *Pauper sibi videtur ac sordidus, nisi parietes magnis et pretiosis orbibus refugerunt, nisi Alexandrina marmora Numidicis crustis distincta sunt, nisi illis undique operosa et in picturae modum variata circumlitio praetexitur*[1]

As the above quote from Seneca makes clear, marble wall revetment (*incrustationes*)[2] was able to equal wall painting in both colour and pattern. While it was first attested in Rome during the mid-1st century B.C., at this point its use remained very limited and exceptional in domestic contexts, even those of elite residences[3]. By the mid- to late 1st century A.D. in central Italy, its diffusion had grown markedly, with revetment now deployed in imperial palaces, and private villas and town houses alike[4]; however, it was still limited and reserved for specific uses and for clients of the highest level[5]. Through the period under consideration here, then, marble revetment was one of many choices for wall decoration consciously made by house and villa owners. Other decorative options included plaster (smoothed or moulded, and painted), paintings ranging from single colour compositions

1 Sen. Ep. 86, 6: '*One seems poor and mean if one's walls are not resplendent with large and costly mirrors, unless Alexandrine marbles [Egyptian granites such as porphyry] are not set off by panels of* marmor numidicum*, if their borders are not faced over on all sides with difficult patterns, arranged in many colours like paintings*'.

2 See Becatti 1969, 123–128, for discussion of and references to ancient terminology related to wall revetment, e. g., *incrustationes* (wall revetment) and *crustae* (single slabs of veneer).

3 Caesar's *praefectus fabrum* and likely agent in the initial development of the Luna quarries, Mamurra, seems to have been the first (c. 49–45 B.C.) to possess domestic marble wall revetment: Plin. HN 36, 7. 48–50; Fant 1988, 149 n. 11.

4 For a general discussion of marble wall decoration, see Deubner 1939; EAA 4 (1961) 130–134 s. v. crustae; Becatti 1961; Dohrn 1965; Guidobaldi 1989; Bruto – Vannicola 1990; Guidobaldi – Angelelli 2005; Barker 2015; Guidobaldi – Guiglia 2016. See also the contribution by Beck, this volume, for marble use in public structures.

5 Private use of wall revetment must have always run counter to the regularity of its inclusion in public architecture, which is hinted at in a letter by Pliny the Younger (c. A.D. 108–109) to the architect Mustius. In writing about the reconstruction of the Temple of Ceres on his property, Pliny (Ep. 9, 39) states: *Videor ergo munifice simul religioseque facturus, si aedem quam pulcherrimam exstruero, addidero* [...] *marmora quibus solum, quibus parietes excolantur* ('I consider that it will be an act of piety and munificence, when rebuilding this temple on the noblest scale, if I add to it [...] a quantity of marble for laying the floor and encrusting the walls').

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to elaborate figural or architectural scenes, or mosaic facing. Moreover, surviving examples show that approaches for revetment could vary widely: schemes could cover whole or parts of walls with one or more marble types and with varying designs and compositions[6]. As with other decorative options, the choice of material and design changed according to the relative status and function of the building or room as well as the cost and availability of materials and the skill of the workforce. In addition, these choices must also have been based on the material and aesthetic characteristics of different marble varieties and the atmospheric qualities that they brought to a room's decoration, as well as the perception of the marble itself. This paper, therefore, focuses on these aspects to identify what made marble wall revetment *the* elite form of decoration in central Italy by the mid-1st century A.D.

First and foremost, we must ask a basic question: why put marble on walls? Marble revetment was imitated in paint long before real marble found its way onto the walls of public buildings and private houses in Roman Italy[7]. The progression from imitation to real marble revetment must at least in part relate to the importance of marble as a 'material', but what were the advantages of marble compared to 'imitated' marble in wall paintings? Here, the connotations of luxury (wealth, status and the exotic origins of these materials) that embodied the 'real' material stand out[8]. Moreover, marble created different aesthetic and synaesthetic effects: marble is cooler, for instance, than plastered walls. In addition, the decorative impact and the physical, workable qualities of marble (hardness and ability to take a polish) were the defining features of the ancient term *marmor*, which is translated here (and elsewhere) as marble[9].

To fully understand the perception and materiality of marble wall revetment we also need to be aware of its development during this period and its social context. The extent to which wall revetment was used (or could be afforded), for example, would have added to its perception as prestigious by ancient viewers. This is evident from its limited distribution amongst the villas and town houses in the Vesuvian area (discussed below). In private contexts, marble was first used for thresholds, then floors and only later for walls. On the one hand, this must relate to technical and economic developments (for example, the growing capacity of the marble trade to supply the materials necessary), but on the other hand aesthetics must also have been at play (for example, the visual impact of revetted as opposed to painted walls). Here we also need to consider the technical difficulties of preparing and installing wall revetment and how these related to its perception as a decorative form.

In considering the aesthetic and phenomenological dimensions of wall revetment, the present article considers a number of elements: the specific surface quality (brilliance, shine, softness) and

6 See Bruto – Vannicola 1990, 335 f. 342–375, for some of the different schemes employed.

7 While Vitruvius' comments about painted imitation marble revetment during the First Style (c. 200–80 B.C.) explicitly imply that real marble revetment existed, no real examples have been identified from this period. See Vitr. De arch. 7, 5, 1, with commentary by Tybout (1989, 61 f. 78 f.). In contrast, painted imitation stones have been found. See Cavari – Donati 2015; Cavari et al. 2015, for the use of painted imitation marble in both public and private structures in Etruria from the late 2nd and early 1st centuries B.C. The authors suggest that travelling painters trained in reproducing real eastern marbles, such as alabasters found in Hellenistic palaces and tombs. For imitation marbles in Alexandrian tombs of the Hellenistic period, see Adriani 1966, Figs. 194. 288. 382 f. 385 f. It should be noted that even after the introduction of real marble, painted imitation remained a popular form of decoration: see Eristov 1979 and Barker – Taelman, forthcoming, for a more recent discussion.

8 See also the contribution by Anguissola, this volume, for a discussion of luxury, its critique and the author Pliny the Elder.

9 The term 'marble' is used throughout for any hard-stone capable of taking a polish, and I have opted to use the ancient names for marbles where known rather than the 19th-century names created by the Italian scalpellini: see Russell 2013, XX f. 10 f. (glossary). However, where ancient names are not known I have used the latter. Details of all the stones mentioned in this paper can been found in Oxford, University Museum of Natural History, Corsi Collection of Decorative stones, published online by Monica Price and Lisa Cooke: <www.oum.ox.ac.uk/corsi> (02.10.2020) and in Siena, Museo di Storia Naturale dell'Accademia dei Fisiocritici, Collezione di Marmi e Alabastri di Roma e sue adiacenze, catalogued by Lorenzo Lazzarini, and now published online: <http://www.musnaf.unisi.it/marmi.asp> (02.10.2020).

treatment (polishing), along with the ways in which marble revetment was staged and applied in specific contexts[10]. From the outset, it should be noted that the limited number of 'complete' contexts has necessitated a focus on the Vesuvian area. Even here, however, survival remains an issue and as such this article is built around a small number of well-preserved examples from which it is possible to reconstruct not only the revetment scheme and the arrangement of the marbles used but also a significant portion of the room's overall decorative scheme. These examples are approached first by considering revetment schemes in broader terms – the sizes of slabs, the marble types and their organisation within schemes – and second via an in-depth look at the precise effects of wall revetment in six rooms distributed in two town houses at Herculaneum and Villa A at Oplontis. Here, each scheme is considered in its individual, specific setting and in relation to other decorative features of the room in order to better understand why marble revetment was chosen and how it functioned in its decorative environment.

Marble and its Semantic Associations

In addition to the aesthetic qualities of marble wall revetment that will be discussed more fully below, marble carried cultural meanings[11]. Polychrome marbles were easily identifiable by eye, and during the Roman period the prospecting of new quarries seems to have targeted polychrome marbles on an enormous scale in order to satisfy the growing tastes of elite patrons[12]. Seneca the Younger (c. A.D. 45), for example, decried that Roman eyes could *non ferunt nisi varium ac recenti cura nitens marmor*[13].

For ancient viewers, polychrome marbles also represented the resources (of both the Romans in general and the house owner in particular) that were required for its extraction and transport[14]. The ancient names given to marble types were often directly associated with their geographic source, for example, Numidian (*marmor numidicum*), Phrygian (*marmor phrygium*) and Karystian (*marmor carystium*)[15]. Furthermore, there was a clear association between the marbles, their origin and the idea of Roman conquest/empire – a kind of 'material map' of Rome's expanse[16]. Ancient literature leaves little doubt that homeowners could recognise the specific marbles they saw or read about – Statius' late 1st-century A.D. descriptions of Pollius Felix's villa near Sorrento and the Baths of Claudius Etruscus in Rome highlight this[17]. Statius exploited both the chromatic and ethnographic qualities of different marble types, such as the description of *marmor carystium* as 'wave-lashed' (*undosa Carystos*) in reference to both the marble's source and its visual similarity to waves[18].

This knowledge was clearly so well known by the elite of Rome that Pliny the Elder (A.D. 70s) simply said, *Marmorum genera et colores non attinet dicere in tanta notitia nec facile est enumerare*

10 For a discussion of the relationship between decorative principles and perception, see Haug 2020, 16 f. 37 f. 45–49.
11 See the contribution by Haug –Hielscher, this volume, for a discussion of the relationship between semantic, aesthetic and functional aspects of material culture.
12 Russell 2013, 8–36.
13 Sen. Dial. 3, 35, 5: 'only endure to see the most variegated marble'.
14 For studies on ancient perception of marble and the ability of viewers to identify different varieties, see Bedon 1984, 28 f.; Russell 2013, 15 f. For ancient references to the qualities and origins of stone types, see Vitr. De arch. 2, 7; Mart. 1, 88; Juv. 14, 307; Stat. Silv. 1, 2, 148 f.; Lucian. Hipp. 5 f.; Sid. Apoll. Epist. 2, 2, 7.
15 Schneider 1986, 139–160; Vell. Pat. 2, 33, 4. Some were also named for the person who first displayed the stone (e. g., L. Licinius Lucullus [consul in 74 B.C.], *marmor Luculleum*) or who was responsible for its discovery (e. g., *marmor Claudianum*). See Plin. HN 36, 49.
16 Story et al. 2005, 163. See, for example, Isserlin 1998; Paton – Schneider 1999; Peacock – Williams 1999, for a discussion of marble as embodiment of empire and control over nature. See also Beck, this volume.
17 Stat. Silv. 1, 5, 11–13. 34–43 (Baths of Claudius Etruscus); 2, 2, 82–94 (Villa of Pollius Felix).
18 On this point, see Bradley 2006.

in tanta multitudine[19]. Similarly, Pliny referred to 'our favourite marbles': 'our' presumably meaning wealthy and educated Romans from elite families[20]. Ancient sources leave little doubt that among such groups the 'identification, discrimination and discussion of marble surfaces was [...] the subject of a highly refined and sophisticated intellectual discourse'[21]. The use and display of coloured marbles in spaces for entertaining and dining, then, offered a rich opportunity to demonstrate authority, knowledge and the owner's wealth and status, as well as the chance to participate in erudite debate on aesthetics and culture[22].

It should be stressed that this meaning attached to imported polychrome marble related to central Italy. Cicero, for example, famously condemned the walls of Chios (the source for several coloured marbles, including the much valued *marmor chium*), which had been constructed in local polychrome marble: *magis mirarer, si Tiburtino lapide fecissetis*[23]. Here, we can see the explicit link between marble, the technical requirements for its acquisition and use, the distance of its source and its prestige. While some authors criticised marble use because of its association with luxury or because of its destruction of nature[24], the archaeological evidence demonstrates that the positives clearly outweighed the negatives. Clearly, the status and atmospheric qualities displayed by marble revetment compensated for any ethical ambiguity.

Technical and Practical Considerations

In the mid- to late 1st century A.D. in central Italy, almost all marble had to be imported from the Aegean, Asia Minor, North Africa or Egypt[25]. The labour and technical achievement represented by the extraction, movement and handling – shaping with chisels and saws and surface finishing with abrasives by specialist workers – was 'stored' in the marble itself[26]. Moreover, completed products like revetment also provided a visual expression of technical virtuosity[27]. This embodiment of technical ability and labour input added to the semantic associations of marble discussed above, to further imbue marble with qualities that made it impressive to Roman viewers. This can clearly be seen in ancient texts, where authors explicitly link marble's prestige with the technical requirements for its exploitation and use. Strabo, for example, calls attention to this in his discussion of the quarries for *marmor phrygium* at ancient Dokimeion. He records that ὥστε καίπερ πολλῆς οὔσης τῆς ἐπὶ θάλατταν ἀγωγῆς τῶν τηλικούτων φορτίων ὅμως καὶ κίονες καὶ πλάκες εἰς Ῥώμην κομίζονται θαυμασταὶ κατὰ τὸ μέγεθος καὶ κάλλος[28]. Strabo would have been familiar (as perhaps would his

19 Plin. HN 36, 55: 'It is not important to state the types and colours of marbles so well known; nor is it easy to list such a multitude'.

20 Plin. HN 36, 46.

21 Bradley 2006.

22 Haug 2020, 32 f.

23 Plin. HN 36, 46: 'I should be much more amazed if you had made them of stone from Tibur (Italy)'. See Russell 2013, 14, for polychrome marble decoration in the east as imitation of imperial *decor*.

24 See, for example, Plin. HN 36, 1 f. 24. 123–125; Schneider 1986, 137 f. 150 f.; 2001, 6; Beagon 1992, 41 f. On the criticism of Nero's marble decoration in the Domus Transitoria as embodiment of his kingly ambitions, see Fusco 2010, 84; Meyboom – Moormann 2013, 28. 74 f.

25 See Maischberger 1997; Lazzarini 2002; Pensabene 2002; Russell 2013.

26 See the contribution by Wagner, this volume, for a similar idea of 'stored labour' related to polish and gloss.

27 Pliny the Elder, for instance, praised artists capable of overcoming the difficulties of carving statues from a single block of stone (that is compositions *ex uno lapide* or *ex eodem lapide*): see Plin. HN 36, 7. 34. 41. 66. While the production and installation of panels of marble veneer is of a more modest artistic output, in the context of a domestic setting, it nonetheless represented (and displayed) a degree of technical accomplishment. In another section of the *Naturalis historia*, Pliny praised the ingenuity of the art of cutting marble – sawing being the method by which veneer slabs were produced: see Plin. HN 36, 9.

28 Str. 12, 8, 14: 'Although the transportation of such heavy burdens to the sea is difficult, still, both pillars and slabs, remarkable for their size and beauty, are conveyed to Rome'.

readers) with the considerable effort and expense needed to move this marble from its quarry at Dokimeion overland before it was loaded onto boats for river transport and then transferred from Ephesos or Nikomedia to ships bound for Italy[29]. This represents just one of the long and arduous journeys that were required to transport different marble varieties to Italy. The larger sizes of the blocks needed to create wall revetment schemes would have been a visual testament to the labour and ingenuity required to transport the marble across the Mediterranean.

Different decorative wall surfaces required different materials, techniques and specialist skills, with more luxurious materials and elaborate patterns requiring more skilled labour and, thus, incurring higher costs. Simon Corcoran and Janet DeLaine, for example, have convincingly demonstrated the higher cost of marble wall revetment in comparison to painted decoration[30]. This relates primarily to the factors noted above, namely the cost of transport and the production of slabs for veneer (including, for example, their sawing[31] and polishing[32]). These labour-intensive processes were required for slabs used on both floors and walls. However, the latter added the further technical difficulty of working on a vertical rather than horizontal surface, which would have necessitated both additional time and costs[33]. In contrast to floors, marble wall revetment required the use of a fixing system with slabs installed from the bottom upwards[34]. Revetment slabs (*crustae*) had to be securely bonded to a vertical surface by means of a layer of mortar[35] – something that was much more difficult than the construction of floors[36]. The principal difference was the use of clamps embedded in the wall at regular distances to hold the revetment panels in position while the mortar set[37]. These added technical difficulties involved in preparing and installing wall revetment – which would have been recognised and understood by most ancient viewers – directly impacted how wall revetment was perceived as a decorative element.

One of the abovementioned visual characteristics of marble that made it stand out as a material was its ability to take a polish – various limestones, marbles, granites and porphyries were included in the term 'marble' (rather than the generic *lapis*/'stone'), which came from the Greek μαρμαίρον ('to shine')[38]. The effect of the technical processes involved in polishing would have been immediately visible to viewers from the shine or gleam of the marble wall surface. This is particularly true

29 Barresi 2003, 103; Christol – Drew-Bear 2005, 199 n. 35; Burrell 2012.

30 Wall painting (9 *denarii*/ft²), revetment in white marble (45 *denarii*/ft²) and *marmor numidicum* (206 *denarii*/ft²); Corcoran and DeLaine (1994) used Diocletian's Edict of Maximum Prices based on marble prices in square feet to estimate the cost of materials and preparation.

31 Bruto – Vannicola 1990a, 288. 315–323. The labour needed for sawing depended on the hardness of the stone, with compact limestones and marble, for example, requiring 20–40 hours per m². Ricci (1877, 114) and Salmojraghi (1892, 289) provide labour times for sawing different marbles and granites.

32 See Bruto – Vannicola 1990a, 313 f. on the types of abrasives, techniques and processes involved in polishing marble. The time needed to polish stones depended on hardness, structure and inclusions, as well as the shape of the surface, with marble requiring c. 16–33 hours per m² and granites and porphyry requiring c. 100–200 hours per m².

33 For example, polishing after installation (due to the difficulty of working on a vertical surface) and additional elements like cornices that needed specialised work: see Bruto – Vannicola 1990, 327 f. Fig. 3.

34 Ball 2002, 556; Guidobaldi – Angelelli 2005, 34 f. On preparation and installation of marble wall revetment, see Cozza 1974/1975, 96–98; Bruto – Vannicola 1990, 322 f.; Giuliani 1990, 143–145; Guidobaldi 2000; Ball 2002.

35 Guidobaldi – Angelelli 2005, 34 f.

36 Pre-fabricated panels became more common for floors from the Flavian period onwards: see Cozza 1974/1975, 96–98; Guidobaldi – Guidobaldi 1983, 176–181; Guidobaldi 1985, 22 f.; Guidobaldi et al. 1994, 49–51 Fig. 3.

37 Ball (2002, 558) noted that the clamps were not to support the panel's weight against gravity but to resist the revetment panels being pushed into the wall or pulled out from it while they were being installed. On the different scenarios for applying the mortar, see Bruto – Vannicola 1990, 332; Ball 2002, 560–562; Guidobaldi – Angelelli 2005, 35 f.

38 See Hom. Il. 12, 380; Hom. Od. 9, 499. Cf. Plin. HN 36, 46. For further discussion of the Homeric word μαρμαίρον to refer to crystalline rock with sparkling luminary qualities, see Bradley 2009. For discussion of decoration, human action and the creation of 'atmospheres', see Böhme 1995; Muth 1998; Haug 2020.

as different levels of polish could have been achieved (from velvety matte to extremely high gloss) through the use of different abrasive stones and/or powders[39].

Moreover, it is possible that different levels of surface finish could have been combined in the same scheme with both matte and high-gloss finishes applied to different marble types or elements; however, the exact level of polishing and surface finish is not easy to reconstruct in the majority of cases. Unfortunately, when marble is exposed to the elements, it loses its smooth polished surface. The surviving panels from the Vesuvian area, however, suggest that a range of finishes from matte to gloss were present. The panels of breccia corallina at Villa A at Oplontis, for example, have a softer appearance, suggesting that they were given a matte finish, while the panels in *oecus* (21) of the Casa del Rilievo di Telefo (Ins. Or. I,2) at Herculaneum appear to have had more polish, bringing out the rich purple in the breccia di Settebasi and the yellows and reds of the *marmor numidicum*. In both cases, the level of surface finish shows a certain attention to the aesthetic atmosphere of the room in which they had been installed (see below).

A final point worth stressing here is the large size of panels that were often used for wall revetment and the technical implications that this demanded. At a very basic level, large panels represented a challenge in terms of supplying the necessary size of marble blocks. In general, the main aim when transporting marble was to keep the total cubic mass of the block required to a minimum; however, while the overall total square metres of material used in pavements and wall revetment might have been similar, the size of individual marble slabs needed for wall revetment was much larger. An examination of surviving revetment schemes from the Bay of Naples demonstrates that large central panels were a consistent feature of marble wall decoration, with individual panels often between 50 and 70 cm high and 75 to 150 cm wide (Tab. 1). Some of the most striking examples include the large central panels of *triclinium* (18) in the Casa del Rilievo di Telefo, whose largest panels measured c. 125 × 170 cm (Fig. 1), the large panels of *oecus* (17) of the Casa dei Cervi (IV 21) at Herculaneum, whose largest panels measured c. 90 × 130 cm (Fig. 2), and the panels from *oecus* (48) of the Casa dei Dioscuri (VI 9,6) at Pompeii, whose largest panels were c. 100 × 120 cm. These panels, discussed further below, were generally offset by frames – on a basic level simply by thin bands set above the plinth and below the crown band, but in more complex schemes, by narrow panels on either two or four sides. In all three cases, the bands were executed in a different variety of marble in order to provide a chromatic contrast that highlighted the large central panels. The large revetment panels would not only have been a striking visual testament to the labour and ingenuity required to transport, saw and polish the marble but would also have presented a greater surface area of precious coloured marble than those used in other decorative schemes. Therefore, the use of contrasting colours to highlight these panels was a conscious decorative choice.

In addition, the 'continuous' view of marble provided by plinths or crowning bands in the same marble variety that stretched the length of a wall or around a room made more efficient use of a stone's visual properties than smaller panels or floor decoration. Here, then, we can see the inherent value in the integrity of large panels. From both the craftsman's and the client's point of view, large panels (made without joining or patching) not only demonstrated the craftsman's skill but also had aesthetic and semantic advantages for the house owner.

Within the Vesuvian area during this period, where difficulties or shortages in supplies must have been a constant reality[40], the ability to acquire large blocks would therefore have had significant logistical and economic implications. That the acquisition of marble blocks large enough for the most luxurious wall revetment could have been a challenge, even in high-status contexts, is evident from the surviving examples. At Villa A (Oplontis), for example, slabs had to be patched together to create 'larger' pieces in the revetment of rooms (64) and (65)[41]. The decorative effect of

39 The higher the gloss finish or shine desired, the more (and finer) the abrasives that were required. For a discussion of finish and polishing processes, see Wootton et al. 2013, 12f.; 2013a, 9.

40 Barker – Fant 2019.

41 Barker – Fant 2019.

Fig. 1: Herculaneum, Casa del Rilievo di Telefo, *triclinium* (18), detail of revetment scheme.

Fig. 2: Herculaneum, Casa dei Cervi, *oecus* (17), detail of revetment scheme.

'patched slabs' was still impressive and acceptable. Even in the 4th century A.D., the senator Symmachus described the marbles in his father's house as *superiora conclavia crustis teguntur ea operas levitate, ut conpago solidum mentiatur*[42]. Similarly, Choricius of Gaza (active c. A.D. 500) described the church of Saint Stephen in Gaza, comparing the marbles to paintings: '[...] bands of well-fitting marble cover the wall. They are so joined together as to appear to be a work of nature, and so variegated with their natural colours as to resemble altogether a hand-painted picture'[43].

We can see from this section that an important element within wall revetment was its visual display of the difficulties overcome to use it – its quarrying, transport, sawing, polishing and installation. Large panels in particular tapped into this technical virtuosity, while providing the opportunity to visually exploit the lively chromatic appearance and aesthetic effects of marble by presenting a greater surface area of coloured marble. Schemes such as that in *triclinium* (18) of the Casa del Rilievo di Telefo distinguished themselves in this respect from other schemes applied in other houses, as will be seen below.

Marble Wall Revetment in the Vesuvian area

Revetted walls of marble, already found in Rome in the Late Republican period, emerged alongside an ever-increasing fascination with and demand for lithic decoration that ultimately far outstripped anything seen before in antiquity. In the context of the houses and villas of the Bay of Naples, wall revetment primarily belongs to the final phase of marble use prior to the A.D. 79 eruption of Mt. Vesuvius. This decorative trend therefore stands as one of the last developments in marble consumption at Pompeii, Herculaneum and in the villas of the Vesuvian area. Here, as in Rome, marble use had begun during the Late Republican period and was much expanded throughout the Augustan and later Julio-Claudian periods[44]. We have no evidence to indicate that wall revetment

42 Symmachus Ep. 1, 12 (before A.D. 337): 'so polished that despite the composition of many pieces they give the illusion of being one sole piece'. Cf. Juvenal's satirical passage (Juv. 14, 59–63) describing an anxious homeowner preparing for visitors, in which marble was meant to 'shine' just like the family silver.

43 Chor. Laud. Marc. 2, 40. Cf. Paul. Sil. 605 and his description of marble wall revetment that 'the joining of the cut marbles resembles the art of painting [...]'.

44 Guidobaldi et al. 2014 (for Herculaneum); Barker – Fant 2019 (for Oplontis); Barker et al. 2013; 2015; Barker – Fant 2018 (for Stabiae); Blake 1930; Guidobaldi 1985; de Vos 1991; Guidobaldi – Olevano 1998; Fant 2007; Grandi – Guidobaldi 2008; Barker – Fant 2018; Barker – Perna 2018; Beck 2019 (for Pompeii). See also Beck, this volume, for public structures.

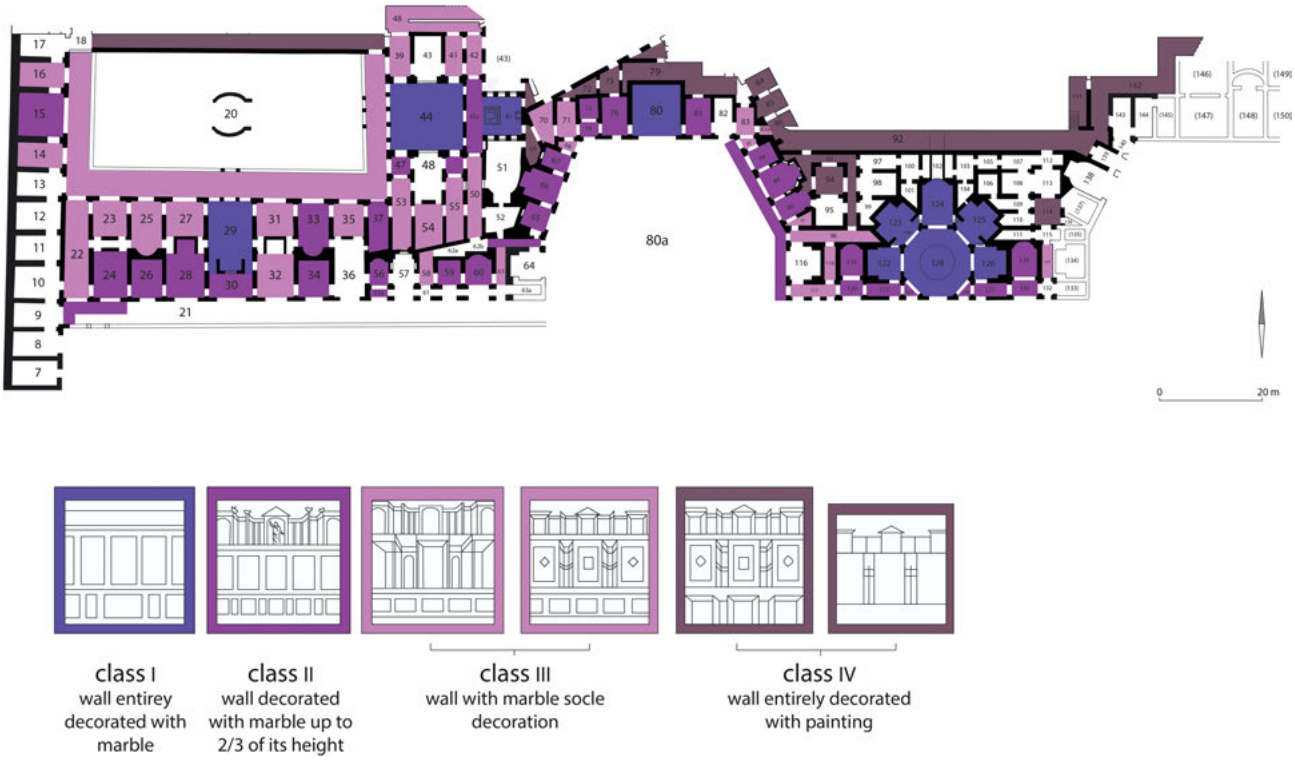

Fig. 3: Rome, Domus Aurea, plan of the Oppian Pavilion indicating the decorative schemes employed.

was used in the houses or villas of the Vesuvian area before the late Third Style[45]. In fact, in all likelihood the majority of examples, both public and private, belong specifically to the late Fourth Style in the period following the A.D. 62 earthquake. With the exception of one example[46], all of the walls with marble revetment at Herculaneum are datable to this period[47]. By this time, following Nero's (A.D. 54–68) large-scale palace building campaign in Rome, marble wall revetment had supplanted wall painting as the most prestigious form of wall decoration[48]. This can be seen particularly in Nero's Domus Aurea, built after the great fire of A.D. 64[49]. In the Oppian Pavilion alone, over 2,100 m² of marble wall revetment was used, only for the most prestigious rooms (Fig. 3)[50]. While this revetment was spoliated for reuse elsewhere sometime between the death of Nero in A.D. 68 and the pavilion's demolition for the construction of the Baths of Trajan in A.D. 104, the scheme can be identified from the impressions of the marble slabs preserved in the mortar preparation layer[51]. From this, it seems clear that the importance of rooms was reflected in their position within the pavilion and the quantity of marble applied to their walls[52].

During its principal period of use in the Vesuvian area, therefore, the diffusion (even if somewhat limited) of marble wall revetment can be connected to imperial tastes in Rome. At the very least, it is clear that Vesuvian marble workshops watched Rome carefully not only for decorative

45 The first identifiable use of wall revetment was probably at the Villa Arianna (ancient Stabiae) in atrium (24) (c. mid-1st century A.D.): see Barker et al. 2013, 8.

46 E.g., the Collegio degli Augustali (VI 20–24). See Guidobaldi et al. 2014, 376 f. cat. no. 356b.

47 Guidobaldi et al. 2014, 445 f. 516 f. Tab. XX.

48 See Pliny's (HN 35, 1, 2 f.) slightly later comments on marble ousting frescoes from walls.

49 Meyboom and Moormann (2013, 75 f.) suggested that this was due to the idea that marble was more suitable to Nero's imperial self-representation.

50 Barker 2012.

51 Meyboom – Moormann 2013, Fig. 73, 1.

52 Meyboom and Moormann (2013, 71 f.) recognised three classes of rooms ranging from rooms with marble revetment up to the full height of the wall to rooms with only painted decoration.

schemes (evident in the adoption of *sectilia* motifs as well as wall revetment)[53] but also in the stones employed (especially Egyptian granites, which first appeared in Rome in the palaces of Nero and Domitian[54]). Evidently, owners were working to keep up with trends at the imperial court, where revetted walls belonged to the most prestigious form of wall decoration available for domestic contexts.

The luxurious nature of wall revetment is shown not only in its limited use but also by its association with the decorative schemes of prestigious sea view houses at both Pompeii and Herculaneum, and the large villa complexes[55]. Often, wall revetment specifically decorated the rooms that commanded direct sea views or looked directly onto gardens, pools and sculpture[56]. In total, wall revetment can be found in 14 domestic structures in the Vesuvian area: four in Herculaneum, seven in Pompeii and three in the villas at Oplontis and Stabiae. The revetment is generally applied only to the lower zone of a wall, with only two extant examples covering middle and upper zones with total heights over 3 m (Tab. 1). The exclusivity of revetment in private houses is evident when we consider that revetted walls account for only c. 150 m² of wall decoration from the surviving houses at Pompeii: a small amount when considered against the c. 25.611 m² of wall paintings that survive in the city.[57] Even if we consider the surface area of wall revetment against contemporaneous Fourth Style painted decoration (c. 9.584 m²), the limited application of wall revetment remains strikingly evident[58]. Wall revetment was therefore limited in diffusion and chronology, and only employed for specific uses and clients of the highest level. The 'marmorisation' of town houses (striking in the post-A.D. 62 renovations of several houses at Herculaneum) and villas was therefore a fundamental development of the Early Julio-Claudian period and following decades, when owners evidently invested heavily in all manner of marble architectural and sculptural components – wall revetment being a central part of almost all of these 'marmorised' residences.

The surviving schemes of marble wall revetment show a certain degree of consistency in terms of appearance and marble use. The most common form consisted of (from bottom to top) a low plinth, a thin (often moulded) band, a series of large (often framed) panels, a thin (often moulded) band and a finishing band[59]. The design and composition did however vary from one example to another, with highly elaborate decoration consisting of architectural schemes that included additions such as columns and capitals, as in *triclinium* (18) of the Casa del Rilievo di Telefo at Herculaneum. This of course provided the opportunity for aesthetic variety within revetted wall schemes. The scheme could have a high degree of repetition, with the same layout and marble types (and therefore colours) reproduced throughout the room, or panel sizes and marble types could be alternated throughout the room.

Wall revetment schemes often played with depth as well as panel colour and size. Large framed panels, which formed the main component of most schemes, were typically recessed by 1 or 2 cm

53 This is evident in the *sectilia* motifs used in *diaeta* (23) of the Casa dei Cervi at Herculaneum, the Villa San Marco at Stabiae and the Casa dell'Efebo (I 7,11) at Pompeii, which correspond to marble varieties (porphyry, *marmor lacadaemonium*, *numidicum* and *phrygium*) and motifs employed in Neronian and early Flavian pavements on the Palatine in Rome. See Guidobaldi (et al. 2014, 253–255 cat. no. 229), who also suggested the possibility that workers from Rome were used in the Vesuvian area.

54 Fant et al. 2013; Barker – Fant 2018.

55 Barker 2015, 45 f. n. 2.

56 For a discussion of the importance of views in architectural design, see Haug 2020, 28 f.

57 Bologna 2019, 124.

58 Bologna 2019, 124 f. The difference would be even more dramatic if we accounted for the potential loss of both excavated wall paintings (perhaps as high as 80 percent) and the unexcavated parts of the town, which at the time of the survey totalled 17.7 ha. On this point, see Bologna (2019, 125), who refers to Parise Badoni (1981, 71), for the figure of 80 percent wall painting loss at Pompeii.

59 See Guidobaldi et al. 2014, 445 f.; Becatti 1969, 124 f., for the Vesuvian area. See Bruto – Vannicola 1990, 334 f. 342–375, for a discussion of the surviving evidence and a description of the different schemes that were more widely employed.

Fig. 4: Pompeii, Casa di M. Fabio Rufo, *triclinium* (21), ground floor.

from the surrounding frames, while the lower plinth and crowning moulding were generally deeper, extending beyond the central panels. Likewise, the top crowning moulding set above the central section of panels was inverted so it projected 1 or 2 cm outwards at the top. These differences provided additional texture and depth to individual revetment schemes, which helped individual elements (and marble varieties) to stand out. These schemes generally made use of various polychrome marbles; however, more muted schemes consisting of mainly white and grey marbles were also popular. The following section will look at how different marbles were employed, before moving on to consider some examples in detail.

Marbles Used for Wall Revetment

The lack of preserved examples of wall revetment in the Vesuvian area makes in-depth study problematic. While the schemes can often be reconstructed, the types and combinations of marble used are often impossible to determine, due to spoliation in antiquity or during the course of 18th-century excavations[60]. This of course has the potential to greatly distort our view from a number of perspectives, such as that of the differences between Pompeii and Herculaneum, and the differences in the types and ways in which marble was employed. Indeed, it is easy to over-emphasise the wealth of marble decoration at Herculaneum due to the higher level of preservation of marble revetment; however, two of the most impressive examples of marble wall revetment from the Vesuvian area are found not here but in Pompeii: the Casa di Fabio Rufo (VI 17,16–19) and the Casa dei Dioscuri. The former had a floor-to-ceiling revetment scheme c. 3.8 m high in *triclinium* (21) that would have required over 100 m² of marble (Fig. 4)[61]. Unfortunately, only the socle of Luna bardiglio remains in situ. Meanwhile, the Casa dei Dioscuri is the only extant house at Pompeii with wall revetment in two rooms: ambiente (22) and cyzicene *oecus* (48) (revetment to a height of 3.7 m, most likely in

60 Barker – Fant 2018; 2019.
61 Barker – Fant 2018.

Fig. 5: Herculaneum, Casa dei Cervi, *tablinum-oecus* (15).

marmor luculleum, *taenarium*, *numidicum* and alabaster)[62]. Judging by the imprints of the mortar preparation layer, both schemes seem to have been similar to those employed in Nero's Domus Aurea. These examples demonstrate how the poor survival of marble revetment makes it difficult to determine with any precision both the types of marble used and, more importantly for this paper, how they were used, for the majority of examples from the Vesuvian area. Consequently, it is not possible to compare like-with-like.

Despite these problems, it is still possible to make observations from the extant wall revetment schemes, where two general approaches to materials stand out. First, there are schemes that employ only a limited amount of polychrome marble, instead focusing on white or grey marbles, as can be seen in *oecus* (17) and *tablinum-oecus* (15) in the Casa dei Cervi at Herculaneum (Fig. 5), where polychrome marble is only represented by thin fillets of *marmor taenarium*[63]. Second, there are schemes that are predominantly or almost entirely composed of polychrome marbles. Here we can make a further distinction between schemes that typically employed the marbles favoured in imperial architecture (such as *marmor numidicum*, *phrygium*, *luculleum* and *chium*) and those that made use of 'new' or 'rare' marble types (such as breccia corallina, breccia di Settebasi and *marmor chalcidicum*), which are essentially absent from imperial building projects. Examples of the former include the wall revetment of *triclinium* (18) of the Casa del Rilievo di Telefo and that of the monumental hall (VPSO(a)) at the Villa dei Papiri[64], while examples of the latter include the revetment in room (64/65) at Villa A (Oplontis), which employed breccia corallina alongside *marmor luculleum* and white Luna marble (Fig. 6)[65], and *oecus* (21) of the Casa del Rilievo di Telefo, which made use of breccia di Settebasi (Fig. 7)[66]. Moreover, based on the surviving evidence there seems to have been a clear difference between the marbles available to decorate walls in the Vesuvian area and those available in Rome[67].

62 Bechi 1829, 21; Richardson 1955, 63–65 Pl. 14, 2.

63 Other houses that primarily relied on grey marble, especially for larger central panels, include the Casa di Sallustio (VI 2,4) and the Casa della Regina Carolina (VIII 3,4) at Pompeii.

64 Guidobaldi et al. 2014, 87–89 cat. no. 45 and Guidobaldi et al. 2012, 159 f., respectively.

65 Barker 2015; Barker – Fant 2019.

66 Guidobaldi et al. 2014, cat. no. 48b.

67 For example, Egyptian granites were used in Rome for wall revetment, but only painted imitations were found in the Vesuvian area: Barker – Taelman, forthcoming. See Carettoni 1949, 57 f. Figs. 8–10, for the Domus Transitoria.

Fig. 6: Oplontis, Villa A, room (64).

Fig. 7: Herculaneum, Casa del Rilievo di Telefo, *oecus* (21), detail of revetment scheme.

While certain types of marble may have appealed to private homeowners precisely because they were found in imperial or public settings, we should not dismiss the decorative appeal of marbles in their own right – their distinctive colours and patterns served to make them desirable material for decoration in and of themselves. The use of what we might call 'new'/'rare' (or at the very least, less common) marble varieties may represent aesthetic innovation by house and villa owners seeking to display colourful and patterned marbles. This may be the reason that large central panels of breccia corallina were used in the revetment of room (64/65) at Villa A (Oplontis) and breccia di Settebasi was used in *oecus* (21) of the Casa del Rilievo di Telefo. In both examples, however, it is worth noting that the panels had similar tonal qualities to the much more frequently employed *marmor phrygium*. At Villa A, the panels of breccia corallina have a striking purplish hue[68], while the pink or orange clasts often found in breccia di Settebasi are almost entirely absent, leaving the panels with a uniform purple ground and white clasts. Indeed, it is possible that this 'innovation' was simply due to availability and/or cost (i. e., the owners had indeed desired better-known marbles but could not acquire or afford them), but it is equally possible that originality was the impetus here[69].

68 Breccia corallina from Verzirhan, Turkey typically has a coral red ground with orange to salmon pink or brown and cream-white clasts. For a discussion of this stone, see Lazzarini 2002; 2006.
69 Barker – Fant 2019; Barker 2020.

The appeal of having highly variegated schemes is evident from Statius' description of Pollius Felix's villa near Sorrento, which shows that part of the attractiveness and luxuriousness of such decoration was the display of multiple 'foreign' varieties – in this case, seven different polychrome marbles, none of which came from Italy[70]. Such choices most likely reflected a number of factors, including economy, aesthetics and prestige. All of the polychrome marbles used in the most impressive wall revetment schemes, irrespective of whether they were found in imperial projects, are multi-coloured and include particularly beautiful stones. This seems to correlate with the observations of Ben Russell in his discussion of stone prices in the early-4th-century Edict of Maximum Prices, that the higher prices of certain stones, such as *marmor numidicum* and *phrygium*, were likely based on their function/decorative appeal rather than the remoteness of their sources[71].

In this light, the monochromatic wall revetment schemes of mainly white and grey marbles that we find in several houses on the Bay of Naples suggest that the choice of this material was related to the overall architectural and decorative atmosphere of the room. While these examples typically employ more 'common' marble varieties (Luna white and bardiglio), the arrangements are sometimes still of considerable height (over 1 m). Two wall revetment schemes from the Casa dei Cervi at Herculaneum, for example, which belong to the post-A.D. 62 renovations in two of the most luxurious rooms, used mainly grey and white marble with the addition of thin bands of *marmor taenarium* (1 cm high)[72]. The limited height (c. 53.5 cm) of the revetment in *tablinum-oecus* (15) was designed to present a continuous band of revetment around the lower zone of the room without interruptions from the room's large windows. Moreover, the quality of the execution and the monochromatic scheme created a band that provided a neutral background surface highlighting the room's colourful Fourth Style wall painting, its intricate polychrome marble *sectilia* floor[73] and its views – looking out on both the house with its temple pediment façade featuring a mosaic-decorated *tympanum* and the garden with its marble furnishings (i. e., the famous stag statues), as well as the 'loggia' with its sea views. The high quality and colourful pavement with rare varieties of marble (for example, breccia corallina and gabbro eufotide) was clearly the focus of the room's decoration, with the wall revetment designed to enhance (but not detract from) it. Here, as in room (64/65) at Villa A (Oplontis) discussed below, the revetment was present, but its monochrome approach aided the wider decorative program of the room.

In contrast, revetment composed of polychrome marbles provided a very different aesthetic quality to a room. These marbles (generally colourful breccias) often contained two or more colours in each block with variable patterning. *Marmor numidicum*, for example, can range from pale yellow to dark yellow/orange with purple, and from a relatively homogenous matrix with large white (calcite) clasts to dense brecciation[74]. Moreover, the employment of different marbles in individual schemes offered chromatic contrast for an impactful visual effect. The bands framing larger panels could provide lighter and/or darker contrasts, which could in turn be repeated or alternated. Here we can recall the words of Seneca quoted at the beginning of this paper, where he describes rare marbles arranged in complex patterns and offset by other marbles of differing colours. In the Vesuvian area, the chromatic contrast was often displayed with frames and/or separating bands of

70 Stat. Silv. 22, 83–87.

71 Prices (in *denarii*) are given: 250, 200, 150, 100, 75, 60, 50, 40. *Marmor numidicum* and *marmor phrygium* are listed at the second highest price of 200 *denarii*, *marmor luculleum* is listed as the third highest, 150 *denarii*, and *marmor carystium* at the fourth highest, 100 *denarii*, for example. Russell (2013, 34–36) based this on the price differences and the apparent inflation of the most highly coloured marbles in Diocletian's Edict of Maximum Prices.

72 This included *tablinum-oecus* (15) and *oecus* (17); Guidobaldi et al. 2014, 249 cat. no. 224b.

73 Guidobaldi et al. 2014, 248 f. cat. no. 224a. The floor included intricate shapes and a large variety of marbles: bardiglio, white marble, *marmor numidicum*, *luculleum*, *phrygium*, *chium*, *taenarium* and *carystium*, as well as rarer varieties, such as alabaster, breccia corallina, breccia Appenninica semesanto, gabbro eufotide, lumachella gialla, paesima, etc.

74 See Ardeleanu 2018, for this stone and its use in the Early Roman period.

marbles that differed in colour or tone from the larger panels. The most common schemes alternated between stones with darker colours, such as *marmor luculleum* (black or dark green matrix containing pink, white, red and green clasts) and *marmor taenarium* (uniformly red-brown), stones with intermediate tones, such as *marmor phrygium* (white clasts in a purple matrix), *marmor carystium* (streaked green and white marble) and bardiglio (streaked medium-grey and white marble), and stones with lighter colours, such as *marmor chium* (pink or grey clasts in a red-pink matrix) and *marmor numidicum* (matrix of purple, orange or yellow with yellow clasts). However, caution is needed. For example, *marmor numidicum* is susceptible to a strong reddening of colour caused by the heat from the A.D. 79 eruption, as we can see in the floor of *triclinium* (18) of the Casa del Rilievo di Telefo at Herculaneum[75]. This distorts the original decorative scheme, with the original yellow tones replaced with red, pink, white and grey tones throughout the floor, creating a less lively and varied effect.

To explore the ways in which the specific aesthetic qualities of marble wall revetment were used in decorative schemes, it is necessary to look at the limited number of surviving examples that can be accurately reconstructed alongside other decorative elements. At Herculaneum, this includes the Casa del Rilievo di Telefo and the Casa dei Cervi, and at Pompeii there are a further three examples at the Casa della Regina Carolina (VIII 3,14), the Casa delle Vestali (VI 1,6.8.24–26) and the Casa di Sallustio (VI 2,4). Finally, there are also a number of rooms at Villa A (Oplontis) where such reconstruction is possible. However, the present discussion will focus on just three rooms: *triclinium* (18) and *oecus* (21) of the Casa del Rilevo di Telefo, and room (64/65) at Villa A (Oplontis). Here, the emphasis is on looking at the choices made by individual house and villa owners, and how the material characteristics of different marble varieties were used to create different room atmospheres. While all of these examples represent substantial monetary expenditure, they were employed in different ways to achieve different effects.

Triclinium (18) and *Oecus* (21) of the Casa del Rilievo di Telefo

One of the largest houses uncovered at Herculaneum (over 1,000 m²) is the Casa del Rilievo di Telefo, which contained three rooms with marble wall revetment, two of which will be discussed here: the grandiose *oecus*/*triclinium* (18) and the luxurious *oecus* (21). Unfortunately, another room, *oecus* (10), cannot be sufficiently reconstructed for in-depth analysis. The marble decoration of these rooms belongs to an important restoration undertaken after the earthquake of A.D. 62 and represents some of the most complex and high-quality examples preserved in the Vesuvian area. In addition, the owner seems to have had a high commitment to marble as a decorative element of the house. It is the only house in Pompeii or Herculaneum to have more than two rooms with marble wall revetment and more than three marble *sectilia* floors, all of which were wall-to-wall, itself a rare feature.

The revetment of *triclinium* (18) was unique in a number of ways. First, the wall revetment reached a considerable height (over 1.7 m), even if it did not represent the tallest example from the Bay of Naples[76]. Second, its blind colonnade and use of spiral semi-columns with Corinthian pilaster capitals to separate large panels provides the only architectural scheme surviving in the area[77]. The

75 On this point, see Guidobaldi et al. 2014, 81–87.

76 The wall revetment in *triclinium* (21) of the Casa di Fabio Rufo at Pompeii, for example, reached a height of c. 3.8 m.

77 It is possible that this unique case is not solely the result of preservation but in fact also reflects the owner's original decorative decisions. A marble cache, probably awaiting reuse, was found on the Janiculum Hill in Rome and most likely came from the nearby Julio-Claudian Domus Agrippinae. This cache represents a similar (albeit more elaborate) marble revetment scheme with large panels, architraves and pilasters with capitals and bases, as well as other figural inlays. This scheme used a wide array of marble varieties, including alabaster, white marble, breccia di Settebassi, *marmor taenarium*, *numidicum*, *luculleum*, *chium*, *phrygium* and *carystium*: see Filippi 2005. Additionally,

revetment consists, from bottom to top, of the following elements[78]: a plinth of *marmor luculleum* crowned with a moulded band of white marble (3 cm high) and above this, a series of framed rectangular panels are separated by spiral columns (c. 13 cm wide and 125 cm high). These columns of *marmor carystium* have the appearance of semi-columns but are in fact almost entirely flat and only give the illusion of projecting and being semi-circular. The columns are equipped with small white 'bases' (1 cm frames), and the white marble capitals (15 cm high) are separated from the columns by a thin strip of *marmor taenarium* (1 cm high), which runs along the entire wall. The columnar elements support a false continuous moulded architrave of *marmor chium* (14 cm high). Beneath this 'architrave' and between the capitals runs a continuous band of bardiglio marble (15 cm high). The small columns frame panels that alternate between vertical and horizontal orientations. The vertically-oriented sections (c. 125 × 80 cm) consist of central panels of *marmor carystium* framed by a 9 cm band of *marmor phrygium*, resting on a band of *marmor numidicum* (14.5 cm high). The horizontally-oriented sections (c. 125 × 170 cm) consist of alternating enormous panels of *marmor phrygium* or *marmor numidicum* (c. 80 × 155 cm) framed by an 11 cm band of *marmor numidicum* or *marmor phrygium*, respectively, resting on a c. 30 cm high band of *marmor carystium* (Fig. 1).

The regular alternation between horizontal and vertical panels, and the resulting placement of the semi-columns, creates a rhythm for the overall decorative scheme. This sense of movement is strengthened by the chromatic characteristics of the different marble varieties employed, with the brighter panels of *marmor phrygium* or *marmor numidicum* standing out against the darker background created by the panels and columns of *marmor carystium*. Moreover, the rhythm of the room is structured and enhanced by the use of *marmor carystium* and its characteristic wavy green and white banding. The panels were cut differently for use in different areas of the revetment in order to accentuate the direction of this banding. This can be seen most clearly in the southeast wall. Here, the lower panels, which were placed just above the plinth, were positioned so that the banding appeared vertical, drawing the viewer's eye from the floor up to the large horizontally-oriented panels of brighter marble. In contrast, the vertically-oriented panels of *marmor carystium* were cut so that the banding ran horizontally, thus drawing the viewer's eye towards the *carystium* columns and back to the large horizontally-oriented panels of brighter marble. In this way, the dark green marble panels were positioned to constantly force the viewer's eye around the room to the large (and therefore costly) panels of *marmor phrygium* and *marmor numidicum*. This careful choice of blocks and orientation of banding for the *marmor carystium* utilised here demonstrates that the choice of marble variety was not the only important decision when commissioning costly wall revetment: the colour and pattern of individual marble blocks were also exploited to create the optimal aesthetic effect.

This scheme, however, changed on the southwest wall of the room. Here, the wall decoration is divided into three sections: the left and right sections are identical schemes of horizontally-oriented panels of *marmor numidicum* with *marmor phrygium* frames with the same upper and lower decoration as the rest of the room. The middle section of the wall is occupied by a large door looking out towards the sea that is flanked by *marmor carystium* spiral semi-columns. Here, the rhythm of the room's wall revetment is intentionally broken to showcase the phenomenal sea view and to invite the viewer through the door and onto the wooden balcony that surrounded the room[79]. Additionally, the homogenous appearance of these panels works to enhance the continuous rhythm of the overall decoration.

While most of the revetment on the northwest wall has not been preserved, it is clear that the two large windows (and their views) were the main architectural features. The scheme would

Guidobaldi (et al. 2014) noted that pilaster columns were not common even in the most complex revetment schemes from later periods.

78 Guidobaldi et al. 2014, 87–89 cat. no. 45.

79 For a discussion of the wooden balcony, see Camardo et al. 2015, 272–274.

undoubtedly have been similar to that on the other walls where possible, with very low white marble windowsills projecting into the room: these would have shone with the light entering through the windows. The projecting marble windowsills would also have mirrored the white marble threshold that led out to the balcony. Moreover, the three-dimensional quality of the windowsills was mirrored in the wall revetment scheme, with its moulded white marble band above the plinth, the strip of *marmor taenarium*, the moulded architrave, and of course the Corinthian capitals and spiral columns. These differences in the depth of the marble elements used in the revetment provide both physical and visual texture to the revetment, drawing the viewer's eye in and out of the decorative scheme itself – something that is also reflected in the ceiling decoration, as will be seen below.

The marble revetment of *triclinium* (18) was undoubtedly high quality, displaying a level of craftsmanship and materials not found elsewhere in the Vesuvian area. Of particular interest is the simulation of architectural decoration and the careful attention to the polychromy and texture of the marbles used. Moreover, the large panels were created with single pieces of marble rather than through joining smaller panels of the same marble. The high status and cost of such large panels was also displayed through the choice of marble varieties, which were those favoured in imperial projects, and the unique and complex layout whose only known parallel is from the city of Rome (see above).

The high quality of the decorative scheme in this room was amplified by the presence of an intricate *sectilia* pavement that made use of 23 different marble varieties[80], and a coffered wooden ceiling that was decorated in geometric shapes and painted in red, green, blue, beige and gold. The overall decorative scheme must have assailed the viewer with a riot of colours and geometric shapes. The atmosphere of the room was therefore designed to keep the viewer's eyes in constant motion and to prioritise the room's magnificent sea views.

The exceptionally well-preserved ceiling, unlike the later, up-to-date marble wall and floor decoration, was an earlier Augustan decoration that was carefully preserved and reused in *triclinium* (18), seemingly after the earthquake of A.D. 62[81]. The coffers were decorated with polychrome relief decorations in geometric patterns that contrasted dark and light colours to play with light, shadow and depth. It is interesting to note that paint and gilding[82] were used to cover up the locally-sourced silver fir. Moreover, Domenico Camardo noted that the red paint on particular panels was used to create the impression that the wooden decoration was made from more expensive woods, such as cedar from Lebanon[83]. Other lacunar panels presented different geometric decorations in different colours, with emphasis placed on the central part of the panel and the frame. These coffers were once again designed with different depths, giving a chiaroscuro effect that pulled the viewer's eye in and out. Like the wall revetment, the decorative scheme played with both colour and depth to create interesting and inviting textures.

The high level of skill required to create, preserve and reinstall the ceiling decoration, as well as the intentional placement of specific decorative elements, can also be observed in the creation of the marble pavement. The *sectilia* pavement was divided into two sections: the section in the southwest half of the room consisted of a uniform pattern of geometric shapes in multiple marble varieties, while the northwestern half of the room was less homogenous. Again, even though a portion of the floor does not survive and there are some questions about the authenticity of its restoration in certain places[84], it is clear that marble decoration was used to create

80 Savalli et al. 2015, 357.

81 This dating was based on dendrochronological analysis of the wood of the roof support and some of the panel frames: Camardo et al. 2015, 291–293.

82 See the contribution by Anguissola, this volume, for a discussion of gilding in Roman thought and aesthetic tradition.

83 Camardo et al. 2015, 272–275.

84 See, for example, the discussion in Guidobaldi et al. 2014, 81–87 cat. nos. 44a–c; Savalli et al. 2015, 357.

Fig. 8: Herculaneum, Casa del Rilievo di Telefo, *triclinium* (18), general view.

specific aesthetic effects. In the northwestern half of the room, (mainly) plain squares of white and bardiglio marbles in several different sizes (Guidobaldi's Q motif)[85] were situated in a U-shape, presumably reflecting the placement of the dining couches on the floor. The most valuable and colourful marbles and complex designs[86] were placed in the centre of this 'U', where diners would have been able to view them directly. This prestigious area included rare marble varieties, such as *marmor lacadaemonium* (from Krokeai, near Sparta, Greece), and unique designs, such as a heart within a circle within a square. The layout, which was a 'sampler' rather than a repeated pattern, and the choice of marbles in this area of the floor would have drawn the viewer's eye to this section of the room, inviting them to linger and focus on the intricate shapes and inventive craftsmanship. The repetitive pattern of the southwestern half of the pavement would have then acted as a sea of marble in contrasting colours[87] that drew the eye to the southwest wall and, when the doors were open, to the view beyond.

The play of colours, shapes and depths in the marble wall and floor decoration would have created an atmosphere designed to engage the viewer and direct their eyes. The views were carefully framed and constructed depending on the viewer's dining location. The axial view from the central couch looked across the marble floor towards the room's southwest wall, where the identical revetment panels and its spiral semi-columns framed the central opening and its views across the bay[88]. The view would have invited the diner to cross the room and go through the doorway onto the balcony to further appreciate the view. The guest seated on the northeastern couch would have had a view through the two large windows across the bay and the edge of the city, while the guest on the northwestern couch would have had a view of the unbroken marble wall. The room could have provided views on all sides; however, instead of providing a window with a view outwards and downward into *viridarium* (15), the southeast wall presented a continuous and unbroken view of the wall revetment scheme with its simulated architectural decoration (Fig. 8). The intention was to **exclude** a window/view in favour of the revetment, which was lit from the windows on the opposite wall and the opening in the southwest wall. The three large openings would have bathed the room and its marble decoration in light when the doors and shutters were open. This light would

85 For the floor motif, see Guidobaldi et al. 2014, 81–87 cat. nos. 44a–c.

86 This included designs in Guidobaldi's QOS8Q and QOQ2: Guidobaldi 1985, 183; Guidobaldi et al. 2014, 81–87.

87 For a list of all 23 marble varieties used in this section of the pavement, see Savalli et al. 2015, 357 f.

88 The balcony would not have impacted the amount of light allowed into the room or the views from the door or windows, based on the reconstruction by Camardo (et al. 2015, 273 f.).

Fig. 9: Herculaneum, Casa del Rilievo di Telefo, *oecus* (21), general view.

have changed throughout the day[89], giving the effect of alternating light and dark spaces along the marble vista, especially during the evening as the sun set and bathed the green, red, yellow and white marbles in golden light.

The wall revetment in *oecus* (21) of the same house, however, was designed to create a different room atmosphere (Fig. 9). As opposed to the riot of shapes, colours and depths that drew the eye and directed the viewer in *triclinium* (18), the revetment scheme in *oecus* (21) focused on warm colours and a homogenous repetitive design on the lower zone of the walls, creating an intimate atmosphere. The wall revetment (c. 90 cm high) is intact and in situ, consisting from bottom to top of the following elements[90]: a bardiglio plinth (14 cm high), a moulded cornice of *marmor taenarium* (4 cm high), rectangular panels of breccia di Settebasi (c. 55 × 80 cm) framed by vertical bands of *marmor numidicum* (4 cm wide) which themselves were bordered by thinner vertical bands of *marmor taenarium* (0.5 cm wide), a moulded cornice in bardiglio (3 cm high) and *marmor numidicum* (14.5 cm high) (Fig. 7). This repetitive scheme focuses on the dark purple and white of the breccia di Settebasi, highlighted by the yellow and red of the marble frames.

Once again, the craftsmen used the pattern of the marble blocks to create movement in the wall decoration. The panels of breccia di Settebasi were positioned to ensure the diagonal alignment of the white calcite clasts in the dark purple matrix, with panels alternating (either every panel or every two panels) between the white clasts 'flowing' from bottom left to upper right, and then from upper left to bottom right (Fig. 9). This created an undulating rhythm that flowed around the room. Moreover, the revetment panels towards the centre of the northeastern wall, opposite one of the room's two large windows, mirrored each other perfectly[91]. Once again, this demonstrates that the homeowner and/or the craftsmen paid careful attention to the choice of marble variety as well as to the aesthetic potential of each marble block. Block selection for larger panels would have had cost implications, with different blocks of the same stone costing more than others based on the quality of their aesthetic characteristics[92].

Here, the soothing rhythm of the panel orientation is enhanced by the rich warm tones of the overall decorative scheme: the dark purple and white wall panels highlighted with accents of red

89 For discussions of the effect of time of day, season, weather, etc. on room function and decoration, see Nissinen 2009; Dickmann 2011, 61. 71; Haug 2020, 19 f.

90 Guidobaldi et al. 2014, 91 f. cat. no. 48b.

91 For a similar decorative approach to marble selection and the mirroring of marble revetment slabs, see the Hadrianic 'Marble Hall' in Dwelling 6 of Terrace House 2 at Ephesus.

92 See Pettinau (1983) for different early 19th-century prices for different versions of the same stone based on block size, grain size and colouring.

and yellow; the homogenous red 'wallpaper' style wall painting; and the marble *sectilia* pavement[93] made with the same marble varieties as the wall revetment and following a homogenous pattern that focused on the orangey-yellow hues of the *marmor numidicum*, highlighted and framed by geometric patterns of red, purple and white[94]. The warmth and intimacy created by the entire decorative scheme was intensified by the smaller size of the room and the light reflecting around the rich red, yellow and purple hues that covered the walls and floors.

It is clear that the different ways in which marble wall revetment was used in these two rooms, both in and of itself and alongside other decorative elements, was the result of aesthetic choices rather than questions of finance. The choice of material and the execution were both of exceptional quality, with perfectly alternating colours and matching floors and walls. Moreover, as Guidobaldi has noted, the pavement was not created according to the usual modular dimensions but rather was designed to fit the specific measurements of the room[95]. Once again, this emphasises the high quality of material and craftsmanship that went into the decorative scheme of these rooms, as well as the different aesthetic and atmospheric ways in which marble wall revetment was used.

Room (64/65), Villa A at Oplontis

Villa A at Oplontis also displays a strong commitment to both architectural and sculptural marble decoration. The villa's marble decorative program is concentrated in the eastern wing, which was a major addition in the Fourth Style period, after A.D. 45[96]. There is revetment in four rooms: (64/65), (69), (73/74) and *diaeta* (78). The revetment schemes in rooms (64/65), (69) and (73/74) might well have been the same with the only difference being in height: 110 cm in (64/65) and (73/74), and 125 cm in (69); however, the lack of preservation in all but rooms (64/65) makes this impossible to determine[97].

While listed as two rooms, (64) and (65) are more accurately described as a room (65) and an alcove within said room (64). The revetment in room (64/65) consisted of the following, from bottom to top: a plinth of breccia corallina (12 cm high), a white Luna cornice with a cyma reversa moulding (c. 4.3 cm), large panels of breccia corallina (c. 65 cm high with variable widths – with the shorter panel due to the fact that it is below a window)[98] framed by strips of *marmor luculleum* (c. 8 cm), a white Luna cornice with cyma recta moulding (c. 4 cm) and a rectangular panel of unknown marble (identifiable from imprints in the mortar bedding; c. 12 cm high) (Fig. 6). The plinth in room (65) is notable in that it is composed of a rare variety of breccia corallina with unusually intense purple veins.

93 The floor is mainly composed of a Q2 motif: Guidobaldi et al. 2014, 90 f. cat. no. 48a.

94 This kind of harmonious scheme was similar to the approach taken in *oecus* (17) of the Casa dei Cervi at Herculaneum. Here the very tall revetment (c. 130 cm high) combined only two marbles: white marble (c. 125–130 or 85–90 cm x 85–90 cm) separated by vertical partitions in bardiglio (c. 30 cm wide). The limited chromatism is also present in the floor, which consists of Guidobaldi's Q2 motif in bardiglio and *marmor chium*. Overall, the combined wall and floor decoration provide a simple decorative scheme characterised by limited colour range but with varieties of marble carefully alternated with precision and according to chromatic harmony. See Guidobaldi et al. 2014, 250 f. cat. nos. 226a. 226b.

95 Guidobaldi et al. 2014, 90 f. cat. no. 48a.

96 For the construction history of the villa and the dating of the eastern wing, see Thomas – Clarke 2007; 2008. The marble decoration, which included *sectilia* pavements, wall revetment and marble columns, was unique in private contexts in Campania prior to A.D. 79: see Barker – Fant 2019; Clarke – Barker 2019. For the marble sculpture, see Moormann 2019.

97 Barker – Fant 2019, 790 f.

98 Much of the marble decoration in room (64) survives, and it seems that the entire space was decorated in the same manner: see Barker – Fant 2019, 790 f.

Fig. 10: Oplontis, Villa A, room (65), southwest, digital reconstruction.

It seems that this marble wall revetment was the main focus of these rooms, as traces of the remaining wall painting suggest that the walls were for the most part painted white and the floors were laid with a simple white, bias-laid mosaic[99]. In addition, there are traces of blue paint on the (now lost) wooden door and window frames of the room[100] (Fig. 10). It seems, however, that the revetment scheme was not meant to take away from room (64/65)'s views: a large door opened onto *porticus* (60) with its colonnade of grey marble and its pool that was lined internally with marble. A selection of marble sculpture was also arranged along the eastern side of the pool. Room (64/65) formed part of a north-south 'vibrant visual axis' that included *viridaria* (61 and 68), which could not be entered but could be seen, and through which the viewer could also see into neighbouring rooms. The *viridaria* were painted with warm yellow backgrounds and images of birds, fountains and vegetation[101]. Moreover, these rooms were unroofed and let in large amounts of light. Room (64/65), as one of three marble revetted *triclinia* (65, 69 and 74), therefore presented a visitor dining on one of its *triclinia* with carefully framed views across *porticus* (60) and the pool to the east, or across the fictitious gardens – rooms (61), (68), (70) and (87) – to the north and south[102].

Within this setting, the marble wall revetment was evidently **visible** but does not seem to have been intended to overshadow the carefully framed views. The scheme, which was homogeneous and repeated throughout (64/65), would have caught the viewer's eye, as it was visible in every direction. Small sections of revetment even framed the opening onto *porticus* (60), but the scheme's

99 For the mosaic pavement, see Cline 2019, 1247 f.

100 Blue paint is identifiable on planter box (61), the pair of windows along the west wall of room (64) and (probably) the shutters of *viridarium* (68). See Oplontis Villa A, excavation notebook no. 4 (25 November 1974 – 19 July 1983, entries for 14–17 April 1975, 16 January 1976 and 13 May 1975). For a history of this period of excavations, see Clarke 2014. For a transcription of notebook 4, see Calosi 2014.

101 Gee (2019) noted that all four *viridaria* had different dimensions and layouts but shared a colour palette.

102 Clarke 2018.

repeated rhythmic layout and colours would not have been overly distracting from the axial or transversal views. Such a design scheme also existed in *porticus* (60) and suited the long, ambulatory space – a plinth of white Luna and grey bardiglio and white ground Fourth Style wall painting with small panels at eye level and hidden figures. As Regina Gee has noted, this decorative scheme may have been designed to take advantage of the rippling light and reflections that would have played around the room from the sun reflecting off of the water in the pool[103]. The material advantages of marble revetment and its interaction with light (and presumably water) can be seen in Lucian's praise of the architecture and decoration of Hippias' bath complex. Here a stone, presumed to be porphyry, was described as 'full of abundant light and aglow with colour like that of purple wall hangings'[104]. In this description, it is precisely the play of light on marble that creates a surface with all the colour of fine tapestries (or even wall paintings), but which also has the ability to reflect light and sound, and presumably also to withstand the moisture of a bath complex better than fabric or paint.

Again, in the decoration of room (64/65), it seems that the wall revetment was designed to best frame the main views of the room. Here, the *marmor luculleum* frames (around the light panels of breccia corallina) with their dark matrix mirrored, in tone and pattern, if not exactly in colour, the larger view to the pool and the grey columns through *porticus* (60) and its blue wooden frame. Overall, while sitting in room (64/65), the viewer was exposed to marble in every one of its major decorative uses: walls and floors, architectural elements such as capitals and columns, and sculpture (visible along the eastern walkway of the pool). Here, then, wall revetment forms a clear part of a total immersion in marble as a decorative material.

Final Remarks

This paper has focused on wall revetment in the mid- to late 1st century A.D., which was a formative period of marble use in private houses and villas. Marble decoration signified urbanity, culture and above all luxury. The decorative appeal of marble for Roman domestic interiors revolved around a number of factors: the source of marble was of course important, as were the technically demanding processes required to transport, carve and install it. For ancient house and villa owners, revetment was a displayed measure of their wealth and status, to be admired, exploited and emulated. The more remote the source of its marbles or the higher number of stones employed in a revetment scheme, the more prestige it brought to the user. Equally, the larger and more complex the revetment scheme, the more it embodied the complex and costly technical requirements of the marble's acquisition and working. However, it should always be remembered that the aesthetic characteristics and appearance of individual marbles – their vividness and their variety of colour – along with the effects they brought, were equally important. The colours and characteristics of marble were appreciated, as demonstrated by the fact that the most impressive surviving wall revetment schemes are multicoloured and employ large panels of particularly beautiful stones with greatly varying hues, tones and patterns displayed to great effect.

Wall revetment came in many shapes and sizes. It could vary based on the height of the wall that was covered, the size of the individual panels used, the types of marble employed and the layout of its panels. Designs could therefore range from simple panels bordered by frames with limited chromatic palettes of one or two marble types, to highly variegated designs with four or more marbles and elaborate, architecturally-informed schemes with pilaster columns and capitals. The success of marble revetment lay in the decorative effects it could bring to the rooms in which

103 Gee 2019, 1108–1124, esp. 1123 f.

104 Lucian. Hipp. 6. Cf. Statius' (Silv. 1, 5) focus on the way that the marble decoration sparkled, shone and glowed depending on the light in Etruscus' baths.

it was employed. Seneca the Younger, for example, noted that marble veneer gave the illusion of solid marble that cheated 'our own eyesight' even though 'we know what sort of material is being concealed'. As he stated, 'What else is it but a lie in which we take such delight?'[105].

An in-depth look at several examples from the Vesuvian area has demonstrated that marble wall revetment schemes, across the range from principally monochromatic to lively and complex polychrome schemes, were designed to help create and complement a room's atmosphere. The colourful architectural scheme in *triclinium* (18) of the Casa del Rilievo di Telefo, for example, was most likely added in the post-A.D. 62 renovations of the house and played on the existing Augustan ceiling decoration. Moreover, the revetment was installed to carefully frame the doorway and its view outwards to the balcony and sea. The unbroken marble revetment of the southwest wall used light from the two windows of the opposite wall to add drama and movement to the decorative scheme.

Similarly, room (64/65) in Villa A (Oplontis), like the neighbouring *porticus* (60), provided the room with the highest luxury while framing the views to the pool. The revetment scheme, however, combined white marble with *marmor luculleum* and a predominately purple-hued variety of breccia corallina to produce a more muted colour palette than the scheme found in the Casa del Rilievo di Telefo. There is little doubt that the wall revetment in room (64/65) was intended to both stand out **and** complement, rather than compete with, the carefully framed views of the villa's real and fictitious gardens, as well as the extensive marble decoration of the eastern wing, including the dark bluish-grey marble columns of *porticus* (60) and the white marble sculpture lining the pool. Overall, then, it is clear from this brief discussion that marble wall revetment was a costly decorative scheme that could be employed to highlight individual views or to create specific atmospheres in individual rooms. As noted at the beginning of this paper, marble was imitated in paint before it was widely available for domestic decoration; however, while painted marble could showcase a patron's taste and urbanity, it could never truly replicate the qualities of real marble – while stucco could be polished to a high shine, for example, it could never imitate the reflection of light on clasts and inclusions of different materials in breccias and other polychrome stones.

Simon J. Barker
Christian-Albrechts-Universität zu Kiel
Institut für Klassische Altertumskunde/Klassische Archäologie
Johanna-Mestorf-Str. 5
24118 Kiel – Germany
simon.barker3@gmail.com

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105 Sen. Ep. 115, 8–9.

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Table 1: Details for revetment in houses and villas in the Bay of Naples

Location	House	Room	Plinth	Moulding	Architectural elements	Maximum height	Panel sizes	Date
Herculaneum	Casa del Rilievo di Telefo	*Oecus* 10	X	X		90 cm	ca. 65 cm high with indeterminable width	Late IV
		Triclinium 18	X	X	X	174 cm	Large panels 126 x 171 cm / smaller panels 126 x 79 cm	Late IV
		Oecus 21	X	X		92 cm	56 cm high, with approx. 81 cm with some variability	Late IV
Herculaneum	Casa dei Cervi	*Oecus–Tablinum* 15	X	X		53.5 cm	56 cm high, approx. 81 cm long with some variability in width	Late IV
		Oecus 17	X	X		130 cm	85–90 cm high with variable width depending on the position (125–130 or 85–90 cm)	Late IV
Herculaneum	Villa dei Papiri	VPSO (a)	X	X		110 cm	70 cm high with variable widths	IV
Pompeii	Casa del Citarista	*Ambiente* 45	X			–	–	IV
Pompeii	Casa di Sallustio	*Cubiculum* 34	X	X		ca. 80–90 cm	Surviving panel measures 44 cm high x 34 cm width	IV
Pompeii	Casa di Fabio Rufo	*Triclinium* 21	X			ca. 380 cm	–	IV
Pompeii	Casa dei Dioscuri	*Ambiente* 22	X	X		–	–	IV
		Oecus 48	X			ca. 370 cm	Largest panels ca. 100 x 120 cm	IV
Pompeii	Casa delle Vestali	*Ambiente* 23	X	X		ca. 90 cm	ca. 60 cm high with variable widths (the largest ca. 70 cm)	IV
Pompeii	Unnamed house at VIII.2.14–16	*Triclinium* (o)	X			ca. 115 cm	ca. 50 cm high with variable widths (perhaps up to 75 cm for the larger panels)	
Pompeii	Casa della Regina Carolina	*Viridarium* 14	X			101 cm	52.5 cm high with variable lengths (some over 150 cm)	IV
Oplontis	Villa A	Room 64/65	X	X		110 cm	67 cm high with variable widths, surviving panels measure 67 x 50 cm, 55 x 122 cm, and 67 x 46 cm	IV
		Room 69	X	X		125 cm	ca. 65 cm high with variable widths up to 100 cm for the largest panels.	IV
		Room 73/74	X	X		110 cm	Unknown dimensions	IV
		Diaeta 78	X			ca. 105 cm	55 cm high with variable width, anels of the central zone of the west niche measure ca. 55 × 100 cm	IV

Dennis Beck

Use, Aesthetics and Semantics of Coloured Marble Columns in the Western Mediterranean during the Late Republic and Early Roman Empire

Abstract: Because of their materiality, coloured marble columns played an important role in the architecture of the Late Republic and Early Imperial period, both as structural elements and as integral decorative features. The necessity and cost of importing these marbles, as well as the complex processing of the columns, made them a sign of prestige in both the surviving written sources and archaeological remains, and the most expensive element in architecture during the relevant periods. Two approaches have generally been employed to define the functions and aesthetics of coloured marble columns in architecture of these periods: the first approach analyses the roles of columns contextually, with regard to their technical and decorative properties. The second approach draws conclusions about the use and semantics of coloured marble columns through cross-genre comparisons which are then also compared to ancient texts. The uses considered appropriate in each context are significant factors in the choice of marble and indicators of social rank, as mentioned by ancient authors. The aesthetic and semantic properties of each kind of marble depend on its materiality, its display in architecture and its appropriate use, the perception of which was key for the ancient viewers' evaluation. The number of coloured marble columns employed (alongside imitations produced in stucco) must have been considerably higher than we can observe in the archaeological record of the Late Republic, with the result that marble architecture and architecture imitating marble coexisted in townscapes and were thus perceived to be part of a common decorative system.

Introduction

Both ancient texts and archaeological remains highlight the use of marble and its colours as components of ancient architecture and decoration. This phenomenon has been intensively studied for many Mediterranean regions[1]. It is the opinio communis that in the course of the 2nd – 1st centuries B.C., Rome dominated in the west and intervened expansively in the eastern Mediterranean through conquests, which enabled the Roman elite to import several types of marble. It was, however, not only foreign materials that were imported, but also ideas and craftsmen, who selected, modified and developed new architectural styles[2]. Thus, coloured marbles were central to the architectural development and design of decorative systems. But they also played a key role as a representative medium in the constant competition between elites during the Late Republic and Early Imperial period[3]. According to textual sources, which mainly concern Rome, marble columns with a monolithic shape (*ex uno lapide*) were a particularly important medium, due to their colour variations and aesthetics, as well as exoticism and prestige value[4]. However, the archaeological

1 Pensabene 2002; 2013; Adam 2005; Bernard 2010, 35–54; Russell 2013; Zink 2019, 1–3. The terms *marmora* and *lapides* as well as λίθος and μάρμαρος were used by ancient authors synonymously for all polishable stones: see Maischberger 1997, 13 n. 1 f.

2 Bernard 2010, 35–54; Hirt 2010, 90–93; Albers 2013, 102–107; Russell 2013; 5 f. 44–51. 90–93. On the distribution of several coloured marbles in the ancient Mediterranean, see Lazzarini 2009. For a general overview of the topic, see Pensabene 2013; on the distribution of giallo antico, see Ardeleanu 2018, 159–163.

3 Schneider 1986, 144–148; von Hesberg 2005, 19–53; Bitterer 2013, 8–23; Bruno – Bianchi 2015, 20–25.

4 Mattern 1999; Barresi 2002; Bernard 2010; Bianchi – Bruno 2010; Maschek 2014; Fitzgerald 2016, 16 f. 20 f. 84, with examples by Seneca, Pliny the Elder and Pliny the Younger.

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contributions to these topics have often been lacking due to the scarcity of preserved columns from this period. As a result, modern understanding of their use was either extrapolated from textual sources or via surviving models from later archaeological contexts. Both methods present issues. Ancient texts were often written with rhetorical intention and a specific focus, and archaeological remains were partly subject to modifications and therefore show the end of a building's development rather than the intervening steps. However, a number of recent studies show that coloured marbles were employed commonly during the late 1st century B.C. and early 1st century A.D. throughout the western Mediterranean[5]. These archaeological contexts offer an insight into the use of marble in general and columns in particular, and allow us to pose specific questions regarding the aesthetics and material values of this period. Thus, the first aim of this paper is to evaluate the textual and archaeological evidence for the use of coloured marble in architecture[6]. After compiling the data, the archaeological contexts will be examined with regard to aesthetic questions related to forms, surfaces, and combinations of colours, as well as the semantic aspects of select structures. Finally, the results will be compared to cross-genre cases of marble imitation in archaeological contexts.

Textual and Archaeological Sources for Coloured Marble Columns

Two primary terms were used to describe colourful decorative concepts in ancient texts[7]: in Greek, *poikilia*; in Latin, *varietas*. The latter was employed by Roman authors (e. g., Cicero) to describe an aesthetic appearance that was varied and multicoloured, with various interactions and visual effects[8]. However, not only were colours important, but also materials and their properties. Pliny, for instance, describes the inseparable connection between a marble's colour (a cognitive property) and its *genus* (a natural property), which is linked to its geographical origin[9]. Thus, the concept of *varietas* applied to a wide range of materials. It includes, for example, the radiance and shine of different marble types intentionally juxtaposed within a space, which allowed them to be perceived in a heightened and aesthetic way. Social and material values were assigned to these marbles on account of their qualities and effects, e. g., durability, colour, gloss and appropriateness to the architectural setting[10]. In order to determine appropriate use and the relationship between material and social values (*pretium*, according to Pliny[11]), the *Naturalis historia* must be consulted, taking into account its rhetorical subtleties and criticism of luxury[12]. Occasionally, Pliny is critical of the attitudes adopted by Roman elites towards marble. He condemns M. Aemilius Lepidus for using blocks of *marmor Numidicum* for thresholds in his house, and M. Aemilius Scaurus the Younger for the construction of a temporary theatre with 360 marble columns and subsequent use of these columns in

5 Lazzarini 2009; Bernard 2017, 62–86; Ardeleanu 2018, 428–435; Beck 2019; Lazzarini 2019.

6 The types of coloured marble mentioned in this paper are: *marmor Numidicum* (giallo antico), *marmor Luculleum* (africano), *marmor Chium* (portasanta), *marmor Carystium* (cipollino), alabaster and *marmor Phrygium* (pavonazzetto). On the origins and nomenclature of these marbles, see Russell 2013, XX f.

7 Many studies on the function of marble in architecture have dealt extensively with the literary sources: see Schneider 1986; Bernard 2010; Grüner 2014; Grand-Clément 2015; Fitzgerald 2016; Zink 2019.

8 Cic. Fin. 2, 3, 10: *Varietas enim Latinum verbum est, idque proprie quidem in disparibus coloribus dicitur, sed transfertur in multa disparia: varium poema, varia oratio, varii mores, varia fortuna, voluptas etiam varia dici solet, cum percipitur e multis dissimilibus rebus dissimilis efficientibus voluptates*; Fitzgerald 2016, 81.

9 Plin. HN 36, 55; Grand-Clément 2015, 417; Fitzgerald 2016, 15–20. 84 with examples by Seneca.

10 Plin. HN 35, 2 f.; 36, 32; Sen. Ep. 115, 8 f. On Vitruvius' ideas about surface perception (and the terms *asperitas* and *splendor*, in particular), see Grüner 2014, 415. 425. On the criticism of luxury, see the contribution by Anguissola, this volume. On material properties of marble, see the contribution by Barker, this volume.

11 Plin. HN 33, 1.

12 Plin. HN 36, 1: *insania morum*; *luxuria in marmoribus*. See Haug – Hielscher, this volume.

his residence[13]. What were the reasons for his criticism? What role did the marble play? Pliny was not offended by the importing of *marmor Numidicum* from remote Simitthus, but rather by Lepidus' use of that marble to produce thresholds, which Pliny deemed inappropriate, as it signalled that the former was wealthy enough to employ this valuable material even for basic architecture features. In the case of Scaurus, Pliny literally equated his wealth with the 360 columns.

Since marble had gained a specific social value, it could also serve as an indicator of a break with social morality. The hierarchy of materials was not established by the opinions of Pliny, but rather was common knowledge amongst his readers. These individuals were not contemporaries of Lepidus or Scaurus, but they were familiar with the origins of marble and shared Pliny's feelings by about topics such as cost and waste[14]. It is well known that members of the Roman elite used marble as a medium for representation and display in a competition for prestige during the Late Republic, a situation that is partially described by the theory of conspicuous consumption[15]. In addition to the rather critical statements by Pliny, the use of coloured marble columns during the Late Republic is confirmed by Cicero's letters, the *lex sumtuaria* (a tax on the import of marble columns to Rome) and archaeological evidence[16].

Regarding the archaeological material in Rome and the west, the earliest imported coloured marble can be found in floors dating to the second half of the 2nd century B.C.[17]. Imported white marble was also used in monumental architecture at this time, probably first in the Temple of Jupiter Stator, which was built shortly after 146 B.C.[18]. Although texts testify that coloured marble columns were employed as votives in the Sanctuary of Fides during the 1st century B.C., this does not coincide with the archaeological remains. Only a few fragments of *marmor Numidicum* can potentially be dated to this period, but they were not found in a stratified deposit and thus cannot even be dated definitively to the 1st century B.C.[19]. Although it has not yet been found, the existence of a burial column for C. Julius Caesar is undisputed. Suetonius reports that the column was produced in *marmor Numidicum* and rose to a height of 20 *pedes*; it was erected in the forum after Caesar's funeral in 44 B.C.[20]. During excavations, fragments of *marmor Numidicum* were found near the altar of the Temple of Divus Julius, but it remains uncertain whether they belong to the destroyed column or not[21]. In recent research conducted on the Theatre of Pompey, Maria Gagliardo and James Packer discovered shafts made of portasanta, pavonazzetto, africano and a fluted column of *marmor Numidicum*, that latter bearing the inscription 'CN. POMPEI'. This is comparable to an africano column published by Patrizio Pensabene with a similar inscription[22]. Based on the inscriptions, the researchers theorised that the columns belonged either to the *scaenae frons* or a portico of the theatre, which was inaugurated in 55 B.C.[23]. However, this attribution is unlikely, since at least three fires (in A.D. 22, A.D. 80 and A.D. 247) destroyed large parts of the *scaenae frons*, meaning

13 Plin. HN 36, 24. 49; Schneider 1986, 145 n. 1093; Bitterer 2013, 16–20; Mulliez 2014, 79.

14 Bitterer 2013, 16; see Haug – Hielscher, this volume.

15 Veblen [1899] 1997; see the theory of conspicuous consumption, summarised by Trigg 2001, 99–115; Bitterer 2013, 15.

16 Cic. Att. 12, 19; see Cic. Att. 13, 6 on the *lex sumtuaria*; Bernard 2010, 35–37. 47–49; see McCann 2015, 25, with references to Statius, Martial, Seneca, Vitruvius and Lucian.

17 Pensabene 2007; Bernard 2017, 62–86; Ardeleanu 2018; Beck 2019.

18 Vell. Pat. 1, 11, 5: *Hic idem primus omnium Romae aedem ex marmore in iis ipsis monumentis molitus huius vel magnificentiae vel luxuriae princeps fuit*. See Bernard 2010, 35–37. 51 Pl. 2; Maschek 2014; 2020.

19 Martin 1987, 120–123; Reusser 1993, 55 n. 20. 166–168 Figs. 95–97. Nine large and 29 small fragments were found, hailing from columns of giallo antico with diameters between 32–35 cm. In assigning the fragments to the Sanctuary of Fides, Christoph Reusser cites two dates: a terminus post quem established by the erection of the temple between 115–109 B.C. and a terminus ante quem by dating the deposit of marble fragments and the acrolith head of a female statue to the second quarter of the 1st century B.C., which coincides probably with a repair from 58 B.C. mentioned by Cicero.

20 Suet. Iul. 85; Schneider 1986, 146–148. Dolabella destroyed the memorial in April of 44 B.C.: see Cic. Att. 14, 15.

21 Martin 1987, 155 n. 806.

22 Gagliardo – Packer 2006, 98 n. 32; Pensabene 2007, 14 n. 12.

23 Gagliardo – Packer 2006, 95 f. 98; Pensabene 2007, 14; Albers 2013, 90; McAlpine 2014, 74 f.

that the columns were likely replaced several times[24]. Moreover, the argument that the inscriptions were chiselled in the quarries is quite unlikely, because no parallel has been found in Simitthus or Teos[25]. However, inscriptions of this kind were also used as aids during construction, which could have taken place at any time.

The number of coloured marble columns dating to the second half of the 1st century B.C. is considerably larger. How the alabaster, giallo antico, pavonazzetto, africano and portasanta columns from the Palatine Hill were used remains unclear, due to the diversity of their dimensions and decentralised find spots, but since these finds are datable, we know the quantities and varieties of marbles employed at the time[26]. Some columns could be connected to the Portico of Danaids, which is known from literary sources[27], although their use in the Temple of Apollo Palatinus[28] or in residences is also under discussion[29]. During the Late Republic and Early Imperial period, marble columns became a common element of interior decoration. This is evidenced by the Temples of Apollo Palatinus, Apollo Sosianus, Divus Iulius, Castor and Pollux and Concordia in the Forum Romanum and by the Temple of Mars Ultor in the Forum Augustum[30]. While local and regional tuff, travertine, peperino and Luna marble were visible on the buildings' exteriors, the interiors were adorned with broad swathes of colour, achieved primarily through the use of various marbles and painting schemes. In the *cella* of the Temple of Apollo Sosianus, which was built during the Early Augustan period, an interior consisting of two orders is attested via fragments of columns and cornices (Fig. 1): both orders are supported by monolithic africano columns, between which were distributed five *aediculae*[31]. In contrast, columns, plinths and cornices belonging to the *aediculae* consisted of the bright marbles giallo antico and portasanta[32]. The excavators suggest that since the same kinds of marble were employed in the *cella*'s *sectile* floor, which dates to the Imperial Period, it is also likely that they were used in the Augustan pavement[33]. The different colours of the marble created an interplay between light and dark, and supported the alternating decorative pattern established by the columns and *aediculae*. The series of dark africano columns created both a vertical and horizontal sequence in their arrangement, and were therefore significant in forming the perception of the entire interior (Fig. 1). The *aediculae*, built with bright marbles, contrasted with the darker freestanding columns and created a staggering effect within the vertical architecture[34]. Thus, there were aesthetic variations along all three axes of the *cella*, with the entire interior influenced by the coloured marbles.

From the second half of the 1st century B.C. onwards, 'sets' of column bases and capitals consisting primarily of white Luna marble were often combined with coloured marble shafts, thereby forming interactions of aesthetic value, as seen in the *cella* of the Temple of Apollo Sosianus and in the Forum Augustum[35]. The consistent alternation of white and coloured marbles created a certain homogeneity, but this could in turn be broken by other interactions. The interior of the Augustan

24 Sear 2006, 17 f. 133.

25 Röder – Röder 1993; Hirt 2010, 420–428.

26 Pensabene (1997, 149–192 Pls. 17–28) mentions 52 architectural elements of coloured marble. See also Quenemoen 2006, 229–250; Carandini – Bruno 2008, 84–87; Pensabene 2017, 410–423. 425–444.

27 Iacopi – Tedone 2005/2006, 358, with references to ancient authors. See also Carandini – Bruno 2008, 84 f. 205–213.

28 Zink 2008; Zink – Piening 2009.

29 Pensabene 1997, 154–157. 192 Fig. 27; von Hesberg 2005, 36; Pensabene 2017, 410–435 cat. nos. 63–120. The presence of coloured marble columns in residences on the Palatine is attested by several ancient authors: see Plin. HN 36, 6 f. 48 on *peregrinum marmor*; Lipps 2018, 75–80.

30 Mattern 1999; Stamper 2005, 119; Sande 2008, 216–221; Zink 2008, 59–64; Albers 2013, 106 f.

31 Viscogliosi 1996, Pl. 6, Figs. 194. 195; De Nuccio 2002, 146 Figs. 1. 156; Stamper 2005, 119 f.

32 Viscogliosi 1996, 187–196. Pl. 6, Figs. 194. 195; De Nuccio – Ungaro 2002, 444 cat. nos. 147–148.

33 See De Nuccio – Gallocchio 2017, 449–458 Figs. 2. 3, which documents giallo antico, portasanta, pavonazzetto and africano.

34 See Viscogliosi 1996, 178 Fig. 194; Schollmeyer 2008, 52 Fig. 59.

35 Mattern 1999; 2000, 147–152; Pensabene 2012, 23–25 Pls. 1–5 for the use of Luna marble.

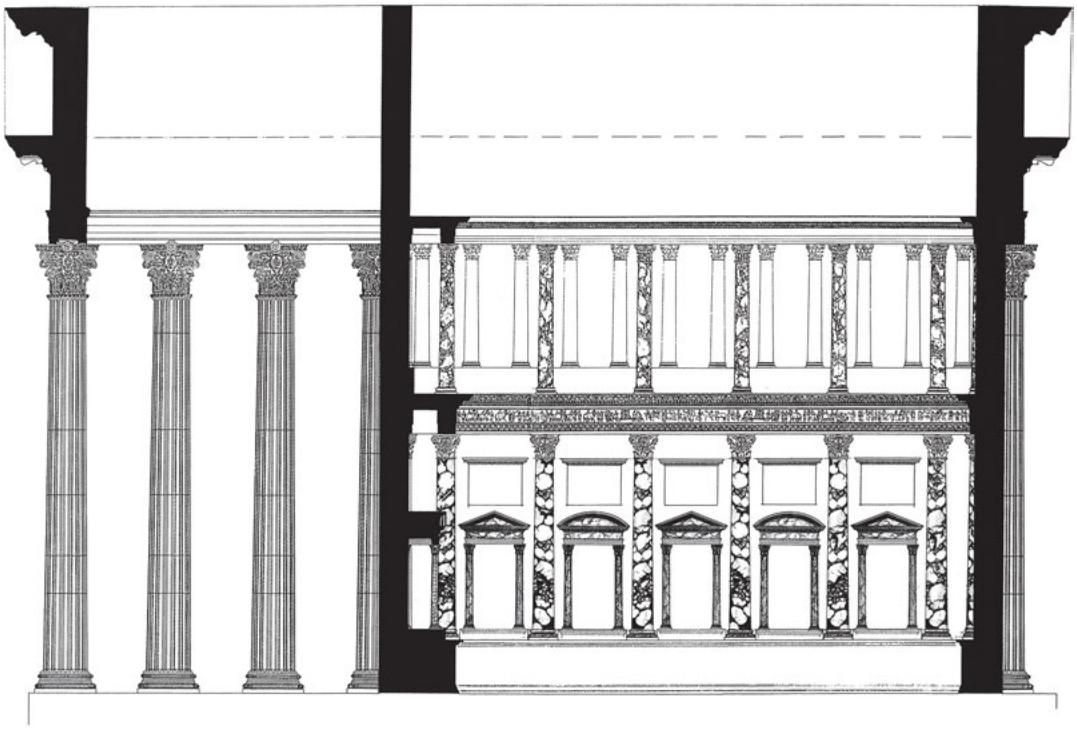

Fig. 1: Rome, Temple of Apollo Sosianus, reconstruction of the Early Augustan interior.

Basilica Aemilia was designed using similar principles to those employed in the temples. The *opus sectile* pavement in the central nave consisted of portasanta, africano, cipollino, pavonazzetto and giallo antico plates, and can be dated by the arrangement to after the fire of A.D. 283, while the mosaics that decorated the lateral naves were produced exclusively in white marble[36]. The nave was flanked by africano and (probably) cipollino columns topped with Ionic capitals in the lower register and Corinthian capitals in the upper[37]. Some fragments of the cornices, which were made of giallo antico, portasanta and pavonazzetto, belong to a multicoloured decorative programme that is likely part of the tetrarchic wall design, according to Johannes Lipps and Tobias Bitterer[38]. There may have been a visual interaction between the africano plates that framed the *opus sectile* and the columns, but this remains hypothetical due to the different phases of decoration. It is likely, however, that the same types of marble were used for the mosaics and columns produced during the Augustan period[39].

The evolution of interior decoration, the interplay of marbles therein, and the effect of marble columns on façades, *exedrae* and porticos, can be studied in greater detail in the Forum Augustum, which was inaugurated in 2 B.C.[40]. In this building, the latter features acted as boundaries on either side of the central court, framing both it and the Temple of Mars Ultor. The parallel courses of the porticos are documented by the mosaics and column bases that survive partially in situ (Fig. 2). The concentration, quantity and size of the remains allows us to conclude that *marmor Numidicum* columns stood in each portico, with half-columns on the narrow sides, while rows of cipollino and africano columns can be reconstructed on the interiors of the *exedrae*[41]. The porticos' floors exhibit a structured grid of grey bardiglio, giallo antico and black africano slabs, creating

36 Appetecchia 2007, 223–229; Lipps 2011; Bitterer 2013, 77–81.
37 Lipps 2011, 181–191; Bitterer 2013, 81. For comparisons to the Basilica Julia, see Freyberger 2015, 76–78.
38 Lipps 2011, 60–80. 150 f. 181–191; Bitterer 2013, 78–80.
39 Bitterer 2013, 81. The same is proposed for the Basilica Julia: see Appetecchia 2007, 221.
40 Ganzert 1988; 2000; Bianchi – Bruno 2010, 45–62; Bitterer 2013, 81–93; Goldbeck 2015, 21–47.
41 Bianchi – Bruno 2010, 46 f. Pl. 1, which documents 2253 fragments of coloured marbles.

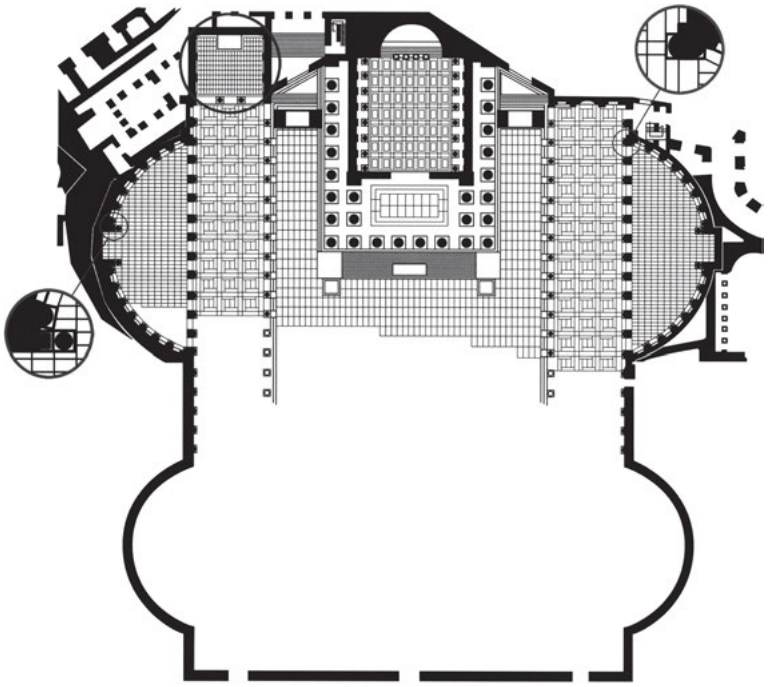

Fig. 2: Rome, Forum Augustum, schematic reconstruction with *opus sectile*-motifs.

colour and spatial interactions via their positioning relative to the columns. This is achieved by axial references and repetitions at corresponding points in the surface: the *opus sectile* squares are situated in three rows running transverse to the structure's length, corresponding precisely with the intercolumnations within the colonnade[42]. The porticos were flanked by columns of giallo antico, which, along with rectangular bardiglio panels on the floor, divide the interior, creating regularity and symmetry. Upon entering the portico from the forum's piazza, an observer would walk between the bright giallo antico columns and immediately encounter the marble floor, which was decorated with a regular pattern that alternated with the colours of the columns.[43] On the exterior of the porticos, bright *marmor Numidicum* columns homogeneously framed the court, creating a luminous and shimmering effect in the sunlight, illuminating the darker porticos. From the forum's piazza, the bright marble columns would also have benefited from this light/dark effect. Moreover, the positioning of the various marbles often corresponds to accentuations of colour in the lower sections of the framing architecture; this design trend has been recognised by Torsten Mattern in various urban contexts[44].

Within the Temple of Mars Ultor, the *cella* floor was decorated with rectangular panels of pavonazzetto and africano, with squares of giallo antico positioned at the intersections (Fig. 3)[45]. Interestingly, the columns and pilasters employed in the flanking colonnades, which were probably made entirely of pavonazzetto, were aligned with the squares of giallo antico and rectangles of pavonazzetto that ran across the room, much like the arrangement visible in the porticos. The interior as a whole was experienced as a rhythmic design created by the relationship between the *opus sectile* floor and the columns, but one that was also broken at intervals by the changes in colour throughout the room and the grid design on the floor (Fig. 4). By establishing a contrast with the predominantly white exterior of the temple, the perception of space would have changed upon entering the *cella*. Here, space was organised by the colour and material interactions that occurred

42 Ganzert 1988, col. Pl. 3; 2000, 36 Fig. 50; Ungaro 2002, 111 Fig. 2; Bitterer 2013, 85.
43 See Ganzert 2000, 36 Fig. 50; Ungaro 2002, 111 Fig. 2.
44 See Mattern 1999, 22, with several examples.
45 Ganzert 2000, 50 Fig. 77; Ungaro 2008, 403 f. Fig. 4; Bitterer 2013, 88. 90; Goldbeck 2015, 24–26.

Fig. 3: Rome, Temple of Mars Ultor, Augustan *cella* with interrelations between colours and patterns.

at the aforementioned reference points within the horizontal and vertical network of the interior decoration[46]. Moreover, the so-called Aula del Colosso, located in the northwest part of the complex, was separated from the exterior decorative system by two Corinthian columns of pavonazzetto and a 'checkerboard' pavement consisting of pavonazzetto and giallo antico[47]. The revetment applied to the walls incorporated pilasters of pavonazzetto, which provided a vertical structure; the socle zone was clad with panels of giallo antico, while the central and upper zones were adorned with paintings of curtains decorated with various motifs[48]. The recurrence of giallo antico and pavonazzetto in various positions produced a colourful room that presented both a certain homogeneity and contrasting interplay, and the mixture of materials and surfaces defined the atmosphere[49].

Late Republic and Early Imperial Theatres in the Western Mediterranean

In many cities of the western provinces, theatres are among the buildings in which imported marble columns were first used. Current research considers the Theatre of Pompey, inaugurated in 55 B.C., and the Theatres of Balbus and Marcellus, both opened between 19–13/11 B.C.[50], to be pioneering examples of architectural design. This view follows the theory of *imitatio urbis*, which sees the

46 On the characteristic changes in the interior design of temples during the Augustan Period, see Mattern 1999, 23.
47 Ungaro 2008, 43; Bitterer 2013, 88; Goldbeck 2015, 42–44.
48 Ungaro 2008, 403 f. Fig. 4; Bitterer 2013, 87 f.
49 Ungaro 1997, 55 f. Figs. 25–27; Ganzert 2000, 51 Fig. 79. For a detailed discussion of the term 'atmosphere' and the analysis of methodological approaches in research, see Haug 2020, 45–49.
50 Sear 2006, 65–67; Pensabene 2007, 17–20; Albers 2013, 102–104. 275 f.

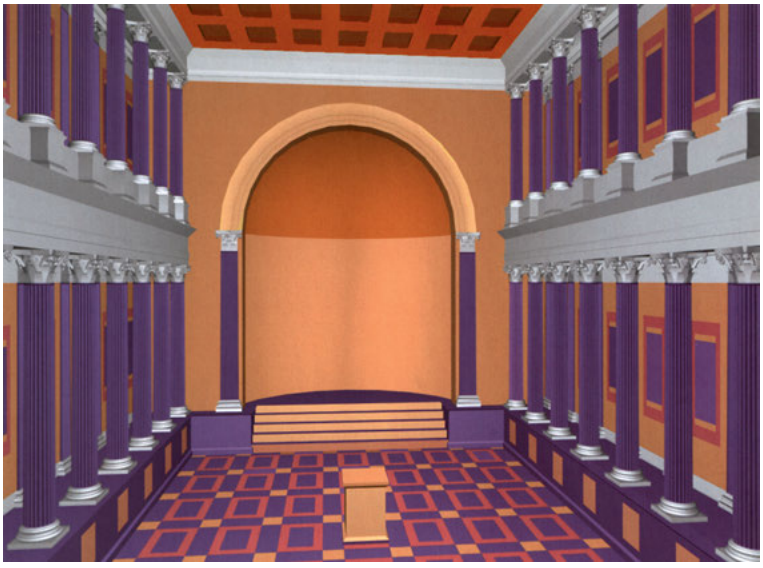

Fig. 4: Rome, Forum Augustum, Temple of Mars Ultor, cella, coloured reconstruction.

theatres in Italy and the provinces as being 'references' to those at Rome[51] and thus part of an empire-wide reception of Roman architectural models. However, it is based mainly on unreliable premises and sporadic evidence[52]. Several authors have even postulated the existence of a fixed architectural and decorative scheme that was supposedly implemented in the provinces, in which *scaenae frontes* were adorned with giallo antico, africano, portasanta, cipollino and pavonazzetto columns and Luna marble capitals and bases[53]. Since these studies are based on the premise that the most important quarries were entirely under Imperial ownership, it is assumed that emperors donated marble to maintain the model of *imitatio urbis*[54]. However, recent research has shown convincingly that provincial theatres were not subject to a fixed architectural and decorative scheme, but were rather quite free in their design[55]. The theatres differ in size and were built from a range of materials, including a diverse selection of marbles. It should nonetheless be noted that there are basic problems in identifying marble decoration in theatres, as a result of ancient repairs and renovations due to wear, fire and earthquakes. As mentioned above, the original decorative programme in the Theatre of Pompey it is difficult to reconstruct, because associated archaeological elements such as capitals, bases and ornaments are absent and the interior is not described in textual sources. In modern research, the concept of *imitatio urbis* has resulted in the coloured marble columns used in theatres being dated to the earliest phase, often without a building analysis. The following discussion of theatres does not follow a chronological order, nor is it by any means complete (Table 1).

Both the architectural design and decorative programme of the Theatre of Marcellus have been interpreted as models for theatres in the provinces, despite the fact that the decoration of the first phase is unknown and the *scaenae frons* has yet to be excavated[56]. There are a number of identical (12 *pedes* high) columns of giallo antico and portasanta, no longer in situ, which were either part of the original building and then later used in the area of the theatre or were added to the inventory without proof of their findspots[57]. Whether these columns correlate with the decorative phase dating

51 On *imitatio urbis*, see Trillmich – Zanker 1990; De Nuccio – Pensabene 2012, 60; Goldbeck 2015, 16 n. 27.
52 Pensabene 2007; Ramallo Asensio – Röring 2010; De Nuccio – Pensabene 2012.
53 De Nuccio – Pensabene 2012, 49–72; Pensabene 2012, 58.
54 On this discussion, see Lazzarini 2009; Hirt 2010; Russell 2013; Goldbeck 2015; Ardeleanu 2018.
55 Goldbeck 2015, 124. Horster (2001) proves the limited influence of the emperors on theatre construction in the western Mediterranean; see also Sear 2006; Isler 2017; Lipps 2017, 13–31; Ardeleanu 2018, 159 f.
56 Sear 2006, 18. 61–65. 135 f.; De Nuccio – Pensabene 2012, 60; Isler 2017, 658–662.
57 Sear 2006, 61–65; De Nuccio and Pensabene (2012, 58 f. Fig. 13) interpret them as parts of the first building.

Table 1: Distribution of coloured marble columns in theatres built during the Late Republic and Early Imperial period.

Theatres	Giallo antico	Cipollino	Pavonazzetto	Africano	Portasanta	Alabaster
Pompey, Rome	X		X	X	X	
Marcellus, Rome	X				X	X
Cassino	X	X			X	X
Ferento	X	X			X	X
Noceria	X	X		X		X
Sessa Aurunca	X	X	X		X	X
Teano	X	X	X	X	X	
Volterra	X	X		X		
Grumentum	X					
Verona	X		X	X		
Aosta	X (pulpitum)					
Arles	X			X	X	
Vienne	X			X	X	
Orange	X			X	X	
Carthago Nova	X	X	X	X		
Tarragona	X					X
Saragossa			X	X	X	
Córdoba		X		X		
Mérida	X		X			
Tarraco	X		X	X		
Iol Caesarea	X					X

to c. 20 B.C. remains questionable due to certain historical factors: the renovation of the entire *scaenae frons* by Vespasian[58], another (disputed) renovation phase under Alexander Severus and texts that attest the theatre's continuous use up to the 5th century A.D.[59]. The remains of the original Theatre of Balbus, built in 13 B.C., are few and far between, because of the substantial repairs undertaken after the fire of A.D. 80 and further building measures that continued through the 5th century A.D.[60].

Outside of Rome, the Augustan theatres at Cassino and Ferento exhibit similarities in terms of architectural design and the use of portasanta, africano, alabaster, cipollino and giallo antico columns in their *scaenae frontes*[61], but both theatres were later rebuilt extensively. During the Early Imperial period, coloured marbles were used for *scaenae frons* architecture in Campanian theatres, such as at Herculaneum[62], Nuceria[63], Teano[64] and Sessa Aurunca[65], all of which were repaired or modified during the Flavian period. In the case of the latter two, the number of Early Imperial columns is unknown due to extensive Severan renovations. Outside of Campania, the theatre at Volterra, with its cipollino and africano columns, and the theatre at Grumentum[66], with its columns of giallo antico and cipollino, display further variations in the design of *scaenae frontes*[67]. But once again, both were repaired multiple times during the Imperial period. Since Campania was one of the regions importing a wide range of coloured marbles during the 1st century B.C., however, it is

58 Sear 2006, 62 n. 187.

59 Sear 2006, 63.

60 However, Pliny mentions four onyx columns, but it remains unclear whether they were part of the *scaenae frons* architecture or not: see Plin. HN 36, 59 f.; Sear 2006, 65 f.

61 Sear 2006, 122. 166 f.; Isler 2017, 207–209 (Cassino). 290–293 (Ferento).

62 Sear 2006, 124; Isler 2017, 335–337. 628–630 (on Pompeii).

63 Here seven alabaster, seven cipollino, four africano, three pavonazzetto and two giallo antico columns were found: see Pensabene 2005, 73–80; Isler 2017, 535.

64 Pensabene 2005, 115; Sear 2006, 138; Isler 2017, 763–765.

65 See Isler 2017, 737–739 on the pavonazzetto and giallo antico columns from the first and second storeys.

66 Sear 2006, 146 f.; Isler 2017, 316 f.

67 Pensabene 2007, 27; Isler 2017, 845–847.

probable that the marble employed in the earliest phases was also utilised for later repairs. Nonetheless, archaeological evidence remains difficult to find in general[68].

In Gallia Narbonensis, the Augustan theatres at Arles, Vienne and Orange display several columns of africano and giallo antico in the first and second orders of their stage buildings. However, all three have undergone numerous repairs over the last two millennia[69]. In the 23 extant theatres from the Hispanic provinces, imported marbles sometimes appeared in the first decorative phases, but only in a few cases can they be dated to the Late Republic or Early Imperial period[70]. Africano, pavonazzetto and giallo antico, for example, were employed for panels and columns in the theatre at Mérida during the 1st century B.C., which was probably built by Agrippa in 18/17 or 16/15 B.C.[71]. In North Africa, various types of marble columns were used in the Augustan theatres at Iol Caesarea and Leptis Magna, although the latter theatre is preserved mainly in its Antonine state[72].

This brief overview proves that coloured marble columns were often used in theatres built during the 1st century B.C. and early 1st century A.D., but the original construction phases are often difficult to identify due to later repairs. These columns were mostly monolithic in shape, produced from africano, alabaster, cipollino, pavonazzetto, portasanta and giallo antico, and were employed in all registers of *scaenae frons* architecture (Table 1)[73]. The choice of marble depended upon local circumstances, available materials and costs; however, a theatre's level of prestige increased with the quantity of coveted imported columns[74], and marbles with veins and natural colour variation were preferred[75]. With respect to the Theatres of Pompey, Augustus and Balbus in Rome, the donors are well-known, but for most other theatres, this information is missing. Regarding provincial theatres, the donation at Mérida by Agrippa and Augustan influence in Arles and Orange attest to imperial participation, but in general, the donors and dedicators in Italy and the provinces were local elites, as can be observed in Campania[76]. The presence of different marble types in the theatres shows that these elites recognised this material as a constitutive decorative element for the establishment of *varietas,* particularly when combined with locally available materials. Theatres served as a place of representation in a permanent way, while also displaying wealth to a large crowd. At the same time, they functioned as a platform for showing loyalty to the emperor, and *sacella*, with shrines and statues in theatres and their surroundings were quite common[77].

Aesthetic and Semantic Reflections

Columns played an important role in structuring spaces and were an integral part of decorative programmes due to their material properties. The majority of the examples considered above vary in size, but are monolithic and fluted. In the case of marble columns, material and object mutually

68 On the import and re-use of marble in Campania, see Pensabene 2007; Perna – Barker 2017; Beck 2019.

69 Gros 1987, 339–363; 1990, 381–390; Sear 2006, 98–100. 245–248; Isler 2017, 92–97.

70 For an overview, see Sear 2006, 101. F28 Pl. 3, 2. The theatre at Cartagena (5 B.C. – A.D. 1) included coloured marble wall panels, cornices and bases in the *pulpitum*: see Soler Huertas 2012, 195–203. 208–225. The Augustan theatre at Tarraco was decorated with *opus sectile* and wall revetment of giallo and nero antico: see Isler 2017, 755–758.

71 CIL 2, 474; Sear 2006, 12. 102. 264 f.; Pensabene 2007, 33–36; Isler 2017, 137–140.

72 For Iol, see Sear 2006, 13 n. 26. 102–105. 271 f. 281 f.; Herrmann et al. 2017, 778; for Leptis Magna, see IRT 372.

73 In addition, these types of marble were used for floor and wall panels, cornices, *aediculae* and sculptures.

74 On production costs associated with columns, see Röder – Röder 1993, 47–50; Barresi 2002. On the costs of theatres, see Sear 2006, 19–22.

75 Giallo antico, cipollino and pavonazzetto with veins were favoured for their contrast to the brighter ground materials. These variants are often imitated in wall paintings.

76 Sear 2006, 11–23; Isler 2017, 262–268. 658–662. M. Holconius Rufus and M. Holconius Celer financed furnishings for the theatre in Pompeii. The theatre in Herculaneum was funded and opened by Appius Claudius Pulcher in 38 B.C.: see CIL 10, 1423 f.

77 E.g., a *sacellum* in the *porticus* of the theatre at Mérida: see Sear 2006, 11–23.

reinforce one another, as both fluting and veining emphasise the monolithic, rising form. Fluting should not be understood as a waste of material, but rather as a process that adds substantially to the perception and value of the finished piece, along with polishing and gloss effects[78]. Fundamentally, the function of marble in decorative work can be interpreted in terms of colour, material properties, gloss effects and the interplay of light and shadow; in combination with each other these elements create atmospheres. Thus, during the Late Republic and Early Imperial period, marbles acted as markers of *varietas* in both the vertical dimension, e. g., in the design of multi-storey interiors or façades, and the horizontal, through the use of various *sectile* patterns. To this end, coloured marbles were employed repetitively in different architectural positions, which were structured by spatial relationships, dimensions, rhythms and visual effects. In order to assess the materiality of marble, there are several categories suitable for analysis:

1. Colour effects and surfaces. According to Pliny, marble columns provided stability (*firmitas* and *duratia*) in architecture and enhanced its magnificence (*lautitia*) through their materiality[79]. The unique colours and textures of marbles were important components of architecture and decoration. Monochrome programmes could be achieved through the use of a single marble, while polychrome decoration employed combinations of different types. The natural colours of the marbles were integral to the decoration and could be enhanced by surface treatment, including paint in some cases.

2. Visual recurrence and breaks. Noticeably, coloured marble columns were used both monochromatically, as in the *marmor Numidicum* columns in the Forum Augustum, and in combination with coloured marbles to create contrasts and visual breaks. The latter design created visual interactions within temples and *basilicae*, thus embedding marble in the perceptual zones of architecture. On façades, marble columns were used mainly in the lower third of the structure, a feature that must have been associated with common principles of aesthetic perception and ideas of appropriate use[80]. On the one hand, a homogenising effect was achieved in Forum Augustum through the use of symmetrically-aligned giallo antico columns in the building's porticos; on the other, the different kinds of marble used in temple and basilica interiors interacted with other decorative elements. The latter conclusion is supported by the spatial correlations between mosaics, columns, wall panels and ceilings, and is based on the interplay of colours, sizes, patterns, proportions and surfaces[81]. By using the same marble in alternating architectural positions within an interior space, it was possible to create a symmetrical and harmonious overall appearance and an atmosphere. Therefore, based on the evidence from temples, marble was used to present both coherent spatial perceptions and clashing effects. In several *cellae* of the Late Republic and Early Imperial period (e. g., those in the Temples of Apollo Sosianus and Mars Ultor), the floors and walls were polished smooth, while the columns were fluted and polished, producing contrasts in colour and rhythm and optical breaks within the decoration.

3. The interaction of light and dark elements in architecture. The marbles themselves could create a specific interplay of light and dark through various combinations and patterns. In the *cella* of the Temple of Mars Ultor, for example, the surfaces of the veined giallo antico and pavonazzetto that alternate within the decoration probably created reflections when light fell upon them. In the Temple of Apollo Sosianus, black africano columns structured the space while the *aediculae* along the side walls were made of bright giallo antico and portasanta. This spatial separation of light and dark marbles contributed to the lighting throughout the room. In the *scaenae frontes* of the theatres there are often alternations of light and dark marbles both within and between the storeys, as well as in porticos and *exedrae*, much like those in the Forum Augustum.

78 On fluting, see Maischberger 1997, 139 n. 484. For Pliny, the value of an object is defined by both the value of the material and the labour invested in aesthetic design and craftsmanship (*ars*): see Plin. HN 33, 4.

79 Plin. HN 36, 45; see Haug – Hielscher, this volume.

80 Mattern 1999, 22.

81 See Mattern 1999, 23, with some examples; see also Haug 2014; Maschek 2020, 330; Haug 2020, 17.

Moreover, the connection between context and appropriate use is an important factor in the choice of marble, the shapes used and the perceived suitability with respect to the building and its decorative elements. However, there were also more complex factors that governed selection, such as contemporary aesthetic discourses, which included the temple's age and political messages[82]. For the Early Imperial period in particular, the import and use of coloured marble was also a symbol of imperial power, a topic that has been discussed extensively in modern research; the observations presented here complement this general picture[83].

Cross-Genre Imitations of Coloured Marble

The imitation of marble in both stucco and wall painting provides further support for the argument that coloured marbles were used frequently in Late Republican and Early Imperial architecture. Studies have shown that many temples and public buildings in Rome and other cities were built of tuff, peperino and travertine and covered with stucco[84]. These surfaces were then painted either in a single colour (typically yellow or red) or painted to imitate marble[85]. Thus, both temples built of marble and those adorned with stuccoed marble imitation coexisted within the same cityscapes. Their colour schemes were intended to produce different perceptions and stimulate appropriate connotations[86]. In the western Mediterranean, the imitation of coloured marble in wall paintings and stuccowork began during the 2nd century B.C., and can be partially correlated to the earliest appearance of imported marbles[87]. Certain examples, like the faux marble stuccowork applied to the *fauces* of the Casa del Fauno (VI 12,2) in Pompeii, the interior of 'Le Logge' in Populonia and the *cellae* of the Republican Capitolium in Brescia, with its painted columns and wall revetment (which represent white and coloured marbles, respectively), suggest the presence of marble equivalents and references to real architecture, as proposed by Mulliez[88]. In addition, coloured marble is preserved in the floors of the architectural spaces mentioned above, demonstrating that the real and fictive versions could be brought together within a single decorative programme[89].

In general, wall paintings shed light on a broad range of coloured marbles. The imitations in the First and Second Styles of Pompeian wall painting are not to be interpreted as simple copies of encrusted marble walls, but are rather a differentiated form of decoration that underwent its own independent development[90]. In the Vesuvian region, many of the imitations have been assigned to the so-called Oplontis-Boscoreale workshop, since numerous examples were discovered in these villas[91]. A large number of rooms in Villa A at Oplontis display imitations of marble architectural elements, such as columns, plinths and cornices. Alabaster, africano, cipollino and giallo antico appear, all of which were painted in detail with respect to texture and colour[92]. It should be noted that the painted marble columns are always depicted in a monolithic form consistent with the

82 See Mattern 1999, 23 and Maschek 2014, 194 for further interpretations.
83 Schneider 1986; Fant 1993; Mattern 2000; Pensabene 2002; 2013; Ungaro 2008; Goldbeck 2015.
84 Bernard 2010; Maschek 2014; see also the contributions by Grawehr and Maschek, this volume.
85 Mattern 1999; 2000, 145–149; Maschek 2014, 192; 2020, 330.
86 For the different options of perception and interpretation, see Maschek 2014, 194.
87 Fant 2007, 336–346; Barry 2011, 85 f.; Mulliez 2014; McAlpine 2014.
88 Mulliez 2014, 94–98. The underrepresentation of some types of marble can be explained by limited availability.
89 On the Casa del Fauno, see McAlpine 2014, 238 Fig. 18. On Brescia, see Barry 2011, 714 Fig. 1.
90 See Eristov 1979, which includes a corpus on marble imitations in Pompeii, and Laidlaw 1985, with over 400 examples of faux marble. See also Fant 2007, 336–346; Barry 2011, 85 f.; Mulliez 2014; McAlpine 2014, 3–15 and appendix.
91 Fant 2007, 338; McAlpine 2014, 107 f. n. 392.
92 For room (11), see McAlpine 2014, 246 Fig. 33; for room (14), see Mulliez 2014, 75 Fig. 47. See also Perna – Barker 2017.

archaeological remains[93]. While Clayton Fant postulates a correlation between the appearance of painted imitations and the arrival of coloured marbles in the region, Lynley McAlpine has demonstrated that this relationship is not necessarily evident in the case of alabaster[94]. However, McAlpine's thesis that marble imitations represented an alternative to the physical use of marble (which had acquired negative connotations in the eyes of contemporary observers) is based primarily on later textual sources (e. g., Pliny the Elder), and the intentions underlying such texts cannot necessarily be transferred to the archaeological finds and contexts[95].

It is more likely that the imitations were intended to create a luxurious display, testifying to the residents' sound knowledge of exotic materials from distant regions[96]. Applying certain colours or mimicking particular surfaces probably represented explicit transmedial references to marble rather than an attempt to deceive the viewer with detailed imitations. In wall paintings, the aim was presumably to display both imitations of marble and architecture, and to simultaneously position them within the genre of parietal art. Thus, the fake marbles and their real counterparts were incorporated into an ornamental system in which their material and decorative values were displayed, despite the qualitative differences between them[97]. A combination of painted, stuccoed and real marble wall elements is attested in the so-called Aula del Colosso, for example, which shows the interaction between three different materials and three surfaces in one single room. It is likely that stuccoed columns and architectural ornaments were employed more often than previously assumed, and this could explain why so few marble columns have survived from the Republican Period. If real and imitation marbles were combined in decorative systems, with each symbolising the same notions and references (i. e., exoticism and wealth), then only the material differences remained, and these were defined by social and material values that were largely dependent on the context and, as a consequence, the appropriate use of the respective materials.

Results and Further Issues

The above discussion of literary references and archaeological remains shows that the number of coloured marble columns in Rome and the western Mediterranean must have been significantly higher than can be observed in archaeological contexts dating to the Late Republic. Several columns are documented in temples, theatres and piazzas, but due to repairs, later modifications and incomplete or displaced remains, it is difficult to make definitive statements about the total number. Columns were an integral part of an evolving architectural language, however, and various decorative patterns associated with columns in both interior and exterior spaces were established using marble or imitations thereof. The primary material properties of marble were its stability, colours and surface effects, which were enhanced by polishing and the monolithic shape of the columns. For this reason, the role of marble columns in architectural contexts has been analysed in terms of the columns' structural, decorative and aesthetic properties. However, the approach taken in this analysis aimed to draw conclusions about the use of coloured marble columns via cross-genre comparisons. In fact, there is evidence for the use of coloured marble for *opus sectile* floors

93 Falzone 2010; Mulliez 2014, 79–81. In contrast, there is no painted imitation of coloured marble column drums, which are not found in real architecture: see McAlpine 2014, 250 Fig. 40, for the west wall in room (23) Villa A at Oplontis.

94 Fant 2007, 337. Painted alabaster appears frequently in First and Second Style compositions, while real alabaster is employed in mosaics from this period: see McAlpine 2014, 89. 95. 99 f. Figs. 24–27. 34. 35. During the 1st century A.D., alabaster was still imported to Italy, but there are no imitations of it in Fourth Style wall paintings from Campania: see Perna – Barker 2017, 73–82 Figs. 1–2; Barker, this volume.

95 McAlpine 2014, 122. 136.

96 Mulliez 2014, 79–81.

97 Mulliez 2014; on aesthetic and sensual perceptions of ornamental systems, see Grüner 2014, 415 f.

and wall revetment in several buildings from the Late Republic. Due to their material properties (and the need to fulfil coherent principles of decoration), columns must have been a particularly important feature of interior space, where they were used mainly to create *varietas* and specific atmospheres, a fact that is attested in the archaeological record from the Imperial Period. Nonetheless, comparisons with other categories of material and media show that columns were more frequently crafted from local stone and covered in painted stucco that often imitated marble. Above all, the coexistence of architectural forms produced in both marble and painted stucco is noteworthy and is a trend that appeared both in urban settings and interior space. The two materials were presented next to one another in a common system of decoration, in which the most varied aspects could play a role in the perception of different elements.

The particular properties of foreign marbles also represent an important point, one that was often explicitly referenced by ancient authors. These individuals were aware of the materiality of marble, as well as the costs (and labour) associated with importing and processing it, and they evaluated the appropriate use of different varieties, classifying them in a socially distinctive way. Some authors criticised the handling of marble during the Late Republic, however their statements should not be viewed negatively, but must rather be placed in the relevant context. Roman authors' perspectives on decorative principles must be considered alongside their ideas regarding appropriate use and public utility (*magnificentia*), which generally influenced the selection of marbles on the basis of their visual effects and their relation to the viewer in terms of the discourse on perception[98].

Imitation and coloured marbles, used in different measures and combinations, led to the establishment of decorative systems and the constellation of materials, colours and motifs that were used throughout the Late Republic and Early Imperial period. The examples discussed above form the basis from which a standardised 'Roman Imperial architectural decoration' developed during the 1st century A.D.[99]. However, the material value of marble columns depended on a complex web of issues, such as ownership, transport, rarity, processing and craftsmanship, and thus it is reasonable to propose that monolithic columns were probably the most expensive architectural element of this period[100]. Ultimately, the aim of this paper was not to examine interactions within decorative systems in detail, but rather to shed light on the broader perspective. While the presence of coloured marble columns in the façades and interiors of buildings was a common sight for Seneca or Pliny, there remains an absence of detailed research into the gradual development of the canonised decorative system that began during the Late Republic and dominated the Imperial era, and this lacuna offers considerable room for future study.

Dennis Mario Beck
Rheinische Friedrich-Wilhelms-Universität Bonn
Institute for Archaeology and Cultural Anthropology/Department of Classical Archaeology
Am Hofgarten 21
53113 Bonn – Germany
dbeck@uni-bonn.de

98 Bitterer 2013, 15; Grüner 2014, 418–420; Grand-Clément 2015, 417; Haug 2020; see also the contribution by Barker, this volume.

99 Maischberger 1997, 17; De Nuccio 2002, 154 f.; Bernard 2010, 35–54. During the Imperial period, standardised sizes (based on the *pes*) for columns, floor tiles and wall panels developed as various coloured marbles were imported from the entire Mediterranean region.

100 Barresi 2000, 354–357; Barry 2011, 37; Russell 2013, 11. 16 f. For calculations, see Sear 2006, 19–22.

Illustration Credits

Fig. 1: After De Nuccio 2002, 146 Fig. 1.
Fig. 2: After Ungaro 2008, 401 Fig. 2.
Fig. 3: After Ganzert 2000, 50 Fig. 77.
Fig. 4: After Ungaro 2008, 402 Fig. 3; Ganzert 2000, 50 Figs. 78. 79.

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Jessica Plant

Hard as Rock and Light as Air: Stucco Ceilings in Roman Domestic Space

Abstract: This paper explores Roman ceilings, one facet of the stuccoed interior, in an effort to reintegrate these surfaces within their domestic assemblages. While stucco can conceal and imitate structure, this essay attempts a more capacious and nuanced account of stucco as a highly versatile surface medium. I examine stucco's medial operations in fashion-forward Augustan-era houses, specifically the vaulted ceilings at the Villa della Farnesina in Rome and the Villa of Livia at Prima Porta. These ceilings show Roman artisans using stucco in a manner that is specific to the material; far from neutral, stucco possesses certain material and functional advantages that directly inform its use. The case studies are chosen to demonstrate a growing awareness of and interest in those properties among artisans. The contrast between stucco's material strength and light visual affordances produces hitherto unexplored aesthetic, spatial and atmospheric effects in Roman domestic space.

Stucco is a Roman medium[1] which protected all types of architecture and generated diverse forms of decoration. Despite stucco's prevalence and artistic range, studies of Roman art often take it for granted as the camouflaging medium par excellence, able to obscure underlying architecture so as to make something else appear[2]. In this tradition, stucco is reduced to a merely (self) effacing medium, covering core construction and deflecting attention away from its own materiality in the service of imitative visual effects. Thus, stuccoed surfaces are interpreted as vernacular alternatives, even reliable skeuomorphs[3], to more costly stone building materials and techniques.

This essay attempts a more capacious and nuanced account of stucco as a highly versatile surface medium. I explore the ceilings of Roman houses, one facet of the stuccoed interior, in an effort to reintegrate these real surfaces with their domestic assemblages. Ceilings have much to contribute to our understanding of the role of surface treatments in Roman interior schemes. They remain underexamined, in part because they so rarely survive, but also because of disciplinary biases towards fresco that have traditionally focused on formalist dating typologies (the Four Styles) and figural representation[4]. However, when taken seriously, stucco ceilings prompt a dynamic investigation of interior assemblages along two spatial axes: on/behind (examining the plastered matter applied to architectural structures), *and* above/below (analysing the ceiling treatments floating above walls and floors that make up domestic contexts).

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1 Medium refers to an art historical/architectural category, based on material and the method by which information is stored and transmitted; henceforth used to describe Roman stucco. See infra n. 6. 7.

2 This manifests clearly in the study of the 'Masonry Style'/First Pompeian Style, which has concentrated on plastered surfaces' ability to emulate stone masonry and extend the wall, often as a cost-effective alternative to stone. For critical discussion and bibliography, see Bruno 1969; Ling 1972; Rosenberg 2010.

3 A form which emulates another material to evoke the original of the same 'function'. Adapted from Knappett 2020, 109 f., citing McCullough 2014; see Conneller 2013. For arguments against skeuomorphic relations in favour of transmateriality, see the contribution by Engels, this volume.

4 Mau 1882; Ling 1991; Strocka 2007. On the limitations of the Four Styles, see Platt – Squire 2017, 10 f. 21–25. For a history of Roman ceiling decoration and the fragmentary conditions of Roman ceilings which preclude studies of workshops like those of wall paintings and mosaics, see Lipps 2018.

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Along these axes, stucco's structural integrity and physical boundedness to architecture affords it practical functions that permit both playful destabilisation of its assumed 'camouflaging' role, and inventive visual experiences. In order to explore such dynamics, my approach employs several conceptual apparatuses, including materiality – how the material affordances of the medium directly inform the ways in which people use and experience it – and the historicity of media[5]. I therefore pay closer attention to stucco's varied functions or what it *does* in domestic assemblages, rather than reconstructing any singular 'nature' of the material[6]. Following media philosopher Sybille Krämer's nuanced use of diaphanous, self-effacing media 'which enable something to be visualised, while simultaneously remaining invisible', I probe how artisans both integrate ceilings within domestic spaces in order to conceal architectural structure, downplaying their materiality, *and* manage to transcend these effacing functions[7]. This approach illuminates the processes through which stucco emerged as a multifaceted, multimodal medium in the 1st century B.C. I focus on ceilings' medial operations in fashion-forward Augustan-era houses, specifically the stuccoed vaults at the Villa Farnesina in Rome and the Villa of Livia at Prima Porta. These ceilings show Roman artisans using stucco in a manner that is specific to the material; far from neutral, stucco demonstrably possesses certain material and functional advantages that directly inform its use. The case studies evidence a growing awareness of and interest in those properties among artisans, developed out of plastering techniques established in the Late Republic. Stucco's colour, relief and design help heighten the tensions between matter and form, decoration and experience in each case. I argue that Augustan stuccoists exploited their medium's material strength and light visual properties so as to generate dynamic visual and atmospheric effects within intimate elite spaces.

Roman Approaches to Stucco

Roman stucco is composite matter (usually made of slow-setting lime plaster) applied to mural surfaces, and, as such, offers a plethora of useful properties[8]. Given the correct recipe, it forms a wet glue[9]. This wet state creates a plastic medium – malleable enough to be moulded, stamped and impressed. It can take on the form of other materials, and even absorb them within its matrix. It also hardens to an extremely dense solid substance, thereby functioning as a protective agent. In

5 For materiality, see Haug – Hielscher's introduction to this volume. On the concept of affordances, see Gibson 1977, clarified in Gibson 1979; for archaeological applications, see Knappett 2005, 47–58; Hodder 2012, 48–54; for the historical relevance of materiality and artefact categories, see Van Oyen 2016. For media thinking applied to antiquity, see Jones 2019, 131–178; Michelakis 2020; and for media phenomena crucial to antiquity, such as doors, see Siegert 2015.

6 Horn 2007. Horn (2007, 8) writes about how objects and phenomena 'become media' in historically specific situations: 'Media are not only the conditions of possibility for events – be they the transfer of a message, the emergence of a visual object, or the re-presentation of things past – but are in themselves events: assemblages or constellations of certain technologies, fields of knowledge, and social institutions.'

7 Krämer (2015, esp. 30–34) borrows from the Aristotelian concept of 'diaphanous media' for her 'messenger model' of communication, whereby the messenger (medium) operates through the illusion of its transparency/neutrality. However, the medium is never totally transparent or neutral; it always bears traces of its mediation and, in Sybille Krämer's formulation, becomes visible as a medium when it breaks down. Platt (2020) helpfully places an Aristotelian understanding of a 'medium' as a 'diaphanous substance, an unmarked *metaxu* (or 'in-between') which has the capacity to transmit sense data without being perceived itself,' alongside Media Theory's sensitivity to the invisibility of all media.

8 'Stucco' can imply a chemical differentiation as well, distinguishing lime plaster from calcined gypsum or plaster of Paris. Because neither sense delimits hard and fast boundaries, I follow and slightly modify Roger Ling's definition of Roman stucco being a hard slow-setting plaster based *largely* on lime and *usually* employed for architectural work.

9 Vitr. De arch. 7, 2, 2.

the Roman context, stucco was employed for its plasticity and replicability, as well as its accumulative and transformative properties. As a protective and decorative agent, stucco tends to be used to frame and support wall painting, interior spatial units and exterior structures.

As for other forms of surface treatment and relief art, Roman authors did not have a consistent terminology for stucco, but referred to it in a variety of ways, for example as *opus tectorium*, *opus albarium* or simply *albarium*. This wide semantic range covers the most common forms of plastering; *opus tectorium* includes enhancements to and protections for architectural structures and interior walls, while *opus albarium* includes white reliefs[10].

When Vitruvius discusses plasterwork in relation to vaulted ceilings in Book 7, he describes *opus tectorium* as a structural component of the wall (*paries*) itself and the surface for colours and paintings[11]. In his view, stucco is both structural and the vehicle for other media. Proper lime slaking, mixing of the correct recipes and layering of plasters using increasingly fine grits were essential steps to achieve *opus tectorium*'s desired solidity and lustre[12]. This solidity formed by the marriage of wall and properly worked plaster is inseparable from the resulting effects. The appropriate plaster relies on the formula's constituent parts: a combination of marble chips mixed into the final layer, colours added when the plaster is still wet (*udo tectorio*) and the polishing process[13]. From Vitruvius' perspective, plaster is marked out as a medium *supplemental* to the wall standing behind (one that is to be added to it in an intricate series of steps). But this additive process is in itself inseparable from the building of structural walls and ceilings; though sequentially applied after a wall or ceiling is erected, Roman plastering could be conceived as *integral* to mural construction. The suitable application of stucco marks out this duality of integrity and supplementarity in a visual sense: only when walls and ceilings were properly completed – coloured, shining, smooth and/or reflective – can the plaster 'on top' no longer be distinguished from the wall 'behind'[14].

Stucco's plastic and protective affordances made it an effective medium for creating both new spatial zones and new modes of decoration. We can trace these reciprocal relationships between structure and surface in the co-development of vaulted spaces and coffered stucco ceilings in Late Republican and Early Imperial Italy. Here, the axis of analysis shifts from on/behind to above/below.

Late Republican Stucco Ceilings

Let us begin with the so-called coffered style of stucco ceilings and its relationship to images. The shift from flat, often wooden, coffering to curved ceilings has a fragmentary history, but several Late Republican monuments attest to the innovative ways in which craftsmen incorporated stucco

10 Wadsworth 1924, 14. In Plin. HN 36, 183, Pliny the Elder describes stucco reliefs as *sigilla aedificiorum*, but this is a rare case.

11 Vitr. De arch. 7, 3, 6 f.: *Ita cum tribus coriis harenae et item marmoris solidati parietes fuerint, neque rimas, neque aliud vitium in se recipere poterunt. Sed et liaculorum subactionibus fundata soliditate marmorisque candore firmo levigata, coloribus cum politionibus inductis nitidos expriment splendores.*

12 Vitr. De arch. 7, 3, 7–9, esp. 7, 3, 8: *Itaque tectoria, quae recte sunt facta, neque vetustatibus fiunt horrida neque, cum extergentur, remittunt colores, nisi si parum diligenter et in arido fuerint inducti. Cum ergo itaque in parietibus tectoria facta fuerint, uti supra scriptum est, et firmatem et splendorem et ad vetustatem permanentem virtutem poterunt habere*. While Vitruvius recommends seven coats of plaster for walls, he suggests three for ceilings in Vitr. De arch. 7, 3, 3.

13 Vitr. De arch. 7, 3, 7.

14 See Platt 2009, 50–57. 62 on Vitruvius' biases towards structural appropriateness (*decor*) and against *monstra* in his treatise, whereby he maintains a separation of frame and ornament; for a discussion of Immanuel Kant's *parergon* in relation to Roman art, with bibliography, see Platt – Squire 2017, 46–59; Squire 2018.

Fig. 1: Rome, House of the Griffins, room (3), stucco vaulting with alternating rhomboid and square panels, which feature incised lines at the corner of each square panel.

to explore the decorative surface potential of concrete vaulting, a relatively new technology[15]. The malleability of lime plaster rendered it suitable for the decoration of curved ceiling surfaces. Plasterers could mould and model coffer bands more efficiently than stone carvers.

Consider, for example, the Casa dei Grifi on the Palatine, in which stucco vaulting and lunette decoration contribute to one of the earliest surviving Second Style (and late Masonry Style) programmes in Rome[16]. Within a stuccoed lunette in room (3), griffins stand in high relief on either side of an acanthus stem, from which flowering tendrils encircle the animals. On the opposite lunette, plants fill the entire field save for two pigeons resting on tendrils[17]. In the same room, the concrete vault was stuccoed with panels within a broad band, alternating between squares and (elongated) rhomboids set in rectangular frames, and running parallel to the wall's cornice line (Fig. 1). Two other surviving stuccoed vaults in the complex preserve simple coffering, with white square coffers of flat frames featuring a central groove enhanced with red paint and diagonal lines at the corners.

The Casa dei Grifi provides evidence of experimentation with stucco and reveals the material's emerging functions in the spatial delimitation of room surfaces. The stucco ceilings, with their panels and coffers, reveal a skeuomorphic relationship to wooden ceilings – evidenced by the incised diagonals at corners, which seem to simulate the material traces of mitred carpentry joints[18]. The artisans' interest in transferring the flat ceiling of monumental buildings, or even fancy Greek houses[19], to the vault was made manifest materially through the moulded plaster bands. Finally,

15 Ling 1972, 24–57; Mielsch 1975, 12–24. For the development of surviving Late Republican ceiling decoration in Rome and central Italy, see Lipps 2018, 109–142; for relative chronology, see Lipps 2018, 169 f.; for the development of concrete vaulting technology, see Lancaster 2005, 22–48.

16 Rizzo 1936; Pappalardo 2009, 29–31. The Casa dei Grifi is the oldest Republican era house published on the Palatine, excavated by Giacomo Boni in 1912 under the Domus Flavia. It was constructed out of *opus incertum*, which was rebuilt with a masonry style similar to *opus reticulatum*, and decorated over, helping to date the structure to the period between the end of the 2nd century B.C. and the beginning of the 1st century B.C. For the ceilings, see Lipps 2018, 125.

17 Ling 1972, 23. While they are no longer visible, Ling says that the plaster ghosts of animals (surviving only from the scratches of their application) indicate that two peacocks stood heraldically in the neighbouring room.

18 Ling 1972, 48; Lipps 2018, 122–127.

19 Vitr. De arch. 6, 7, 3.

Fig. 2: Pompeii, Casa del Criptoportico (I 6,2-4), north wing of the *cryptoporticus* showing central stucco medallion.

the strategic use of colour helps to mark these experiments visually and spatially; by leaving the projecting stucco details white, accented only with red grooves, the differences between media on the walls, the lunette and the geometric floor mosaics are emphasised.

Thus, an interesting contradiction arises between the idea of skeuomorphic imitation and the decision to leave the stucco visible and entirely recognisable as stucco. The ceiling stuccowork here does not operate strictly in the service of mimesis – there is a self-referential quality about it that playfully and deliberately undermines its mimetic potential. Rather than effacement, stucco introduces its potential hypermediacy, rendering visible the signs of its own mediation[20].

Built in the 1st century B.C. (roughly 40–30 B.C.) – the end of the Second Style's heyday – the Casa del Criptoportico (I 6,2-4) in Pompeii exemplifies the expanding uses of stucco in coffered ceilings[21]. The eponymous *cryptoporticus* employs a wide array of centrally planned geometric panels, framing pictorial fields with a great variety of motifs, including hybrid creatures and vessels (Fig. 2). These repetitive geometric fields create a dazzling white foil to the colourful paintings on the walls below. The murals are brightly painted in an alternating scheme of herms, friezes and garlands with a Trojan War cycle framed in a panelled frieze in the upper zone. In their current fragmentary state, the surviving stucco panels seem disconnected, floating above the polychrome walls. But in antiquity, the bands of white stucco coffers would have extended down the vaulted ceiling to the cornice level of the frescoed walls below, resonating with the white vertical bands painted between the regular fields on the mural hall (Fig. 2). These white zones create repetitive geometric fields throughout the entire space, painted and in plastered relief and exhibiting a composition that experiments with pattern, texture, figure and light.

Light is especially crucial in a semi-subterranean space. The stucco's colour and layered depth could catch light from the five windows on the south wall of the northern wing and reflect it onto

20 To use Jay Bolter and Richard Grusin's terminology of remediation, oscillating between immediacy (the total effacement of a medium) and hypermediacy (the marking out of mediation) to analyse strategies of Roman decoration (see below): see Bolter – Grusin 1999.

21 Lipps 2018, 127 f., with bibliography. Stucco ceilings are preserved in the north and west wings of the *cryptoporticus*, an adjoining *cubiculum* to the north and *oecus* in the east.

its murals below[22]. The single angled light source would also have thrown the stucco patterns into higher relief. The stuccowork meaningfully engages the space's visual programme by exploiting its spatial zoning – the vaulted ceiling enhances the visibility of the sunken, semi-subterranean rooms through its patterned coffer-work. In this sense the stucco acts as a medium integrated as part of the building's infrastructure. It relays light from one zone of the wall to another, between 'above' and 'below'. Rather than calling attention to its own operations, as in the case at the Casa dei Grifi, it fulfils a more self-effacing role.

The Weightless Spaces of the Villa della Farnesina

These interests in stretching the boundaries of coffering and expanding the pictorial potentials of stucco ceilings find their fantastical realisation in the Villa della Farnesina in Rome, designed during the beginning of Augustus' reign[23]. The mural surface strategies employed here reveal the ambiguity between stucco's boundedness to vaulted architecture, referencing the underlying architectonic structure, and its simultaneous transcendence of this relationship through the use of decorative relief panels.

While previously praised as both the birthplace and pinnacle of sophisticated Roman stucco relief decoration, the stucco vaults are in fact part of a rich tradition of Italy and the Hellenistic world, as demonstrated by the previous examples[24]. The Villa della Farnesina also underscores the fragility of the genealogical record of stucco ceilings in the Roman world – the salvage excavations were the result of a chance discovery during the 1879 embankment project of the Tiber River. The excavations preserved only the southern sections – the mosaics, paintings and stuccoes of which are now displayed in the Museo Nazionale Romano at the Palazzo Massimo[25].

The villa's assemblages are exceptional, both in preservation and execution. In three small rooms, *cubicula* (B), (D) and (E), stuccoed vaults supported by the richly painted walls are preserved (Figs. 3–6)[26]. Based on careful contextual analysis of the decorative assemblages of *cubicula* (B) and (D), Stéphanie Wyler has shown how the painting programme 'succeeds in combining architecture, sculpture and painting to replicate pictorially a proper art gallery', layering the 'referential language' of Hellenic artistic styles and integrating the 'familiar otherness' of Dionysiac imagery[27]. She has argued that the artisans created a 'politically correct' *pinacotheca*, parading eclectic exoticism through appropriating, referencing and accumulating a variety of artistic styles and cultural images[28]. This argument is based largely on iconography and mimesis; the frescoes emulate a Greek

22 Consider Roman *candor* as in Vitr. De arch. 7, 3, 4.

23 For an introduction, see Bragantini – de Vos 1982; Sanzi Di Mino et al. 1998; Wyler 2006, 216; Mols – Moormann 2008. Dated to the 30s–20s B.C. based on architectural and stylistic analysis. The owner was long assumed to be Agrippa; Hendrik Gerard Beyen's hypothesis was based on chronological, topographical, iconographical evidence, though no definitive proof: see La Rocca 2008. The design of the villa is unique, even avant-garde, which fits well with the new expressions of Roman art within it.

24 Supra 15; cf. Wadsworth 1924.

25 Wadsworth 1924, 23. Thousands of fragmentary reliefs were found in the debris and 'set in beds of plaster of the same dimensions as the original vaults'; through reconstruction by archaeologists, plaster remediates and re-presents the stucco programme of the *cubicula*.

26 Mielsch 1975, 20–24. 111–114; Bragantini – de Vos 1982, 61–65. 137–139. 193 f. 291–295. Barrel vaulted ceiling areas are approximately 3.42 m x 2.6 m for *cubicula* (B) and (D) and 3.57 m x 2.58 m for *cubiculum* (E). The wall paintings are traditionally placed between the Second and Third Styles by formalist analysis: see La Rocca 2008.

27 Wyler 2006, 217. 220. In the Roman context, in addition to being the god of altered states and carnivalesque revelry, Dionysus was considered 'Greek' and thus a familiar cultural 'other'. On the transferability of media in Roman wall painting, see Jones 2019, 137–178.

28 Wyler 2006, 217. 227. This process of accumulation/replication was inventive rather than solely derivative; through the models and techniques of Hellenistic art (i. e., a 'reconstructed orientalism'), artists contributed to a distinctly

Fig. 3: Rome, Villa della Farnesina, *cubiculum* (B), stucco vault.

Fig. 4: Rome, Villa della Farnesina, *cubiculum* (D), stucco vault.

Fig. 5: Rome, Villa della Farnesina, *cubiculum* (E), stucco vault.

Fig. 6: Rome, Villa della Farnesina, *cubiculum* (D), wall paintings and stuccoes.

Fig. 7: Rome, Villa della Farnesina, *cubiculum* (D), detail of stucco sacral-idyllic panel.

picture gallery with painted *pinakes* and framing devices that conjure up Hellenistic references, concentrating on Dionysiac and Egyptianising themes. The stuccowork contributes to the thematisation of 'Greekness' and the luxurious otherworldly: depicting sacral-idyllic landscapes[29], Dionysiac rituals and even the god himself, shown in an archaising profile bust in *cubiculum* (B), the images are all located in worlds 'somewhere else' (Fig. 7)[30]. These images create a 'familiar alterity': a mass of visual and cultural imports confidently collected and cohesively displayed within the Roman *domus*[31]. In this Early Imperial context, such elaborate picture-gallery ensembles blur the familiar and foreign; referential Bacchic/Egyptianising images were integrated within the residential sphere, yet they could evoke the unfamiliar or exotic (on the margins of empire or beyond)[32]. In the following discussion I build on Wyler's argument to show how the stucco ceilings also contribute to iconographic themes such as domesticated otherworldliness *spatially*, creating an airy atmosphere above the painted walls and viewers below through the unique surfacing properties of stucco.

The same artisans surely executed the three stuccoed vaults of *cubicula* (B), (D) and (E), which are materially and technically very similar, though each vault has its own decorative programme with subtly varied figural and compositional elements (Figs. 3–5). The stuccoes are a light cream colour without any trace of polychromy, and have a smooth, close-grained texture[33]. Though showing affinities to the compartmentalised formulae of Roman stucco traditions, the compartments no longer create recognisable quotations of wood or stone coffers, but fluidly adapt their slender interlocking rectangular compartments, framed by delicate stamped mouldings, to the curvilinear vault form[34]. The resulting effects differ in each room, where the ceiling compositions

Roman development of Hellenistic art. Textual accounts of this process are very concerned with the private appropriation of public art. For an exploration of the Roman enthusiasm for fictive murals of Greek artworks, as observed on the Palatine, see Bergmann 1995, 102–108; Jones 2019, 93–126.

29 These echo the landscapes in found in *pinakes* on the murals: see Ling 1977. For monochrome 'grisaille' wall painting scenes interpreted as relief, see Moormann 1988, 36–39.

30 Wyler 2006, 224, including the rustic outdoors and Dionysiac drunkenness.

31 Wyler 2006, 223; also Barrett 2017, 325.

32 See esp. Barrett 2019. In *cubiculum* (B), for example, images of Isis and Ammon are painted directly onto a red background, seemingly integrated as *monstra* or decorative statues, rather than framed as panel paintings. Such appropriations were enabled by Rome's conquests and, thus, participated in developing the *decorum* of lavish display within the new imperial context.

33 Wadsworth 1924, 23.

34 Ling links this trend to the introduction of differently shaped coffers like diamonds in the Casa del Criptoportico, suggesting medial transference between Italian *opus reticulatum* wall-facing, Ling 1972, 52; cf. Mielsch (1975, 21), who

contrast their correspondingly decentralised (or emblemless) floor mosaics below. For example, in *cubiculum* (E), the complex interlocking frames on the ceiling juxtapose the bichrome mosaic pavement beneath, with its geometrised rosettes and squares composed on a (more straightforward) grid[35]. While the regular geometry of the bichrome floor heightens the intricacy of the ceiling design, both bichrome/monochrome palettes highlight the exuberant chromatic effects of the wall paintings above and below.

On the ceiling, the stucco panels contain delicate and shallow pictorial reliefs, featuring figures that were modelled by hand[36]. In addition to the peopled 'landscape' and narrative scenes alluding to the Dionysiac mysteries (Fig. 6), fantastical candelabra, plants and floating figures such as victories, cupids and griffins fill the narrow framing fields[37]. The vegetation in particular, though shared across the three vaults, evinces an interest in variety and playfulness; tendril ends are left unfinished and some compositions are 'architecturally impossible'. This detailing of the framing flora and fauna anticipates one of the most celebrated monuments of the early principate, the Ara Pacis Augustae, and its inclusion of *minutiae*, like the tiny animals lurking in the spindly depths of its vegetal frieze[38].

Thus, this picture-panelling mode of the Villa della Farnesina's *cubicula* demonstrates an innovative adaptation of the coffer-style vault to create intimate enclosures where the imagination is given free reign. However, the inclusion of relief sculpture above the fictive architecture of a 'Greek' picture gallery prompts further exploration of surface and colour, how they operate, and their impact in the rooms. Indeed, the vaults' complex relief sculpture resists placement in any one category of artistic media. As Christopher Lakey has commented with regard to the medieval period, relief is both painting and sculpture, 'material and virtual space', which 'requires observers to complete two-dimensional forms in three dimensions'[39]. The plastered relief sculpture on the ceiling presents varied media and experiential effects, going beyond the fictive/non-fictive boundaries of the painted surfaces below, which Nathaniel Jones has sophisticatedly argued are rife with remediations[40]. While the stuccoed relief does cite diverse artistic styles (as is evident in the sacral-idyllic scenes and archaising profile busts), it does so within a different visual/material logic to wall painting: the stucco produces all images and spaces using the same palette, framing devices and relief technique (and to quite different ends). What happens to the overall decorative assemblage when stuccoed relief interrupts or converges *above* painted remediated depictions? The reliefs' assertion of their own surface, I argue, further destabilises those of the murals below. The ceiling surface is subtly within our realm, real in its almost three-dimensional claims, yet simultaneously creates a light, diaphanous visual effect, unlike the spatial and architectural claims of the painted picture galleries below[41].

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describes the composition as 'rechtwinklige Felderdecke'; see Lipps 2018, 171–186, for a survey of Late Republican/Early Imperial ceiling aesthetics, esp. 173–175, on the importance of variation.

35 See watercolour by Domenico Marchetti in Sanzi Di Mino et al. 1998, 79 Fig. 113.

36 While the frames were stamped, the figures show scoring marks typical of Roman relief stucco. See Ling 1976.

37 Wadsworth 1924, 23 f.; Mielsch 1975, 20–26. 111–114.

38 See Castriota 1995; Platt 2017, 81 f. For the Augustan structuring principle of ordered disorder, see Kellum 1994, 217; Barham 2018. For the concepts of *monstra* and the role of vegetal motifs/organicism as organisational in Augustan art, see Platt 2009.

39 Lakey 2018, 1 f.

40 Jones 2019, 137 f., employing Jay Bolter and Richard Grusin's terminology (supra n. 20). Cf. Barham (2021), arguing convincingly for the interest in varied colour effects in both representational and formal modes of decoration in *cubiculum* B, likewise focuses mainly on wall painting. The ways in which the medium of stucco introduces broad white colour fields, undulating with light and dark shadowy surface on the Farnesina ceilings (below), complement such an analysis of mural and floor materiality and abstraction.

41 Consider too, that these shallow reliefs were not capturing and shifting natural light, as they were in the Casa del Criptoportico, but rather due to a lack of windows, are probably brightening these small intimate spaces by reflecting lamp light or diffused natural light from elsewhere in the villa: see Vitr. De arch. 7, 3, 4. For literary sources on the valued relation between ceiling surfaces and lustre, see Lipps 2018, 171–173.

Fig. 8: Rome, Villa della Farnesina, *cubiculum* (D), standing nude figure (representing Zeus).

Within these assemblages of the Farnesina villa, such disparities between reality and representation, then, hinge on the textures and chromatic efficacies of the walls and ceilings. The gauzy stucco relief panels introduce a monochrome palette, a lightness, clearly juxtaposed with the brightly painted walls below (Fig. 6). In the mural programmes, white pigments are used in culturally-encoded ways – in *cubiculum* (B) for example, the female musicians make a double quotation, resonating for modern viewers with surviving classical Greek white-ground *lekythoi*, and presumably evoking Greek panel paintings for ancient viewers[42]. As Jones has elucidated with regard to Roman wall painting, white's 'dual sense' generates both atmosphere and solidity: white can indicate spatial regression (like the white paint used above the architectural fiction in *cubiculum* (D) of the villa (Fig. 6), but can also represent the solidity of stone architecture and panelling[43]. As in the case of the Farnesina fresco paintings, white can represent literal surfaces, such as prepared wood panels or painted marble, like the rare surviving examples from Herculaneum[44]. The distinctions between representations of literal white surfaces and dematerialising atmospheric effects are already called into question in *cubiculum* (D), which for example includes a standing nude figure (representing Zeus) on the left wall of its antechamber executed almost entirely in line against a white background (Fig. 8)[45]. Is this a transparent figure emphasising the artist's use of line, set against a marble slab or a panel painting? Does it float against a fictional ground or the smoothed (painted) surface of the plaster wall itself? These citational and representational slippages between specific cultural media

42 Wyler 2006, 217; Platt 2009, 41 f. 47 f.

43 Jones 2019, 142 f. 154. Jones' analysis of the medial spectrum between opacity (hypermediacy) and transparency (immediacy) of Roman wall paintings inform my interpretation of stucco ceiling reliefs (see below).

44 Jones (2019, 143) cites the prepared wooden boards mentioned in the Delian inventories. Pausanias (7, 22, 6) says Nikias painted on a white marble tombstone in Achaia; cf. the white-ground panels at Boscoreale in Jones 2018, 17.

45 See the stucco reliefs of nude male athletes from Castellammare di Stabia and the Stabian baths in Pompeii, which formally resemble the Farnesina Zeus but mediate through relief sculpture rather than line: Mielsch 1975, 129 f. (K34 5–6, Pls. 30, 1–2); 143 (K 54a III.V, Pl. 50, 1).

and visual imaginaries revolve around the opacity and transparency of colour, namely white[46], and these are the very slippages that the stuccoists exploited to create an otherworldly atmosphere on the vaults.

Thus, a paradox exists within the visual environment of the Farnesina *cubicula* – stucco is actually quite solid, hardening to a rock-like consistency when dry. And yet these ceiling stuccoes have an *airy* effect, contrasting with the painted architectural solidity of the walls below. In addition to their creamy colour, the stuccoes' shallow relief generate a soft contrast between lights and darks. This is partly owed to the slender, attenuated proportions of the figures and architecture depicted. But it also owes a great deal to the expansive empty 'grounds' found within each framed panel. For example, within the sacral-idyllic scenes, figures and architectural elements recede in order to depict space. They are also held within a matrix of white ground, which also represents the air/space surrounding them, albeit in a gauzy, unstable fashion (Fig. 7). However, framing figures like the victories project solely from their empty grounds. Their bodies are fused physically (with scoring marks) to this 'virtual' space, blurring into the movement (or air) of the background. Grounds are both representations of spatial regressions (a matrix through which figures and architecture recede in 'landscape' scenes) and ambiguous empty zones held within each interlocking frame (white space). These grounds are crucial for the ceiling's operations, then, since they literally represent *space/air*. In this way the stucco ceilings both lighten the small rooms with their creamy colour, and produce a weightless, atmospheric visual effect. All in all, by combining slender figures, shallow relief and creamy white grounds engendering space/air, the artisans crafted a light, dreamy zone above their viewers' heads[47].

Within the inventive frame of the panelled vaults in the Farnesina *cubicula*, amidst the most fashionable expressions of learnedness and connoisseurship, stucco's plasticity is on display. It absorbs and morphs Hellenising motifs and styles, fervidly amassing and homogenising materials as well as cultural and religious allusions, and projecting them *out from* and *as* a real surface. Its monochrome matter unites and 'domesticates' them, as it were, within a single light-cream palette. This white monochrome is, in one sense, architectural and solid. It is pressed upon and, thus, signals the softly curving architectonic structure of the ceiling. But through the movement of its modelled figures, and the expansive empty grounds of each relief panel, a sense of ambiguity also arises, effacing the underlying construction of the vault. What appears first as a solid and opaque *true* surface dissolves so that the viewer sees the varied (transparent) picture scenes projecting from it, creating an uncertain (diaphanous) space[48]. These applied architectural *ornamenta*, capping the make-believe 'Greek' picture gallery below, generate the least stable *imagines* of the room. Floating above the viewer, and outside of the trompe l'oeil architectural fictions of the walls, the white reliefs generate an interstitial ceiling by means of the material solidity and visual ethereality of their medium.

Establishing Hard Boundaries in Livia's Garden Room

I conclude this discussion of ceiling picture-panelling with another touchstone mural programme from Augustus' reign: the garden room *triclinium* in Livia's villa at Prima Porta, which offered

46 See e. g., Mandel 2010; Barry 2011.

47 This could of course affect viewers' emotional state or mood. See Lipps 2018, 176, for ancient literary evidence on the 'atmospheres' of domestic spaces.

48 Jones 2018, 137 f. 140–143. I borrow Jones' language (inspired by Louis Marin's formulation) to describe this tension between opacity and transparency, which he uses exclusively to describe the operations of Roman paintings, as well as Krämer's use of 'diaphanous' media: see Krämer 2015, 6.

Fig. 9: Rome, Villa of Livia at Prima Porta, Garden Room (*triclinium)*, the long east wall.

diners a fantasy space in which they could ruminate on the complex relationship between *ars* and *natura*[49].

Livia's Garden room presents one of the most famous examples of illusionism in Roman wall painting and references Augustan mythology though botanical specimens (Fig. 9)[50]. The *triclinium* and its paintings create impossible vistas, immersing the viewer in a pavilion which activates synesthetic allusions to the sounds of birds with their fleeting movements, the scent and feel of the cultivated plants and the taste of locally grown fruit[51]. However, this is no fictive gazebo from which the lucky spectators may gaze – despite the craggy grotto-like overhang above the painted garden scenes[52], no architectural supports are depicted to uphold the grotto, revealing the *triclinium*'s enclosure as a make-believe fantasy. This lack of structure signals the impossibility of such a privileged space of viewing and immersion. But look up! See the fragmentary painted stucco panels that emerge from the cavernous overhang of Livia's garden room. Here, rectangular frames in relief appear along the upper wall. White stucco figures project from painted red and blue backgrounds. In antiquity, a painted stucco cornice with a white waterleaf pattern on a blue background marked the transition of the murals to the ceiling vault[53]. This three-dimensional architectural element interrupts the unsupported grotto-like illusion of the garden paintings, shifting the viewer's attention to another make-believe picture field above.

The plastered panels rest above the (now dilapidated) stucco cornice[54]. Framed by an egg and dart moulding, they alternate between white relief scenes against white grounds, and white-winged Victories poised on candelabra against blue grounds within a narrow red frame. One relief panel that is still legible suggests a banqueting scene, where a recumbent male holds a lyre, another figure rests between his legs with pipes and a boy stands off to the side (Fig. 10). Though fragmentary, these relief pictures beg the question: what are these panels? Does this marked material shift to the stuccoed vault represent a coffered stone roof? Are stucco panels now presented as the expected medium of vaults, an integral mode of surfacing in the 1st century B.C.? No matter what the answers are, the illusion of an unsupported pavilion comes crashing down. The stucco panels, so often cropped from both visual reproductions and analyses of Livia's garden room, announce their own artifice and surface quality. The stuccoes' materiality, expressed through their projecting reliefs and

49 Gabriel 1955; Calci – Messineo 1984; Kellum 1994; Kuttner 1999; Settis – Donati 2008; Zarmakoupi 2008. For the dynamics of nature and design performed in other Roman media, namely cameo stones, see the contribution by Lang, this volume.

50 Kellum 1994.

51 See Caneva – Bohuny 2003.

52 See Gabriel 1955, 7 f., for arguments as to whether this painted upper zone represents a grotto's stalactites or the thatched roof of an *incannuciata*.

53 Wadsworth 1924, 35.

54 Mielsch 1975, 114.

Fig. 10: Rome, Villa of Livia at Prima Porta, Garden Room (*triclinium),* stucco with banqueting scene.

colour, draw attention to the ceiling's lithic *weight* – in contrast to the diaphanous weightlessness of the Farnesina vaults – and the fact that it cannot be supported by the expansive outdoor scenes of the walls below it. This juxtaposition throws other aesthetic effects into high relief.

In concordance with the wall paintings, the stuccoes help to evoke the theme of liminality in the room in three ways: mimetically, materially and rhythmically. Mimetically, boundaries are pictured through the wall's celebrated illusionistic representations: white (stone) and ochre (wicker) painted fences in the garden scene separate the cultivated from the wild, and the rocky overhang represented on the upper wall marks the transition from the floral plant world to the grotto outcrop above. *Limina* are activated materially with the onset of the plaster panels above the paintings. Finally, boundaries are generated rhythmically through the replication of banded colour fields, conjured by the visual similarities between the bands of the black dado on the lowest register of the wall below the ochre trellis and white balustrade, all of which echo the banded stucco panel frames above (especially with their gemlike quality of figural whitework emerging from red and blue colour arenas)[55]. These strategies are enhanced by motion – both visual and physical – in the space, relying on human bodies to 'take in' the immersive environment around and above them[56]. Thus, through these visual and material strategies, the assembled mural programme *thematises* boundaries and framing, and in doing so, the room's decoration prompts its viewers to reflect upon the relationship between *ars* and *natura*. These stucco panels are therefore an integral component in distorting this immersive fantasy and in doing so draw out the tension between mimesis and materiality in Livia's garden room. At least momentarily, the stuccoes bring the viewer's attention to the room's skilful artifice as well as its close relationship to realistic *natura*[57]. They employ a similar vogueish panelled-picture mode to the one explored in the Villa Farnesina, in a similarly close-textured stucco[58]. But this time the artists exploit polychromy and projecting relief fields in order to heighten the contrast between the walls and the ceiling.

55 See Ling 1976, 45, for the development of gemlike stucco treatments, which he relates to craft experiments interested in the effects of metopes and gems.

56 We must not forget, however, the viewers' stillness while dining, too; reclining might have allowed viewers to parse the images within the stucco frames, which include banqueting scenes, in addition to taking in their surface, colour and materiality.

57 On Roman artisans at once purposefully engineering an illusion and rendering it transparent in mosaics, see Molholt 2008, 15, quoted in Crowley 2020, 218.

58 Wadsworth 1924, 35.

In both case studies artisans expand stucco's previous architectural resonances to coffered ceilings, in order to open up new possibilities of pictorial space. In doing so, the stuccowork transcends strictly imitative and self-effacing qualities. At the Farnesina this results in ethereal vaulted spaces of three-dimensional (cultural) accumulation. By crafting surface relationships between floor, mural and ceiling, the artisans enabled stucco's other-worldly atmospheric effects to coalesce above the viewer. The assemblages in Livia's garden room thematise unstable boundaries, made manifest between whimsical frescoed surface treatments and solid, three-dimensional stuccoed surface treatments, which transport the viewer between *ars* and *natura*.

Conclusion

By exploring decorative stuccowork applied to ceiling surfaces, this paper has attempted to tease out how artisans exploited stucco's sturdy material and light visual affordances in order to generate exciting aesthetic, spatial and atmospheric effects in elite Augustan homes. These properties hold important implications for Roman surfacing techniques. First, stucco helps to highlight the intimately entangled concepts of surface and structure in Roman culture and *decor*. As a ubiquitous and understudied cultural technique, stucco offers a wide functional and aesthetic continuum, from the engrained practices of 'finishing' interior walls and protecting exterior architectural features to creating sophisticated zones of decoration. Finally, by challenging the boundaries between the *on* and *behind*, and the *above* and *below* of interior decoration, stucco heightens the drama of – and even sometimes undoes – painted mural fantasies, while also highlighting the immersive materiality of surface assemblages.

These conclusions reveal stucco as a dynamic vehicle for varied modes of communication. As a self-effacing medium, stucco could act as an emulative and pictorial mode of decoration for vaulted spaces. Stucco does this, but simultaneously summons the viewer to see its *hypermediacy* – affirming its own surface – as a medium full of potential, generating novel atmospheric effects. Augustan plasterers invite us to notice stucco in many surprising ways that were related to the architectural, formal and stylistic innovations of the period, helping to account for its persistent inventive use in elite houses. Taking stucco seriously as a multi-dimensional medium propels viewers into new realms of experience and facture, transcending the dyad of reality and representation in domestic space.

Jessica Plant
Cornell University
History of Art Department
GM08 Goldwin Smith Hall
Ithaca, New York, 14853 USA
jp2344@cornell.edu

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Arne Reinhardt

Diverging Trends in the Visual Appearance of Fired Clay in Roman Architecture: 'Campana Plaques' and Terracotta Façades

Abstract: This article addresses aesthetic, functional and semantic aspects of the material clay/terracotta in Roman architecture and possible changes to these aspects over time. In particular, the focus lies on 'Campana plaques', a class of Roman architectural terracottas used in the upper parts of architectural structures. My aim is to provide a phenomenological overview of general design tendencies, and to contribute to the interpretation of large-scale plaques from the Palatine in Rome, which have recently been regarded as important evidence for a special appreciation of clay in the era of Augustus. In order to complement this (inevitably partial) insight into the manifold ways in which terracotta was used and shaped for architectural surfaces, this paper includes a second case study focussed on exposed terracotta façades. After a short overview, each section first turns to the usage of clay and its visual appearance(s) in the particular cases, and then approaches possible semantics tied to clay during this period of its use. Both cases relate to the metropolis or its immediate surroundings and belong to the late 1st century B.C. and the 2nd century A.D., respectively.

Introduction

Of the many natural resources used in antiquity, clay is a real 'wonder material': it is widely available and easy to work with, both in terms of influencing its physical-chemical composition and utilising its natural plasticity. When properly treated, this malleable substance will take on almost any kind of form, whether achieved purely manually, or by moulding or impression; furthermore, it maintains its given form for an impressive length of time, thanks to its material strength and the resistance gained through the processes of various preparation methods and firing[1]. This great usefulness easily explains the material's ubiquity in ancient architecture: clay's uses range from roof tiles and architectural terracottas (associated with the earliest surviving examples of monumental architecture in Early Archaic Greece) to brickwork as a standard Roman building technique from the Late Republican period onward[2]. The durability of antique ceramic and terracotta products makes them objects of modern research, which usually relies upon their form and primary 'practical' function in its approach to this class of material. Yet the important characteristics of clay are not limited to these: as with any other *materies*/ὕλη[3], colour also holds an important place amongst its physical properties. Depending on the raw clay that is used, as well as the preparation and firing processes,

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1 On clay/terracotta as a material for construction, see, e. g., Malacrino 2010, 41–60.

2 For Greek roof tiles and architectural terracottas, see Winter 1993. Gerding (2006) provides a brief overview of the early use of fired brick.

3 On *materies*/ὕλη and material, see Meier et al. 2015; on the concept of affordance, see Plant and Hielscher, this volume.

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its spectrum ranges from whitish-grey to brown and orange-red. The characteristic, intense earth hues of clay products therefore result from a combination of both natural properties and human intervention[4].

Ancient material culture is rich in examples of the deliberate integration of earthy tone(s) into an overall design, which makes clay a potential medium for colour decoration (as is the case with many kinds of ceramic, including Athenian glazed pottery or terra sigillata, for example). However, in many cases this facet of clay's physical properties seems to have been simply accepted as a given fact, rather than seen as a feature chosen deliberately for its decorative potential. In architecture, for example, a monochromatic earth tone characterises many objects that served primarily practical purposes, such as roof tiles, *tubuli* and bricks. While the former sat in a remote position on the less conspicuous rooftop surfaces, the latter were usually plastered over. Lavish façades, when finished, almost always concealed the intense hue of the monochromatic terracotta elements used in their construction. Thus, unlike other – mostly 'noble' – materials, the characteristic earthy colour of clay did not necessarily form a visible component of the final visual appearance, as was the case with precious metals or marble, which were usually visible in the finished appearance of artefacts crafted from them. With respect to clay/terracotta in Roman architecture, there were many situations in which the inherent colour was clearly less appreciated than the material's other qualities (such as its strength and useful multiformity).

If, in material culture studies, we understand material as a specific quality of 'things' or objects and attempt to explore its effects on the usage and perception of artefacts in a certain cultural frame (materiality)[5], clay's colour is of special interest. Stressing clay's inherent colour as a medial quality can help us to recognise the presence – or absence – of this physical property in the overall appearance of the final artefacts (or architectural structures) not as a matter of course but rather as the result of the technical and artistic treatment that it has undergone. This emphasises the choices made by the relevant actors and reflects deliberate cultural preferences. As with form and decoration, colour also depended on the 'fashioning' that a material underwent during the production process: within the realms of possibility and intention, the actors involved had 'a choice'[6]. In the process of fashioning, the basic *materies*/ὕλη was either included in the visual appearance of the final product (which I take to be a combination of form, surface/texture[7] and colour), possibly supplementing or enhancing those three qualities, or it was excluded from it and concealed. In the latter case we may speak (paraphrasing Martin Seel)[8] of a difference between the basic material with its native colour, and the finished artefact's material appearance *in terms of* colour, which may include other hues and substances applied to the surface (for example, a slip or gilding). A terracotta product may thus appear as if it was made of plaster/stucco or plastered stone, or it could even glitter like gold. In order to avoid the biased term 'surrogate' here[9], I suggest comprehending the effect stemming from such an artificial accumulation of various, even foreign, synesthetic

4 Malacrino 2010, 42.

5 See the introduction by Haug – Hielscher, this volume and Plant, this volume. On 'material' and 'materiality', see also Meier et al. 2015, 21 (with further references); Karagianni et al. 2015.

6 I thank Annette Haug for pointing out Stephen Greenblatt's *Renaissance Self-Fashioning* (1980) to me, which examines the construction of identity based on English Renaissance literature. Another reference point here is Pierre Lemonnier's 'technological choice': see Lang 2006, 311–313. Referring to 'actors', I mean the contemporary figures involved in ordering, producing and consuming terracotta artefacts (I do not refer to actor–network theory).

7 This aspect, although important for the aesthetic appearance in all of its complexity, must be almost completely omitted here. On surface/texture, see Grüner 2014, 424–439, which discusses the effect of the Vitruvian *asperitas* on stone surfaces etc.

8 Seel 2003, 173 f.: 'eine basale Operation der Malerei dürfte in der Herstellung einer Differenz von Bildfläche und Bilderscheinung liegen'; see Haug – Hielscher, this volume.

9 The potential to deceive – a standard accusation made against the 'ignoble materials' (for the concept of 'Materialgerechtigkeit', see Wagner, this volume; Raff 2008) – is one of the many key reference points I share with Jessica Plant's contribution on stucco in this volume.

information in one material appearance as that object's 'aesthetic cloud'. In this mental figure, a variety of aesthetic potentialities correspond to a single material. Or, put conversely, different materials may share the same aesthetic qualities[10].

The preceding discussion characterises my approach to terracotta in this context only insofar as I will be focusing on different methods of fashioning this material, especially with regard to its natural colour. However, as the following comparisons will show, the divergence between the basic colour of the material and the colouring chosen for the artefact's visible surface not only indicates a range of possible visual appearances, but is also instructive in terms of semantics and the underlying concept of appropriateness (*decorum*)[11]. For this reason, my contribution will attempt to draw conclusions from the archaeological evidence through comparison and close analysis. Observations concerning both the combination of materials used side by side within one architectural structure, as well as brief glances at other solutions applied in buildings of the same period or their historical predecessors can shed some light on the semantic aspects and diverging tendencies within the concept of *decorum*. Methodologically, I thus share the approach taken by Annette Haug, Adrian Hielscher, Matthias Grawehr and Dominik Maschek (among others) in this book, who argue for the need to draw conclusions from archaeological 'pragmatics' and to address the subject from the perspective of production[12]. In scholarship to date, however, conclusions regarding the semantics of clay/terracotta have almost unanimously been drawn from ancient literary sources and follow a preconceived and standardised 'hierarchy of materials'[13]. Despite the polyfunctionality and heterogeneity of preserved terracotta artefacts, there remains a common assumption that a general, almost 'monolithic' semantic connotation can be assigned to clay in the Roman era. This view is almost unquestionable, especially as regards the aspects of material value and immaterial meaning: clay is humble, but from its simplicity, a high ideational content emerges, marking it *the* traditional Roman medium, which signalled decency in architecture, the arts and everyday objects.

Even though my remarks in this essay are in many respects limited to outlines and indications, I still hope to contribute to shifting the semantic perspective towards a view that pays more attention to the archaeological evidence. At the very least, the examples gathered here should reveal diverging strategies in fashioning – negating, supplementing or using – the inherent monochromatic colour as one factor among others with regard to clay's physical properties.

'Campana Plaques'

'Campana plaques' are commonly understood as a Roman version of Etrusco-Italic architectural terracottas[14]. Emerging in the 1st century B.C., probably between the period of Sulla and that of Julius Caesar, they continue the old tradition of moulded terracotta plaques which were applied

10 See Haug – Hielscher, this volume. This blending, it has to be stressed, produces direct consequences for the field of semantics, as discussed by Anguissola, this volume, in the context of Pliny the Elder's writings. The deception of a camouflaged material, however, is rarely absolute, always bearing in itself the possibility of revelation.

11 Here I focus on 'original', first-phase decorations, leaving aside the aspects of later alterations affecting the aesthetic appearance during the artefacts' lifespan, such as weathering, damage, refurbishment, etc.

12 See esp. Maschek, this volume, along with the contributions by Grawehr, Anguissola and Haug – Hielscher.

13 According to which – in a seemingly transcultural manner – clay/terracotta assumes a relatively unimportant place in comparison with precious materials such as gold, silver, bronze and marble. Even if this categorisation is deeply rooted in ancient thought (as shown in passages that discuss tableware, such as Plin. HN 33, 142, Sen. Ep. 5. 6 and Val. Max. 4, 3, 7. 4, 11, in which comparisons between vessels made from precious metals and simple ones made from clay forms a known topos: see Raff 2008, 29. 77–82), this does not mean that diverging interpretations and classifications were not practiced under certain socio-cultural circumstances (as we shall see).

14 The plaques' rich imagery is decisive (addressed as 'neo-Attic' in scholarly tradition): see Borbein 1968, 20–27; Reinhardt, forthcoming. However, the differences from other related forms of Roman architectural terracottas (which are actually produced side by side: see Pensabene 2017, 136 f.) are often fluid.

to the edges of roofs as well as to wooden entablatures of both religious and public buildings, as well as in domestic architecture. Typologically, 'Campana plaques' can be divided into four different shapes, three of which stem directly from the Etrusco-Italic tradition. First, revetment plaques (Verkleidungsplatten) were fixed to the entablatures of temples, as well as porticoes in villa architecture. *Simae* framed the roof edges of both sacred and profane buildings. In many cases, they were crowned with crestings (Krönungen), low and elongated elements which were typically worked 'à jour' (producing a pierced cresting). The irregular upper end of this cresting is mirrored in the fourth type: cresting plaques (Aufsatzplatten). This type is the most common among surviving examples, and was used for several purposes in various architectural contexts, from eave tiles to wall friezes[15]. Because of their use in the upper parts of architectural structures, the contextual setting of 'Campana plaques' within original decorated surface assemblages is much harder to identify than, for example, stucco or wall painting.

Fashioning Clay in Various Colours

'Campana plaques', like other architectural terracottas, take advantage of their constituent material's malleability during the manufacturing process. The standard procedure applied in their production was the principle of mould and impression; this permitted, for example, the forming of relief depictions from the same substance to a certain elevation/height. In a semi-dried state, minor changes could be performed by hand (e. g., the reworking of details or, by piercing the background, the creation of cutwork or openwork) and it was possible to join individual pieces (as was the case with the water spouts on the *simae*). 'Campana plaques' are thus mechanically reproduced items[16]. This shows a fruitful connection between the favourable material properties of clay and the particular need for identically shaped and decorated elements that fit the overall design of a building. It also goes hand in hand with a certain seriality in terms of the images, which were bound to form friezes on the entablature, the roof edges or upper wall zones in quite a repetitive form[17].

However versatile the material in this regard, its natural monochromatic tone usually underwent further alteration (although the majority of terracottas survive without colour today, traces indicate that they were originally painted in almost every case). In the absence of an overarching study in this field, we remain dependent on the remarks of Hermann von Rohden and Hermann Winnefeld, who were working on the material between 1878 and 1900/1911[18]. Overall, they distinguish four typological groups. The most common were plaques covered in a layer of whitewash, which served as a support for further painting in various colours (1). However, several of the 'best pieces from the Augustan era' lack this supportive layer and the clay is painted directly while some parts were omitted (2). In these cases, a thin coat of clay, which must have been incorporated into the mould first before filling it with the usual compound, indicates a special treatment of

15 The standard publication is von Rohden –Winnefeld 1911 (esp. 23*–47* on the types and their use); see also Borbein 1968, 14–19. For villa contexts, see Johannsen 2008 and Känel 2013, 1115–1119 for more recent works.

16 This fact has been interpreted in different ways: see von Rohden – Winnefeld 1911, 24* f.; Borbein 1968, 33 f.; Känel 2013, 1115; Reinhardt 2016, 256–260. On production, see Tortorella 1981.

17 Identical pieces were set next to one another; varied counterparts formed companion pieces and single plaques closely linked in content were combined (e. g., three deeds of Hercules): see von Rohden – Winnefeld 1911, 29*–31*; Borbein 1968, 19; Reinhardt 2016, 250–256. For 'Campana plaques' as wall decoration, see Tortorella 2018.

18 Modern scientific methods form a necessary and important addition to their observations. For example, a mixed analytical approach (Tarquini et al. 2019) has recently helped to reveal remnants of Egyptian blue on a fragment from the Palatine Hill, and in this case the naked eye was not able to perceive traces of colour at all. Yet this type of research remains rare; a poster published by Buccarella Hedegaard et al. in 2017 represents a rare, but important example, while additional research is forthcoming (e. g., that performed in the Kunsthistorisches Museum in Vienna and the Ny Carlsberg Glyptotek in Copenhagen, to be presented at the International Conference 'Status Quo Campana Reliefs', organised by the author).

Fig. 1: *Sima* with lively colours; Rimini, Museo della Città, inv. 4767.

the plaques' surfaces. Furthermore, reliefs (especially *simae*) exist that were covered by a thick, milk-white colour (3) alongside, perhaps, pieces that remained entirely unpainted (4)[19]. These four groups correspond directly to two different decorative conventions: one that covers the original clay colour entirely (cases 1 and 3), while the other allows it to come through at least partially (2 and 4).

The first convention may be illustrated by a fragmented *sima* from Rimini, which is dated to the 2nd century B.C. and has survived with much of its original colouring intact (Fig. 1)[20]. On its concave front, it is decorated with an elongated pattern based on the traditional lotus and palmette frieze. However, the heads of a Gorgon and a lion alternate with these floral elements, separated by elongated spirals. While the piece itself is brown to greyish in colour, a white slip originally covered large areas (or all) of this earth tone, which has now become visible through surface wear. As far as it is possible to discern today, the white slip primarily served as a preparation layer, remaining visible in the final state only at the bottom of the piece. Further colours were then applied: the background is dark blue, with the lower border of the *sima* a wine red; this same red was also applied to the hair of the *gorgoneion*, which is adorned with pink skin, black eyebrows, red lips and a collar of blue snakes. In accordance with this veristic application of colour, the lion's head is reddish brown with yellow manes. A rich red was applied also to the main leaves of the lotus flower and palmette, while the tiny leaves in their bottom and the middle sections differ in colour (the former are light blue, while the latter, in the case of the palmette, are yellow; light blue was used for its calyx).

The fashioning of this *sima*'s decorative elements relies on the usual material properties of clay, both in terms of function (forming a weatherproof eave) and plasticity (shape, surface elevations), but originally it must have been almost completely deprived of its inherent colour. For the sake of aesthetics, the decoration was further pigmented, which reflect both convention (the use of blue and read as major colours for architectural ornaments) and a general veristic tendency as far as the figural parts are concerned.

19 For technical questions, see von Rohden – Winnefeld 1911, 26* f. esp. 23*. 29*; see also Perry 1997, 58–60; Blume 2016. Comparing these findings with the polychromy of related pieces, such as other *simae* and antefixes (e. g., Pensabene –Sanzi di Mino 1983, Pls. O–Q), remains an important activity for future research.

20 Rimini, Museo della Città, inv. 4767; see also Maioli 1998 (thanks to Maddalena Mauri for this reference).

Other supplementary evidence can be presented. While some fragments from the Casa del Granduca Michele (VI 5,5) in Pompeii provide us with another example of vivid colourfulness, both a cresting plaque in the Museo Nazionale Romano and a revetment plaque from the Casa del Fauno (VI 12,2) in Pompeii rely heavily on the use of white. In the theatre scene depicted on the cresting plaque in Rome, white denotes the architectural structure in the background and plays an important part on the lower border and in the palmette frieze at the top, whereas the plaques from Casa del Fauno's north peristyle lack any evidence of additional colour[21]. In general, the use of this white primer coat is attested from the 2nd century B.C., and it continues into later periods. This timeline parallels the chronology associated with the finishing of architectural surfaces (e. g., those of walls, columns, capitals and friezes) produced in tuff or travertine with a thin protective layer of plaster, which could then be supplemented with additional paint. This practice, common in Republican architecture, subsequently became less popular in Imperial Rome due to the increasing use of white marble at that time. Accordingly, white plaster is often believed to have served as a substitute[22]. However, both the white primer coat and the vivid colours applied to architectural terracottas followed the same decorative strategy; in effect, the general aesthetic impression produced was similar to that of other painted plaster surfaces. Today, one of the inner gardens of Villa A in Oplontis still provides a basic idea of how coated terracotta elements merged aesthetically with adjacent surfaces covered in painted plaster[23].

In contrast, another technique for colouring Roman architectural terracottas omitted the white primer coat. The large-scale revetment plaques from Rome's Palatine hill provide the best examples of this (dating, most probably, to 42–36 B.C.). Figure 2 shows one of the plaques depicting the struggle for the Delphic tripod. The additional colours used here – light blue for the background, wine red for hair, yellow ochre for the leonté – were applied directly to the surface of the clay, which ranged in colour from rose pink to yellow. In addition, a white/cream colour appears along the upper borders and may denote clothing[24]. In the majority of cases, however, the figures' bodies lack additional colour: uncovered body parts appear yellowish[25].

In contrast to the whitewashed pieces cited above, here the plaque incorporates the native colour of the clay as one of its physical properties. This use of natural colour is partial, remaining strictly limited in its scope; nevertheless, it mirrors directly the basic substance, which forms the background to the decorated surface and the plaque as a whole. Here, terracotta not only shapes the general form and constitutes the surface decoration in terms of motif, its natural colour also claims a certain visibility precisely where its plastic qualities are most conspicuous, namely in the figural elements.

Generally speaking, the chromatic fashioning here corresponds to a palette built heavily around the earth tones (with the addition of blue). As a result, the overall impression evokes the

21 For the piece in Rome (Museo Nazionale Romano, Palazzo Massimo alle Terme, inv. 34355), see von Rohden – Winnefeld 1911, 280 Pl. 81; when found, the plaque decorated a funerary monument and thus perhaps represents an example of reuse (after renewal of the painted decoration?). Zink (2019, 20 Fig. 18) refers to the Pompeian examples, including the revetment plaques from the Casa del Fauno (Naples, Museo Archeologico Nazionale, inv. 21517; see also Haug 2020, 102 Fig. 61 with references).

22 See Mattern 1999, 24–26 for examples in temple architecture, as well as the contribution by Plant, this volume. As for architectural terracottas, a white primer coat is sometimes believed to be typical of the Republican period: see Zink 2019, 3. 20 Fig. 18. See also Grawehr, this volume. In addition, the (ancient) restoration of architectural terracottas with stucco (e. g., Merone 1993/1994, 58 f. Fig. 1) must have created a similar impression.

23 See Borriello et al. 1996, 156 Pl. 58. 266 cat. no. 583. See also Zink 2019, 18, on the polychrome architectural decoration in terracotta and (as a comparison) stone used in Temple A at Cumae; on stucco, see Zink 2019, 24. Tortorella (2018, 212–217) discusses the relationship between stuccowork and terracotta reliefs.

24 Rome, Museo Palatino, inv. 379663. 379664. 379665. See von Rohden – Winnefeld 1911, 28* f.; Carettoni 1973, 80 with n. 40–43 and Figs. 20–23; Pensabene 2017, Pls. A–E; Perry 1997, 6 f. n. 3 f.

25 While, according to the first convention, the bodies of relief figures remained white: cf. von Rohden – Winnefeld 1911, 28*.

Fig. 2: Revetment plaque coloured in earthen hues (figures) and blue background; Rome, Museo Palatino, inv. 379663, 379664, 379665.

'typical' aesthetics of painted terracotta known from earlier examples, as saturated and reserved colours prevail over more vibrant and lively hues[26]. Altogether, it becomes apparent that 'Campana plaques' fashioned in this way must have created an impression clearly distinguishable from that of the whitewashed pieces previously described; consequently, this fashioning will have triggered and nurtured diverging semantic connotations[27].

Approaching Semantics: Roof Material and Façade Appearance

As we have seen, additional colour dominated the aesthetic appearance of the average architectural terracotta when first attached to a building's façade. With respect to the terracotta itself, the rear and the sides retained the natural aesthetic of the raw material's colour, as did most Roman roof tiles. Yet despite this strong connection in terms of material and function, it is the colouring and further decoration of the front-facing surfaces that aesthetically decouples 'Campana plaques' from roofs and relates them more closely to building façades.

Taken on its own, this might not point unequivocally towards a positive appreciation of terracotta, but several external indicators offer further support in this direction. For example, many 'Campana plaques' and related terracottas come from building projects and villas of the Roman aristocracy, as on the Palatine in Rome, where Octavian/Augustus converted his house and the adjacent area into the temple complex of Apollo Palatinus (vowed in 36 and inaugurated in 28 B.C.; Fig. 2)[28]. Thus, when it comes to function and aesthetics, 'Campana plaques' were apparently an

26 The colour white may illustrate this: 'cream white' has a firm part in the 'Archaic Colour Triad' of architectural terracottas from Central Italy: see Zink 2019, 6. 16–18 with a short overview; Winter 2009, 519–522.

27 Currently it is unclear to what degree a certain evolution of taste is mirrored by these aesthetic differences, and how this relates to the types of plaques employed and their respective positions on the façade (entablature vs. eave/cresting). See von Rohden – Winnefeld 1911, 27* with references to *simae*, crestings and cresting plaques.

28 Pensabene 2017, esp. 45–47. 53. 56–64. 126–131 Pls. 25–39. Other finds come from the Villa of Livia at Prima Porta, the *gens* Cotta villa near Cottanello, the villa at Punta Eolo on the island of Ventotene, the 'villa di Palazzo a Mare' on Capri and Caligula's luxurious ship no. 2 on Lake Nemi. See Johannsen 2008, 19. 32 with references; Reinhardt, forthcoming.

appropriate form of decoration for both the entablatures and roof edges of religious buildings[29] and lavish private houses during the Late Republic and the Early Imperial period in Italy and beyond[30].

Several reasons presumably lay behind this, not all of which can be unambiguously identified. A major factor must have been the natural qualities of the clay (such as malleability during the working process, the capacity to create multiple copies, a high durability when properly fired, and so on), which, apart from its inherent colour, fulfilled many functional requirements. The long tradition of typologically related architectural terracottas from the Archaic period onwards also mirrors these aspects[31].

These qualities also permit the possibility of applying various designs – both in relief and in additional colour – to visible building façades. However strong the connection between 'Campana plaques' and the Etrusco-Italic tradition, the large-sized figurative images applied to entablatures and eaves during the 1st century B.C. seem to have been something new[32]. There should be little doubt that this trend represented a decisive factor for the actors involved when ordering and manufacturing these kinds of products. To a certain degree, the appropriateness of 'Campana plaques' depended on the fact that they were carriers of images[33]. Their figurative relief decoration represented one form of the lavish surface finishing that was required to fulfil the actors' needs, and fit the concept of *decorum* at the time. Obviously, architectural terracottas which retained the old (i. e., less figurative) style were insufficient for those needs.

Two general assumptions may be drawn from these observations regarding semantics. First, the surface treatment, in the form of both figurative relief images and additional colour, stands in contrast with the view that the plaques' raw material was cheap and undemanding[34]. Even if terracotta was less esteemed than bronze or marble in absolute terms, it obviously did not violate the rules of *decorum* when used next to 'noble' materials in the proper position (i. e., entablature/roof edge) in cases where the basic substance – deployed according to its functional qualities – was properly treated in terms of technique and decoration.

Second, this argument regarding proper artistic treatment should prevent us from giving too much weight to the *luxuria*-centred perspective which emerges from literary sources such as Pliny and Livy (see above). According to this discourse, a high degree of positive ideational content attached to a raw material served as the counterbalance to its general lack of material value (regardless of the artistic treatment that it underwent). Recently, Christopher Hallett connected this model with the emergence of large scale, high-quality 'Campana slabs' with archaistic figures (Fig. 2)[35].

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29 New evidence comes from the sanctuary of Castrum Inui and other find spots: see Tortorella 2019.

30 On chronology, see Pensabene 2017, 135 n. 356 with references. Most of the 'Campana plaques' from dated contexts in the Roman provinces date to the Augustan period (Reinhardt, forthcoming).

31 Additionally, the material's longevity is mentioned in the written sources: see n. 57 below.

32 In scholarship, this imagery is deemed a decisive factor for the constitution of this 'Gattung' (class or type): see Borbein 1968, 25. The standard example is the terracotta decoration of the temples on the *arx* at Cosa (see Taylor 2002; Pensabene 2017, 125).

33 See Tortorella 2019, 212 and Johannsen 2008, 23. 29 f. on the relationship of single images to building function. Furthermore, various interpreters have stressed the possibility of a political reading (mainly based on the finds from the Palatine): see Strazzulla 1990.

34 More than once, this earthen material has stimulated negative assessments. For example, scholars have contrasted 'Campana plaques' with marble reliefs in a negative sense, or even claimed that they served as substitutes for those who could not afford marble sculpture (see Vermeule 1977, 12; Froning 1981, 31 f.; Känel 2013, 1115; or, as a general view, RE V A, 1 (1934) 808 s. v. Terrakotten [Heidenreich]). Plaques are rarely discussed in terms of their associated production technique (e. g., in a series using moulds) or their durability despite their dual function, protecting and decorating the architectural surfaces of roofs/eaves and entablatures (e. g., Borbein 1968, 17–19).

35 Hallett (2018, 185–194) suggests that the Augustan restoration programme of old temples represented an important parameter for this development. In his view, this kind of architectural decoration was deliberately adapted for new structures, such as the temple complex of Apollo Palatinus, and subsequently spread to other contemporary buildings (e. g., a shrine at Castrum Inui). On the assignment of these plaques to the Porticus of Danaids in the new complex of Apollo Palatinus, or better the House of Octavian, see above, n. 28.

Against the backdrop of a 'new early Augustan valuation of clay', he proposes that the material of these architectural terracottas was 'intended to make reference to the traditional architectural ornament of the temples of central Italy, and that the use of terracotta was intended to sound an unmistakably Italian patriotic note in Augustus' first building programme'[36]. This sheds interesting light on associations connected to the entire material class of clay, but two major problems with this thesis remain. The first is the assumption that terracotta stands in contrast with the use of 'noble' materials[37]. We could object, saying that the position of clay/terracotta in the hierarchy of materials was not absolute, but rather relative, insofar as it depended on the extent of artistic treatment which it underwent in the context of its socio-cultural significance at the time of its production. Second, the uninterrupted tradition of using terracotta elements for entablatures and eaves during the Republican and Imperial periods raises the question of whether some special referential power inherent to clay may have existed beyond the literary discourse on *luxuria*. Perhaps for most contemporaries, the use of baked clay as a basic substance for these architectural forms would not have been surprising at all[38]. Examining the appearance of the finished product is obviously more instructive than looking at that material in isolation. In this regard, the large slabs from the Palatine Hill certainly point in a different stylistic direction – in terms of typology, figural decoration and colour scheme – than the decoration applied to contemporary marble buildings[39].

Terracotta Façades

In contrast to architectural terracottas, *opus latericium* emerged late in central Italy, possibly not until the mid-1st century B.C. Recent research has shown how the use of fired bricks spread from mainland Greece to the Italian peninsula, where they were employed in the walls surrounding several cities in Gallia Cisalpina from the Mid-Republican period onwards; they later also appeared in the Transpadana[40]. The Porta Palatina, which makes up a part of Turin's circuit wall, is a later example that is particularly instructive, with its carefully set and exposed brickwork (Fig. 3)[41]. In Rome, apart from private *mausolea*, the construction of the Theatre of Marcellus (finished 13/11 B.C.) forms an important example for the use of fired bricks, which were to become the ubiquitous building material for masonry shells during the Imperial period. The majority of these brick walls were covered by plaster and painted or clad in marble revetment[42].

36 Hallett 2018, 200. He notes that terracotta is 'the authentic material of the old gods of Italy' and thus provides *gravitas*: Hallett 2018, 194. 199. 201. See also Hallett 2012, 86 f.

37 Hallett 2012, 87; 2018, 181–183. 194. 200.

38 This is suggested by Vitruvius, who, in his account of the origins of architecture (Vitr. De arch. 2, 1, 3–6), describes how roofs were first made of wood, straw or unfired clay, as can be seen from buildings in other parts of the Mediterranean and older properties in Athens and Rome. Generally, this is taken as evidence for the earliest technical solutions for this architectural task (see Vitr. De arch. 2, 1, 7). For Vitruvius, roofs covered with tiles made of baked clay are considered standard, and he begins his overview of 'suitable' building materials with the 'new' bricks (Vitr. De arch. 2, 3).

39 In my view, Hallett's reading of an explicit back reference to the Palatine is best underpinned by the plaques' characteristic surface treatment and 'colour management'. The lack of a white primer coat, together with the limited colour range, indeed links these examples to the terracotta revetments of the *maiores*' venerable old temples, even if they differ considerably in terms of figural decoration.

40 Coarelli 2000; Gerding 2006; Bonetto 2015; Vitti 2016, 350–357.

41 Quite similarly to the brickwork of the *mausolea* described below, joins were kept to an absolute minimum (see Papotti 2003, 279–285 Figs. 269–280. 294 Figs. 285. 286), which – together with the fact that a finish is applied to some of the bricks – unequivocally indicates the presence of non-plastered façades: see Henry 1984, 59–68. The gate is sometimes described as having once been plastered: see Thomas 2007, 110.

42 On the Theatre of Marcellus, see Buonfiglio 2015. It is generally assumed that Roman brickwork was usually covered: see, e. g., Kammerer-Grothaus 1974, 199; Henry 1984, 12–16 (on history of research); Adam 1999, 145–150; Zink 2019, 26 f. (using the Basilica of Constantine in Trier as example); see also Barker, this volume.

Fig. 3: Turin, main gate of the Porta Palatina, meticulous brickwork on the façade.

The heavy use of clay for the Roman 'brick industry' relied on the positive material qualities already mentioned, which, besides the factors of durability, stability and capacity for multiple applications, also guaranteed a high degree of standardisation that helped to accelerate the building process[43]. Unlike roof tiles, however, the basic aesthetic quality of brick's earthen tone was in many cases concealed under decoration after building had finished. From the convention of covering brick walls with marble veneer or painted plaster, it follows that the bricks' natural colour must have been perceived as something 'raw' and typical of construction sites, and, thus an indicator of incompleteness (or poorly maintained architecture). However, this does not exclude the fact that special care must have been paid to the meticulous (sometimes decorative) arrangement of the material(s) used for the masonry shell (as often occurs in *opus reticulatum*)[44].

Nevertheless, several exceptions to this general 'aesthetic principle' of covered Roman brickwork are attested, such as the Porta Palatina mentioned above. Apart from funerary architecture, uncovered bricks were sometimes also used for ornamental purposes in domestic architecture, as on the corners of houses in Pompeii. Some public buildings, such as the Mercati Traiani in Rome or the Horrea Epagathiana et Epaphroditiana in Ostia, also suggest a combination of plastered surfaces and exposed brickwork[45]. While these examples already point towards diverging tendencies in the appearance of bricks in Roman architecture, one group of monuments breaks completely with the established convention. Specifically, about one dozen *mausolea* constructed in and around Rome during the middle of the 2nd century A.D. have façades produced in (exposed) red and light ochre brickwork ('Sichtziegel'/'brique apparante')[46].

Clay is Colour: The Exposed Brickwork of the so-called Temple of the Deus Rediculus

This ostentatious use of fired bricks in two[47] different colours is best illustrated by the so-called Temple of the Deus Rediculus, a burial structure in the Triopion of Herodes Atticus (ca. A.D. 160) (Fig. 4), although the same phenomenon occurs in other examples of this limited group. The bricks

43 Volpe 2015, 231. The latter aspect is treated by other contributions in Bukowiecki et al. 2015.

44 See the contribution by Busen, this volume.

45 Bukowiecki 2014; Kammerer-Grothaus 2017, 161–166; for Rome and Ostia, including some cases of *opus reticulatum*, see Kammerer-Grothaus 1974, 199 f. 214–233, cf. Henry 1984; Bukowiecki 2014, 227. For the city of Ostia, see also Stöger 2007, 353. Apart from this, single related examples exist in the provinces (e. g., Greece: Fouquet, forthcoming).

46 The corpus compiled by Kammerer-Grothaus contains mostly *mausolea* of the tempietto type: see Kammerer-Grothaus 1974, 200–214. 252 appendix 8 (Rome); Bukowiecki 2014, 226. The large square structure (villa) of Le Mura di Santo Stefano/Anguillara Sabazia should also be included in Kammerer-Grothaus' corpus: see Blagg 1979, 276.

47 Kammerer-Grothaus (1974, 169) speaks of two colours. For the sake of accuracy, it should be noted that slight divergences in tone are present (especially as far as the yellow bricks are concerned).

Fig. 4: Rome, Temple of Deus Rediculus, view from the southwest.

used are made of two different varieties of clay, and they were applied to the masonry shell according to a distinct method[48]. Red bricks were positioned on the podium and the pilasters, i. e., on elements that are decisive for the chosen architectural form and that are significant in terms of their visualised architectural function (since they determine the layout, set the rhythm of the individual architectural parameters and 'support' the structure). The light bricks, in contrast, form the components of the wall fields and appear in the upper zone on capitals and in the entablature. This basic rule also varies somewhat. For example, the pilaster capitals and cornice are composed of both kinds of bricks, whereas the architrave and frieze were produced in bricks of light ochre[49]. This ochre frieze, however, is interrupted by vertical stripes of red bricks that correspond with the axes of the pilasters below. Conversely, red bricks frame the ochre meander panels between the pilasters, thus highlighting these ornamental fields and at the same time contradicting the exclusive use of red bricks for supports (podium/pilaster).

In general, the mausoleum's colour management refers to the architectural function of the elements depicted, indicating a difference between 'support' and 'load' (Tragen und Lasten) of the vertical and horizontal elements. The attribution of the two colours in this binary system is consistent; however, in certain situations the basic rule is reduced for the sake of accentuation and chromatic variety within a zone that would otherwise be monochromatic and uniform[50].

This ostentatious two-colour display relies upon further measures which are not paralleled in common brickwork. In the case of the Temple of the Deus Rediculus, the joins between the bricks are unusually thin, especially in the case of the light ochre bricks (measuring c. 0.2 cm in height),

48 Kammerer-Grothaus 1974, 169–171. 234–236. 252 appendix 8; Bukowiecki 2014, 226–229. For an inversion of this colour system, see Kammerer-Grothaus 2017, 161. 163 Fig. 10.

49 Kammerer-Grothaus 1974, 169 f. 177–179.

50 Possibly, this mirrors (within the façade's limited colour range) the convention of accentuating capitals and friezes with additional colour (see Zink 2019, 24 f.).

while the red bricks were attached to one another by pigmented mortar in slightly thicker joins (0.8–1 cm)[51]. In order to achieve this, the bricks were tapered towards the rear, and, furthermore, their front face was typically smoothed or polished[52]. The resultant visual effect consists of homogeneously coloured surfaces in which the single elements blend almost seamlessly together, so that the typical impression of a grid generated by the pattern of bricks and mortar joins is minimised[53]. Finally, single architectural motifs, such as consoles, capitals and so on, are created out of several bricks that are cut accordingly, and moulded terracotta elements were also used (in the meander panels, for example)[54].

To summarise, the façades of the Temple of the Deus Rediculus and related buildings make use of clay's physical properties in a different and more comprehensive way than had been seen previously. On the one hand, the basic shapes of the individual elements and moulded features rely on clay's strength and plasticity. The work associated with the basic material, however, was extended from the pre-firing phase (the fashioning of architectural terracottas is usually almost completely limited to this stage) to the building process, in which the terracotta elements received their final shape and surface treatment (i. e., the cutting and smoothing/polishing of the bricks). On the other hand, the masonry technique deliberately utilised the native colour of the material, integrating it into the visual appearance of single elements right from the beginning. The creation of two different colours from one kind of *materies*/ὕλη (undoubtedly relying on two different clay deposits) exploited and thus demonstrated the natural versatility of clay in this regard. Later, during the construction and finishing processes, the additional techniques mentioned above were applied to help further bring out the two-toned character of the brickwork. What had remained hidden in many earlier (and contemporary) buildings was now displayed as an aesthetic quality in its own right. Basic form, plastic decoration and colour coincided in one place: here, clay not only guaranteed stability and useful multiformity, its intrinsic colour also brought beauty (mimicking the well-known Vitruvian triad).

A Seemingly 'Basic' Material: Self-Representation via a Reversed Hierarchy

Although built with the ubiquitous building material of Imperial Rome par excellence, fired brick *mausolea* such as the so-called Temple of Deus Rediculus and Temple of Fortuna Muliebre (Fig. 5) show how this traditional construction technique could take on another dimension, both technically and aesthetically.

Looking at both the technical efforts and socio-cultural context associated with *mausolea* in general, we can deduce a high degree of acceptance – or better, esteem – for the material used and its natural, native colour. With respect to burial monuments, buildings used expressly for the exhibition of social status and prestige, it is commonly assumed that the decorative emphasis shifted from the façade to the interior during the Imperial period, reflecting a 'private turn' in self-representation[55]. At this time, brick was a dominant building material in the *necropoleis* of Rome

51 Kammerer-Grothaus 1974, 169–172. The author mentions that the mortar used for the joins of the red bricks was also red (Temple of Deus Rediculus); see Borg 2019, 29 n. 90. See Zink 2019, 26 n. 134 and Borg 2019, 28 f. for additional colour on the terracotta façade of the so-called Sepolcro Barberini on the via Latina.

52 Kammerer-Grothaus 1974, 169–172; Bukowiecki 2014, 228 Fig. 12.

53 Aesthetically speaking, this seems to indicate a kind of visual correction regarding the ornamental effect that otherwise results from the pattern of light joins and dark bricks: see Grüner 2014, 435–437.

54 Bukowiecki 2014, 228; Kammerer-Grothaus 1974, 172–181 Pls. 102–105 (Deus Rediculus) with further descriptions in the catalogue. Scattered evidence is preserved in the Allard Pierson Museum in Amsterdam (Lulof 2007, 96 f. n. 5–10 Pl. 31).

55 On this topic, see Borg 2019, 2 f. n. 8 (with further references). 27–29. 258 f.

Fig. 5: Rome, Temple of Fortuna Muliebre, detail of the northern wall.

and its hinterland[56]. Within this environment, bichrome terracotta façades had the advantage of combining a common and simple material with a somewhat more elaborate appearance. Similarly, the use of two different hues for adornment guaranteed a clear aesthetic distinction from the many other brick tombs[57]. It is also noteworthy that architectural elements produced in white marble were occasionally included in these decorative assemblages. A pierced marble cresting crowned the terracotta pediment of a mausoleum at Grottarossa (Via Flaminia), for instance, while the entablature and marble columns of San Urbano alla Caffarella represent another example. The same trend also occurred outside of *mausolea*, as exemplified by the marble *tabula ansata* included above the main entrance of the Horrea Epagathiana et Epaphroditiana in Ostia[58]. In the history of taste and *decorum* in Rome, this represents a clear change in comparison to the previously dominant trend, which dictated that a decent façade should be made from marble or at least covered in coloured plaster[59], presuming brickwork to be either subordinate or in implied opposition to marble[60]. Here, this general tendency is reversed.

If brick was the right material for the construction and *decor* of these *mausolea*, then other positive connotations must have been connected with this material, according to social negotiations of the actors involved. Certainly the contrast with the use of marble on façades is significant here. Based on the literary evidence, one might assume that the 'decent sumptuousness' of these earth-coloured façades could be understood to refer to the traditional Roman value of modesty[61]. If we

56 E.g., on Ostia's Isola Sacra, see McDonnell 2014, 270.

57 The higher number of *mausolea* that show a combination of terracotta elements and plastered surfaces on their main façades is another indicator: see Kammerer-Grothaus 1974, 214–225. On the necropolis Sotto San Pietro, see Mielsch – von Hesberg 1995 and Liverani –Spinola 2010 (with colour illustrations).

58 Bruto – Vannicola 1985; Thomas 2007, 189 Fig. 155; cf. Bukowiecki 2014, 222. 224. Kammerer-Grothaus (1974, 154–161) argues for a later date for San Urbano, with the possible secondary addition of the marble elements. For marble at the Temple of Deus Rediculus, see Kammerer-Grothaus 1974, 172. 197; for *horrea* at Ostia, see Kammerer-Grothaus 1974, 225.

59 Above, n. 43. Similarly instructive is a passage by Vitruvius (De arch. 2, 8, 49. 52), in which the author is eager to defend this building material by pointing to its technical advantages and usefulness for buildings of high value as was the case in Greece and Asia Minor.

60 Interestingly, Seneca (Ep. 115, 9) refers to the gilding of *lacunaria* and marble veneer as deceptive: see Raff 2008, 75; see also Bradley 2009, 92 f. n. 17 on the concept of *fraus* in the *Naturalis historia* and the contributions by Haug – Hielscher and Anguissola, this volume. It is noteworthy that building inscriptions sometimes point to the 'massiveness' of the marble used, e. g., on the arch at Oea/Tripolis *ex marmore solido*: see Mühlenbrock 2003, 12. 223 no. LAR 6.

61 Thomas (2007, 189) speaks of a deliberate reference to older Italic temples and sees such terracotta decoration as an expression of cultural identity; cf. Hallett 2018, 194. 199–201. Borg (2019, 29), in contrast, argues convincingly for the prestige connected to temple tombs with bichrome terracotta façades.

start from material evidence, however, the situation is more complex. It becomes clear that the individual facets that comprised the materiality of these façades permit different points of reference: the red and yellow hues would have triggered different associations, and the comparative scarcity of the latter must have also formed an important parameter for its contemporary 'semantisations'. Today, we can only guess at the aesthetic and semantic significance of this light ochre brickwork; perhaps it was associated with structures built in the unfired bricks that preceded *opus latericium* (a reference that would likewise point backwards in terms of age and material expense), although further research would certainly be required to reach such a conclusion[62].

More tangible – from the perspective of both the archaeological evidence and the literary sources – is the notion of durability and stability (*firmitas*) that is commonly associated with elements made from fired clay, whether roof tiles, architectural terracottas or brickwork[63]. It was certainly this quality, which was of highest relevance to the owners of a private mausoleum, that helped to create a permanent *monumentum* perpetuating *memoria* for the longest possible time. Placing two kinds of bricks together with special care and according to a distinct aesthetic concept guaranteed that both the building itself and its *decor* remained unchanged for several generations. As the building's design and colouring was thoroughly integrated into its structural body[64], typical problems, such as the fading of colours, flaking of plaster or the removal of stone for reuse (which certainly occurred during the life of many buildings)[65], might have been minimised. The nature of this building type was such that nothing could be revealed by altering the decoration applied to it, as was the case with plaster or a marble veneer: the brickwork was bare to begin with, and therefore could not be 'exposed'.

Finally, that this brickwork was indeed perceived as something robust, strong and long-lasting is demonstrated by the semantic use of the two colours on the façade itself: the yellow bricks form the components of the wall fields, while dark red was employed for the basic structural elements, such as the pilasters. This is certainly no coincidence, but rather shows how red bricks usually served exactly this function when they were used in Imperial architecture, even if they were destined to be covered under layers of plaster afterwards[66].

Conclusion

This contribution has focussed on two case studies chosen from the large spectrum of clay/terracotta applications in Roman architecture. Although different in many respects, 'Campana plaques' and bichrome brick façades both rely on certain functional qualities present in clay, their constituent material. These include clay's malleability in its unfired state and its great durability after firing, features that distinguish it from other materials used in architecture (economic

62 That some structures built using this technique were still visible in later times is suggested by Vitruvius (De arch. 2, 1, 3–6). Interestingly, at Villa Adriana, the same 'colour dichotomy' was applied to the Teatro Marittimo's ring wall before it was plastered during its second phase. Initially, the surfaces of the *opus reticulatum* shell were painted yellow, before red was applied to the structuring stripes and cornice made from brick: see Üblacker 1985, 9 col. Pl. A, 2. 3 (thanks to M. Grawehr for this example). The bricks used in the inner galleries of Rome's Theatre of Marcellus were also yellow in colour: see Buonfiglio 2015, 13.

63 Pliny admires the durability of old architectural terracottas (Plin. HN 35, 158) and Vitruvius hints repeatedly at the outstanding age of many buildings built with bricks (Vit. De arch 2, 1, 3–6; 8, 49 f. 53 for bricks and roof tiles). From an archaeological perspective, several examples in which roof tiles were employed as proper bricks exist, including the Tomb of Caecilia Metella (Gerding 2006, 357) and (in a smaller quantity) the Baths of Trajan in Rome (Volpe 2015, 232–234 with further examples).

64 For the term 'structural polychromy', see Van Zanten 1977, 304.

65 On the reuse of building materials, see Barker – Marano 2017.

66 The (plastered) columns in the interior of the basilica of Pompeii represent an early example: see Dessales 2015, 81. Besides, the term/concept 'column' was almost proverbial for 'stability' in antiquity: see Thomas 2007, 18.

considerations must also have come in to play). Even if the basic qualities highlighted here were significant for the production of architectural elements, the use of clay's natural colour could vary considerably. As we have seen in the case studies, in terms of surface finishing, this variation ranged between two opposite poles. On the one hand, the material's natural colour typically appeared when further decorative measures were not taken, as in the case of roof tiles and most bricks. Where terracotta was used to produce prestigious architectural or decorative elements, then a final finish was often applied. In the case of 'Campana reliefs', this included decoration with relief images and the application of paint, with or without a white primer coat. In both cases, the natural colour of the basic material was altered, either by completely concealing it (Fig. 1) or by widening the natural colour spectrum. With respect to the high-quality slabs from the Palatine Hill, however, this includes a partial combination of the materials' plastic qualities and its intrinsic colour, at least for the figural sections (Fig. 2). On the other hand, the exposed terracotta façades that were popular during the 2nd century A.D. represent a hybrid form of these two approaches, combined with a transformation. Here, the natural terracotta hues of the two clay varieties are unaltered (Fig. 3). Form and plastic decoration fully coincide with the basic, native colour of the clay employed. This is no longer an expression of a basic state of fabrication, however, but rather the outcome of the augmenting of a common masonry technique with minute enhancements (e. g., bricks produced in two colours, minimal joins and the pigmentation of the mortar). When compared with traditional uses of brick and tile, in Rome's *mausolea* with bichrome terracotta façades we observe a different consciousness of material. The aesthetic of a pure terracotta hue (especially the red variety) seems to be divided between an accepted and widespread use on the one hand and a desirable aesthetic outcome on the other[67]. The latter is an exception with regard to terracotta but it is the standard treatment of coloured marble[68]. Here, terracotta is almost presented as a type of synthetic, artificial marble.

The painted 'Campana plaques', in contrast, attest to the more widespread convention of enhancing the clay's monochromatic appearance by means of additional colour. Even if these architectural terracottas do not signal an explicit appreciation of the basic colour of clay, they rely on the abovementioned positive material qualities that have linked all the examples cited here. However different in terms of the technique applied, 'Campana plaques' and terracotta façades were therefore both subject to a basic principle of surface finishing. When properly crafted and fashioned, terracotta did not indicate a violation of *decorum*, despite the ancient debate surrounding *luxuria* and clay's supposed 'sobriety'.

Arne Reinhardt
Universität Heidelberg
Institut für Klassische Archäologie und Byzantinische Archäologie
Marstallhof 4
69117 Heidelberg – Germany
arne.reinhardt@zaw.uni-heidelberg.de

67 The shift between the two poles occurred considerably later than the introduction of fired bricks as a new material for construction in Rome (above, n. 40). Similar staggered intervals are present in the history of the use of other building materials, such as travertine or tuff: see Grawehr and Maschek, this volume.

68 See Kammerer-Grothaus 1974, 234 f. and, in terms of technique, Bukowiecki 2014, 228; see also Henry 1984, 55 ('ashlar tradition').

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Figs. 3–5: A. Reinhardt.

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Materiality of Architecture: Semantics

Dominik Maschek

The Meaning of Building Materials in Late Republican Architecture: Moving from Semantics to Pragmatics

Abstract: By exploring the potential of archaeological pragmatics in the analysis of Late Republican architecture, this paper focuses on the ways in which building materials could become charged with meaning. In contrast with traditional approaches which largely deal with the semantics of Roman architecture, its aim is to delineate how the pragmatic power of ongoing construction projects, unfolding across multiple generations, led to the creation of an intricate network of knowledge regarding the choice and usage of specific materials. Ultimately, this leads to the conceptual distinction between two fundamental types of knowledge, expert and vernacular, which had different, albeit equally potent roles to play in the complex social negotiations between Late Republican builders, craftsmen, commissioners, and viewers.

Throughout architectural history, building materials have been bearers of meaning. Such a statement, verging upon the banal, might appear uncontroversial, but those who actually want to recover at least snippets of this original meaning are facing a series of obstacles. For example, the meaning of building materials cannot be supposed to have stayed fixed across long periods of time; our modern perception of materials and their qualities will inevitably be compromised by our own social and cultural context; and, last but not least, in antiquity, as indeed at present, the ideas and qualities associated with certain building materials might have oscillated according to different frameworks of reference that were located in the social, political, economic, religious, magical or, more broadly, aesthetic sphere – all of which, to add yet another layer of complexity, was not neatly separable in the first place[1].

The Case for Archaeological Pragmatics

In the face of such challenging conditions, most archaeological studies of Roman architecture and its constituent materials have focused on a comparatively narrow definition of meaning, almost exclusively located in either the political or the economic sphere. Without recourse to much theory, it has become widely accepted that the fabric of Roman buildings should best be understood as a 'sign system' which originally addressed an ancient 'viewer' and can thus equally be 'deciphered' by the learned modern interpreter. This approach, relying on the principles of semiotics, is predicated upon the assumption that architecture operates as a semantic system[2].

Whilst it is not the aim of this paper to dispute such a notion, it is clear that the semantic approach has its limits: most seriously, in its two most popular manifestations it is either based on too few and too simple, or on too many and too complex factors. The former manifests the purely politically and economically focused approach, and it is unlikely that Roman building materials were ever understood merely as conveying an *exclusively* political or economic message. As for the latter, the conceptual openness of sign systems to an infinite number of possible interpretations,

1 Popkin 2015, 301–303. Amongst a wealth of more recent studies on Roman Republican architecture, design, and materials, see in particular Mattern 1999; 2000; Jackson – Marra 2006; Rous 2009; Bernard 2010; D'Alessio 2010; Nichols 2010; La Rocca 2011; La Rocca – D'Alessio 2011; Jackson – Kosso 2013; Emmerling et al. 2014; Maschek 2014; Mulliez 2014; Demma 2016; Davies 2017; Ducret 2017; Tortorella 2018. The references provided throughout this essay represent only a small fraction of my research on this subject.

2 See Gros 1976; Hölscher 1987; 2004; Zanker 1988, 104–156; 2000; Sauron 1994; Favro 2017.

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promulgated most strongly via the various postmodernist 'turns', renders them ineffective for historical analysis of 'more general scope and utility'[3]. The potentially endless figure of meanings associated with buildings and building materials would only allow for highly personalised accounts of their perception that carry little weight in terms of historical interpretation beyond the purely anecdotal.

One possible way of dealing with this conundrum is to acknowledge that it is virtually impossible to make generalising statements about the way in which Romans *collectively* understood their built environment and its constituent materials. This acknowledgment then allows us to venture freely into fields like phenomenology and sensory studies. The allure of such approaches notwithstanding, the aim of my paper is to explore a different route, in particular as I do not share the occasional scepticism regarding the attempt to reconstruct broader patterns of meaning behind the use of Roman building materials. That being said, the critics of conventional architectural semantics clearly have a point in stressing its highly reductionist focus on messages and viewers[4]. I thus propose to change the way we look at Roman building materials: from the *perception* of the sign system to its *creation*, and thus, from a bewildering semantic openness to the recovery of a comparatively well-circumscribed set of motivations and ideas which formed a subsystem of knowledge quite separate from purely political or economic considerations. The following conceptual sketch therefore works upon the proposition that the meaning of building materials is not best sought 'in the eye of the beholder(s)', but rather in the socially embedded process of architectural creation[5].

Underpinning this shift from perception to creation is the tripartite concept of archaeological relations – syntactics, semantics, and pragmatics – as defined by David Clarke[6]. Whilst syntactics encompasses a holistic view of the relations between artefacts and *all* their attributes, semantics only denotes the relations between artefacts and their roles in the physical world, based on the analysis of *designata* (i. e., the signified, in terms of semiotic theory). Pragmatics, by contrast, refers to the way in which artefacts, their users and observers are related through *percepta* (performances, buildings, objects and so on) and *concepta* (norms, values, attitudes and so on). As Clarke succinctly put it: 'The relations that archaeological pragmatics can hope to investigate are those which may suggest association between certain sociocultural organisations and certain sets of attribute or artefact regularities'[7]. In the following, the pragmatics of Late Republican building materials shall be explored in relation to the material manifestation of the builders' knowledge that was involved in the process of architectural creation.

Late Republican Building Materials: Regaining the Builders' Perspective

Before we can start discussing the system of meaning within which Republican builders operated when choosing their materials, some general points of methodology seem in order. Traditionally, studies on the architecture and building materials of the Republican period have focused on aspects of chronology, cultural attribution and ideological and political significance[8]. Based on a small

3 Clarke 1978, 38.

4 See Grüner 2014; 2014a; 2017; Haug 2014; Thomas 2014; Popkin 2015.

5 See Busen, this volume.

6 Clarke 1978.

7 Clarke 1978, 483.

8 For the focus on chronology and typology, see e. g., Frank 1924; Blake 1947; Lugli 1957. For the earliest and still one of the most influential attempts at combining dating questions with the assessment of cultural influences in Republican architecture, see Delbrueck 1907; 1912. Cf. Fasolo – Gullini 1953; Boëthius 1978; Gullini 1983; 1992; Coarelli 1987; Osanna – Torelli 2016; Howe 2016. On Late Republican building materials, ideology, and politics, see Pensabene 1998;

number of select buildings (the round temple by the Tiber in Rome, for example) and seemingly bolstered by a few quotations from Vitruvius and Pliny, the familiar narrative pits an 'Etruscan' or 'Italic' tradition of building against an increasingly 'Hellenised' architecture which emerged in the wake of Roman conquests in the Eastern Mediterranean. In this context, modern scholars often refer to the famous saying, attributed to Cato the Elder, that the primordial 'earthen antefixes of the Roman gods'[9] were succumbing to the overwhelming power of Greek temple decoration. However, this popular story is problematic in all sorts of ways.

To begin with, the main challenge consists in the fact that, from the completion of the Temple of Capitoline Jupiter in 509 B.C., we have an unbroken series of monumental buildings in Rome and central Italy, but almost no reference whatsoever to the qualities, aesthetic or otherwise, which contemporaries (commissioners, builders, and viewers alike) would have associated with the materials used for their construction. Evidence for an explicit aesthetic discourse on building materials arguably does not start before the first half of the 2nd century B.C., with the plays of Plautus, alongside a few and frustratingly isolated punchlines from the speeches of Cato the Elder that were only reported much later in the accounts of Livy, Gellius, and others[10]. The oft-cited value judgements about the introduction of marble into Roman temple architecture after the destruction of Carthage and Corinth in 146 B.C. probably pertain to the accounts of moralising historians such as L. Calpurnius Piso Frugi, active towards the turn of the century, but they are also only preserved in later works[11].

A first glimpse of the active involvement of Roman *nobiles* in matters of architectural practice and design is offered by the suggestive, albeit admittedly rather tenuous, link between the architect Mucius, mentioned by Vitruvius[12], and the Mucii Scaevolae towards the very end of the 2nd century B.C.[13]. At the same time, eminent statesmen like Q. Caecilius Metellus Macedonicus, Q. Lutatius Catulus, and M. Antonius, the orator, demonstrated an explicit interest in the arts, and their links with prominent contemporary architects such as Hermodorus of Salamis are famously attested[14]. Moreover, the number of architects in inscriptions from Rome and central Italy increases significantly, which equally indicates an enhanced professionalism and concomitant appreciation of architectural design and practice[15]. The same tendency is reflected in the increasingly intense level of experimentation and innovation in the use of *opus caementicium* in domestic and monumental architecture from the middle of the 2nd century B.C. onwards[16].

More literary evidence for architectural tastes and fashions comes with Cicero's letters and speeches and, of course, with Vitruvius' treatise at the very beginning of the Principate[17]. However,

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Mattern 1999; 2000; Rous 2009; Bernard 2010; Torelli – Marcattili 2010; La Rocca 2011; Marcattili 2011; Steinby 2012; Maschek 2014; McAlpine 2014; Popkin 2015; Tortorella 2018; Yegül – Favro 2019, 127–134.

9 From a consular speech given in 195 B.C.: Liv. 34, 4, 4 f.

10 E. g., Plaut. Mostell. 101–104. 123–128; Liv. 34, 4, 4 f.; Gell. NA 2, 20, 6. For full references, see Nichols 2010; cf. Leach 1969; Gruen 1992, 6 f. 110–113 (the latter raising fundamental doubts regarding the authenticity of Cato's speech on the *lex Oppia* as reported by Livy).

11 For example, the description of the Temple of Jupiter Stator, commissioned by Q. Caecilius Metellus Macedonicus, in Plin. HN 36, 24. 34. 40. 42 f. See also Vell. Pat. 1, 11, 3–5, with explicit reference to the *luxuria* of the temple's building material. On Calpurnius Piso Frugi, see Rawson 1991, 260–267; Cornell 2013, 230–239.

12 Vitr. De arch. 3, 2, 5; 7 Pref. 17.

13 Rawson 1985, 88. 324; Zevi 1996; Anderson 1997, 19. 24–26.

14 Rawson 1975; Gros 1976a; Gruen 1992, 137 f.; von Hesberg 1994, 88. 91–95; Grüner 2004, 28–37; D'Alessio 2010; Leach 2010; La Rocca 2011; Davies 2017, 87–104.

15 Donderer 1996. One particularly interesting case is the *nymphaeum* at Segni, bearing the (Greek) signature of a certain Quintus Mutius: see Wallace-Hadrill 2008, 125 f.; Cifarelli 2020.

16 Jackson – Kosso 2013; D'Ambrosio et al. 2015; Mogetta 2015; 2016; D'Alessio 2016; Marra et al. 2016; Davies 2017, 104 f.; 2017a.

17 Cicero on architecture and building projects, e. g.: Cic. Att. 2, 3, 2. 4, 7; 12, 18. 23. 29. 35–37; 13, 6. 29; 14, 3, 1. 9, 1; Cic. Ad Q. Fr. 2, 2, 1–2; Cic. Fam. 7, 14, 1. 20, 1. See also Anderson 1997, 35–39; 2014, 130 f.; Bernard 2016, 84 f. For Vitruvius, see Knell 1991; Callebat 1994; Romano 1994; Gros 2006; Nichols 2017; Oksanish 2019.

the bulk of the information upon which we regularly draw to reconstruct the key aesthetic and semantic principles of Roman Republican architecture ultimately derives from Imperial sources, first and foremost Pliny's *Naturalis historia*. The very nature of these sources poses an insurmountable problem: in the case of Pliny, his references to Republican practice reflect both the sources he was using (mostly Varro, some Vitruvius, Piso Frugi, and Cornelius Nepos) and the aesthetic and moral principles of his own time, i. e., the Late Julio-Claudian and Early Flavian period[18]. We simply cannot assume that value judgements referring to the aesthetics and semantics of building materials remained stable over the course of the centuries; taking Pliny at face value is therefore problematic even when he uses the works of earlier authors from the late 2nd and 1st centuries B.C. in his attempt to collate pertinent information.

By contrast, the 300 years of Republican architecture before Plautus and Cato the Elder are tangible mainly through the archaeologically attested remains. Rather than retrofitting the view of Late Republican and Imperial writers onto these buildings, we should take them seriously as sources for the conscious ways in which architecture was created, revealing frameworks and patterns of meaning that do not (or only barely) feature in our written sources. As soon as we recognise that only a rigorous archaeological analysis will provide the clue to these largely unreported patterns of meaning, the same perspective can fruitfully be taken for buildings of the 2nd and 1st centuries B.C., which, in spite of the presence of some literary texts that refer to architectural thinking and practice, can then be used as a source in their own right.

This also compels us to change the way we look at things. If we acknowledge that the key tenets in semantic studies on Republican architecture, such as the simplistic dichotomies of 'Etruscan/Italic tradition' versus 'Greek innovation' or 'primordial terracotta' versus 'sophisticated marble', rely on deliberate cultural and literary constructs of the 1st century B.C. and the Early Imperial period, we realise instantly that the notion of monolithic cultural traits is not useful as a framework of analysis. In other words, the use of materials in Republican buildings is not ethnically or culturally conclusive, but rather socially conclusive, with the important subclause that politics is only a subsystem of society. If such use results in specific patterns over time, these patterns must be seen as the outcome of social processes. As a matter of fact, this processual aspect of architectural creation does not unfold in a perfect vacuum: it was always conditioned and guided by networks of knowledge which harkened back to the experience of previous generations of builders.

In this sense, it seems fair to see the process of design and construction in Republican architecture as intrinsically linked with the concept of a 'social memory' that operates as a potent basso continuo underneath short-term political discourse[19]. This social memory spans various generations, i. e., it is not short-lived. However, it is also not as anthropologically rock-solid as Jan Assmann's 'cultural memory', in which, through processes of cultural sedimentation within society, knowledge and norms are deposited over centuries[20]. By contrast, the crucial dynamics in Republican architectural practice can be understood as a perpetuation of knowledge in the medium term, from generation to generation. Seen from the builders' perspective, the recorded patterns of continuity and disruption in the use of building materials over time, freed from political or ethnic interpretations, lead us to a new *social* chronology of architecture in Republican Rome. This social chronology must form the basis of our exploration if, in a second step, we want to search for meaning[21].

18 E.g., Plin. HN 36, 1–8. 50 f.

19 Fentress – Wickham 1992.

20 Assmann 1992.

21 A detailed diachronic study on the use of building materials in Republican architecture is currently under preparation by the author.

From Semantics to Pragmatics: Types and Hierarchies of Knowledge

Meaning, in the sense of archaeological pragmatics, resides in the fact that materials featured in the decision-making of Roman builders across extended periods of time: they were introduced at a certain moment (*innovation*) and, if not rejected, went on to be more widely used (*acceptance*), until they became an integral part of the repertoire (*tradition*)[22]. Incremental changes and refinements indicate that the framework of knowledge driving this process was not static but constantly evolving, due to permanent re-calibration[23]. Within the overarching framework, I suggest a further differentiation between two different types of knowledge (Fig. 1): expert knowledge (for example, that of a master builder, stonemason or carpenter) and vernacular knowledge (such as, that of an average commissioner who was not an expert in construction[24]).

Expert knowledge might manifest itself on two levels. First, on the **macro-level** of the entire building, for which builders had to consider structural issues when using certain materials. Such considerations usually pertained to an entire set of structurally important components, like the colonnade or podium of a temple. Moreover, knowledge on the macro-level also encompassed the understanding that a particular material was especially prone to damage by water or fire, or resistant to it. In this context, it is important to note that such notions would not necessarily have always been founded upon empirical observation, but could also be derived from magical and religious, or related worldviews. One poignant case in point are the extremely detailed remarks on the impact of the four elements on various sorts of trees and their timber, offered by Vitruvius[25]. This passage seems oddly esoteric to a modern reader, but it is actually based on a precise ontological understanding of nature that is laid out by Vitruvius at the beginning of his chapter on building materials. Citing Thales, Heraclitus, and Pythagoras, he presents an abbreviated theory of the four elements, peppered with the teachings of Democritus' atomistic theory, which he might have imbibed through the highly popular and influential writings of Lucretius[26]. Modern scientific knowledge about particular building materials should thus not simply be taken as an absolute normative framework to which Roman builders would naturally have adhered.

Second, expert knowledge was at work on the **micro-level** of particular architectural elements, for example when it came to the rendering of decoration, mouldings, roofs etc. In executing these details, stonemasons, carpenters, and other craftsmen followed a code of practice which was transmitted through trans-generational processes of education and might have varied significantly from task to task[27]. Micro-level knowledge therefore introduces a strong undercurrent of tradition which can, at least partly, run counter to the expert knowledge applied on the macro-level: for example, certain stones with strong structural properties might not have been suitable for fine finishing, whilst others which were easy to carve could have been deficient in terms of solidity. Thus, far from being a homogenous set of ideas, the application of expert knowledge on the construction site always oscillated between the macro- and the micro-levels, leading to solutions on what one could

22 This nomenclature was chosen because it reflects the formation of widespread knowledge systems about building materials more neatly than rather mechanistic definitions of technological development such as the 3-phase-model proposed by Greene 2009, 76–80: (1) invention/discovery – (2) innovation – (3) diffusion/technology transfer. In Greene's view, innovation 'is the process by which the invention is brought into use'; by contrast, the sequence of 'innovation – acceptance – tradition' is predicated much more on the socio-cultural formation of normative frameworks and systems of meaning. On the social embeddedness of such processes, see Clarke 1978, 196 f.

23 See the important discussion in Bernard 2018, 197–227.

24 For a similar concept with a strong focus on social practice, see the distinction between 'vernacular' and 'academic' building traditions in Deetz 1996, 125–164.

25 Vitr. De arch. 2, 9, 5–17.

26 Vitr. De arch. 2, 2, 1–2. On the influence of Lucretius and Epicuraneism on Vitruvius, see Rawson 1985, 117; Nichols 2017, 8–10. 17. 24.

27 The notion of 'Handwerkstradition' (craft tradition) proposed in Maschek 2012, 26 f. 36 f. 237–243.

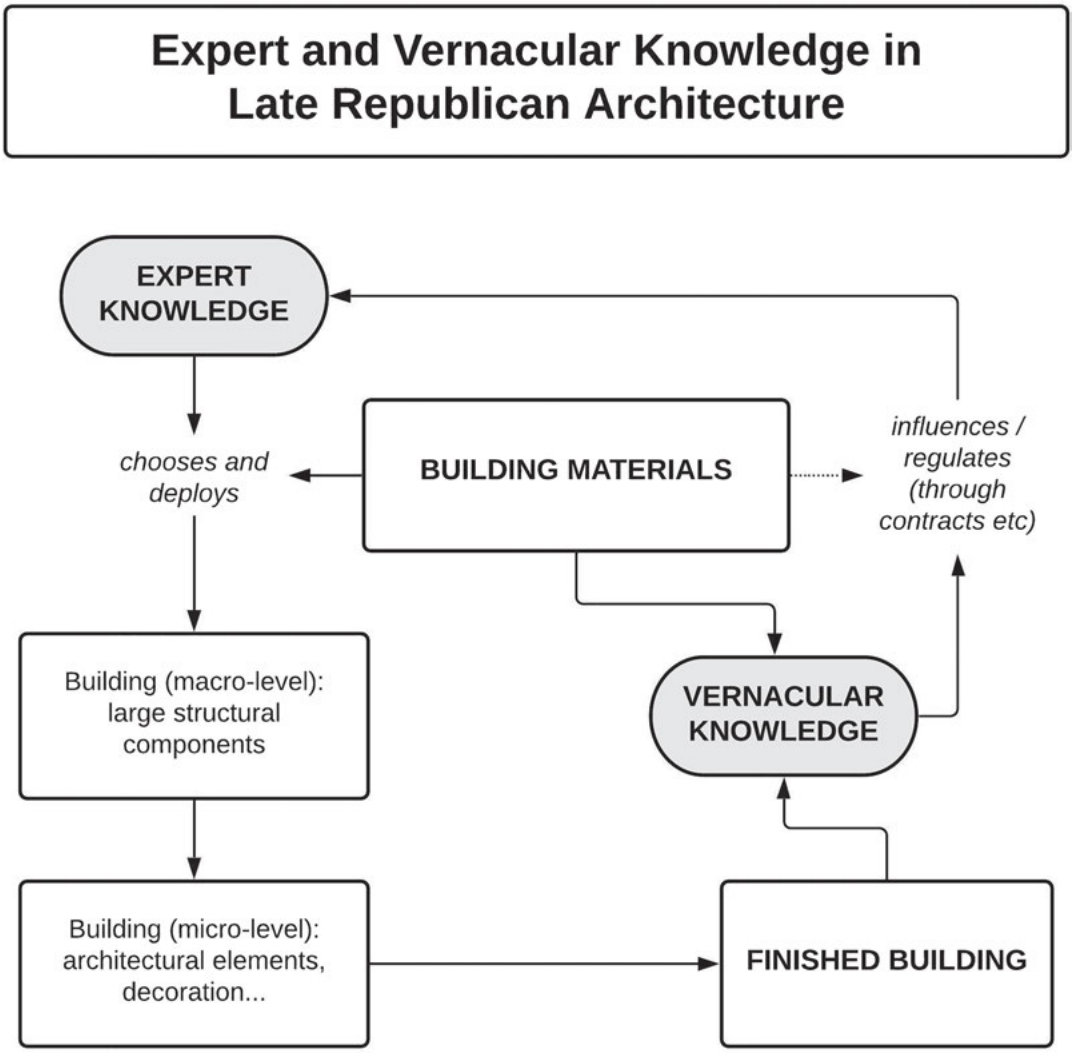

Fig. 1: Expert and vernacular knowledge in Late Republican architecture.

call an **intermediate level**, where both the macro and the micro intersect (for example, in the use of plaster, which covered large sections of a building but also offered the possibility for detailed decoration)[28].

Vernacular knowledge, on the other hand, was present on various levels, and could be partly (but not necessarily) linked with expert knowledge: here, aspects like colour and coarseness of a building material could be related to specific qualities, but, more importantly, to other buildings and structures which constituted the world of those who perceived them. We could call this a *horizontal* system of meaning, which expands from the core of the individual structure or material under consideration to all other structures and materials which were known to the commissioners, users, and viewers of certain buildings at particular times. This intersected with, but did not neatly map onto, the largely *vertical* and hierarchical system of meaning which was used and, through its use, constantly re-calibrated by the experts.

28 See Jackson – Kosso 2013; Bernard 2018, 198 f.

The Application of Knowledge: Direct and Indirect

How did these two systems of knowledge condition the process of architectural creation, and thus, the material remains we can still study in the archaeological record? The vertical system of expert knowledge was elaborated in **direct** relation to the built structure (Fig. 1). Its implementation happened continually during the building process, from the selection of materials through the various stages of their processing to the state of the finished end product. This chaîne opératoire entailed a high degree of experimentation which contributed to a slow and incremental adaptation of expert knowledge over time[29].

By contrast, vernacular knowledge always stood in an **indirect** relation to the built structure. The commissioner's aims were formulated in conversation with the builders and formalised via contracts in which the commissioner either asked for specific materials or even put himself under the obligation to provide them[30]. Vernacular knowledge therefore had a constant and powerful (albeit oblique) impact on the process of construction: it was applied by individuals outside the group of expert builders, both before and during the building process, and the demands emanating from it became the legally binding conditions for successful completion of the contract.

Despite these structural differences in how expert knowledge and vernacular knowledge operate, it is important to emphasise that the two intersect at the crucial junction of social control, which was enforced through the framework of contract law. As a consequence, there was always a fundamental asymmetry of power in the extent to which knowledge could shape the built environment: the experts had a clear understanding of materials and how to use them, but the laymen (commissioners) may not have fully shared their views. The result of this crucial intersection – i. e., the expert's knowledge confronted with the commissioner's aspirations – took material shape in the building. The degree to which expert and vernacular knowledge influenced the end product would thus have varied slightly from project to project, but always within the boundaries of current norms and conventions[31]. In spite of the essentially dynamic nature of the process, there are some aspects of the archaeological record that can provide valuable clues about the respective roles of 'expert' and 'vernacular' knowledge on Late Republican construction sites.

For example, it is fairly uncontroversial to ascribe specific techniques of working and manipulating building stones (lifting, dressing, and finishing, for example) to the builders' expert knowledge. However, when it comes to the clearly discernible patterns of stone use over time, things get a bit more complicated, as the introduction of a new material, i. e., innovation, would often have been triggered by the wishes of particular commissioners. The introduction of marble to Roman architecture is a case in point: here we see that the choice of this particular material, starting with the two marble basins at the Arch of Scipio in 190 B.C., was heavily predicated upon the personal preference of particular commissioners[32]. Arguably, the subsequent phase of acceptance, followed by the

29 For the importance of the chaîne opératoire and institutional aspects as conditioning factors in Roman construction projects, see Maschek 2017, 40–42. The fundamental link between social systems, knowledge networks, and production/craftsmanship is explored in Dobres 2000; 2010; Rebay-Salisbury et al. 2014.

30 On institutional frameworks and legal aspects of Roman building contracts, see Martin 1989; Anderson 1997, 68–118. For the role of patrons in Roman architecture, see Anderson 2014; Wescoat 2015, 190–197.

31 I would like to emphasise that this position differs significantly from the postmodernist approach recently advocated by Popkin (2015, 301–303), who talks about 'the unstable meanings of individual materials' and postulates that in Roman architecture 'a monument's materiality was not finite and fixed because even if its physical materials remained unchanged, interpretations of those materials shifted constantly'. This idea of constantly shifting interpretations is untenable when confronted with the strikingly patterned structure of the archaeological record. This allows us not only to distinguish between different systems and hierarchies of knowledge and social control, but also to tentatively reconstruct majority views as opposed to eccentric outliers in the use of particular building materials at specific moments in Roman history.

32 On the Arch of Scipio, see Liv. 37, 3, 7. For the use of marble in 2nd century B.C. Roman architecture, see Ducret 2017 with full discussion of literary sources. For the archaeological evidence, see Bernard 2010.

emergence of a proper tradition in the use of marble, was governed to a much lesser extent by the wishes of individual commissioners, as builders acquired more and more expertise in working with them. It thus seems fair to postulate a decrease of vernacular knowledge in the decision-making process over time, matched by a corresponding increase in expert knowledge. This matches the situation in the 2nd century B.C., with the isolated appearance of powerful commissioners (Q. Caecilius Metellus Macedonicus, D. Iunius Brutus Callaicus) and eminent specialists of foreign extraction (first and foremost Hermodorus of Salamis) in the 140s and 130s B.C., as opposed to the widespread evidence for professional architects working in Rome and Italy from the turn of the century onwards[33]. Of course, these processes of decreasing influence of vernacular knowledge versus the increasing importance of expert knowledge were by no means linear and uniform; moreover, they applied to many different building materials across different timespans, according to the respective historical context (for example, marble from the eastern Mediterranean was introduced at a later moment than 'tufo giallo della via Tiberina', but both were essentially fruits of conquest)[34]. We therefore have to reckon with multiple such processes, to which the archaeological remains bear witness.

From an archaeological point of view, it is important to stress that the structured pattern of occurrence and use of specific building materials in Republican architecture was always strongly tied to the vertical system of expert knowledge. The horizontal system of vernacular knowledge, by contrast, is much harder to pin down. It certainly existed from the very beginning, but in the absence of reliable literary evidence before the turn of the 2nd century B.C., we can only guess its constituent elements, which would have varied according to the social status, education, and interest of the individual commissioner, user or viewer.

Conclusion: The Pragmatics of Late Republican Architecture Between Internalisation and Externalisation

Ultimately, we can also conceptualise the opposition between expert and vernacular knowledge, essential for the pragmatics of Late Republican architecture, as one of *internalisation* versus *externalisation*. Expert knowledge is mostly, if not exclusively, developed and preserved within a particular social group of builders who are organised along the lines of seniority and experience, i. e., according to social generations[35]. This means that the social standing and portfolio of the individual builder decided whether his voice was important and would be heard by his peers. Very often, the tight internal cohesion of this group would have led to the preservation of venerated knowledge, even in the face of rapidly changing customer demand or the arrival of outsiders with different sets of expert knowledge. Existing systems of expert knowledge could be challenged by such outsiders, but more often than not their success or failure was predicated not upon their superior skills, but rather their social position: whether they had important supporters, for instance, or were promoted by influential members of the Roman elite.

By contrast, vernacular knowledge can be described as being mainly influenced by factors external to the building process. The aims of the commissioners and the normative and aesthetic framework of reference for those viewing and using a building and perceiving its materials would not usually have been formed on the construction site. This is the type of context that proponents

33 Rawson 1975; Coarelli 1976; 1983; Gros 1976a; Zevi 1996; D'Alessio 2010; La Rocca 2011; Cavallero 2017; Davies 2017, 80–104.

34 Bernard 2018, 103. 223–226.

35 For the idea of the 'social generation', see Lisón-Tolosana 1983, 170–201; cf. Maschek 2018, 16–18. A similarly useful way of conceptualising social generations is the framework of 'predecessors, contemporaries, consociates, and successors' in Geertz 1973, 364–367.

of conventional architectural semantics have in mind when they want to reconstruct 'values' and 'ideologies' through the analysis of building materials. But this unduly privileges and thus starkly inflates the importance of vernacular knowledge in the process of architectural creation: never would we expect vernacular knowledge to fully override expert knowledge. Quite to the contrary, it is the intersection between the two that results in the design and erection of buildings, including the choice of their materials.

Dominik Maschek
University of Oxford
Faculty of Classics
Ioannou Centre for Classical & Byzantine Studies
66, St. Giles'
Oxford, OX1 3LU – United Kingdom
dominik.maschek@classics.ox.ac.uk

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Fig. 1: D. Maschek.

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Matthias Grawehr

Travertine in Rome: Its Style and Meaning

Abstract: The building materials used in Rome are well known. Yet beyond marble, which has commanded great attention from both ancient authors and modern researchers, much can still be discovered regarding the specific meaning, or semantics, of other building materials. In this contribution, the semantics of travertine are studied as an exemplary case through a collection of archaeological and written testimonies. Following the introduction of travertine into Rome in the 2nd century B.C., it was favoured for its strength. Still, its distinctive surface texture remained largely hidden under stucco coatings. In contrast to marble, the visual qualities of travertine were apparently considered unappealing. Only during the Early Imperial period did travertine surfaces become the standard for prestigious substructures of all kinds. With the Flavian emperors – who sought a visual contrast to Neronian aesthetics and propagated a new, down-to-earth approach to building – even the most iconic monuments, such as the Colosseum, received a travertine façade. In addition, a special 'plain' style became standard for the design of travertine structures.

The importance of studying the meaning of materials has long been acknowledged in fields beyond archaeology. For example, since the mid-1990s Monika Wagner and several of her former students have generated an entire compendium dedicated to the meanings of materials (Materialikonographien) in modern art and architecture[1]. Indeed, in his 1994 book, *Die Sprache der Materialien. Anleitung zu einer Ikonologie der Werkstoffe,* Thomas Raff demonstrated the potential of this topic vis-à-vis the study of medieval art[2]. In this regard, archaeology has lagged behind. Indeed, while today building materials are widely described, sampled and sourced, attempts at elucidating their semantics are rare[3].

Perhaps the most studied material in ancient architecture is marble, the significance of which has been amply demonstrated by ancient authors. The ancient world was captivated by marble's glinting luminescence, and, despite being a terrifically bulky freight, huge loads of this material were shipped over hundreds of kilometres by both land and sea. Suetonius reports the famous comment made by Augustus on his deathbed: *sit marmoream se relinquere, quam latericiam accepisset* ('I leave to you of marble, what I found of brick'[4]), while Cassius Dio expressively noted that Augustus aimed to illustrate the empire's new prowess and aesthetic renown[5]. Thus, marble constituted the glittering proof of Rome's glory. The word *marmoreus* ('shining like marble'[6]) even became one of the topical adjectives for describing the necks and limbs of beautiful woman in Roman erotic poetry[7]. Andromeda's body is described as standing polished like a *marmoreum opus* against the background of the rough cliffs to which she was tied[8] and, funnily enough, in one of his erotic elegies Ovid reassures his vain inamorata that he only cast his eyes up to the upper boxes in the theatre to admire the marbles, not the marble-like skin of a *candida femina*[9].

1 See Wagner 2001 and numerous other publications by the same author, e. g., Wagner, this volume; Fuhrmeister 2001; see also the works of Ann-Sophie Lehmann, e. g., Lehmann et al. 2013; Anderson et al. 2015.

2 Raff 1994.

3 Note, however, the attention paid to materials, e. g., in Schneider 1986; Fejfer 2008; 2013.

4 Suet. Aug. 28, 3; the translation is my own.

5 Cass. Dio 56, 30, 3 f. A similar statement about stone as a symbol of the Roman Empire's strength (versus brick and stuccowork) appears in Aristid. 26, 83.

6 For a discussion of the meaning of the Greek and Latin word, see Bradley 2006, 5–7.

7 Discussed by Bradley 2006, 8.

8 Ov. Met. 4, 675.

9 Ov. Am. 2, 7.

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Furthermore, marble was a consummate extravagance. Wherever Romans celebrated luxury[10], or castigated excessive indulgence, marble made an appearance[11]. For Seneca, marble bespoke a materialised lie: 'we admire walls veneered with plates of marble, although we know what sort of material is being concealed [...] what else is it but a lie in which we take such delight?'[12].

In the following discussion, I turn my attention to travertine as a building material in the city of Rome. Travertine has received far less attention than marble, although it also enjoys a special meaning. I will first detail the well-known physical properties of the stone. Then I will argue that a typical 'travertine style' can be discerned from an examination of its significance, properties and specific architectural uses. Finally, I will illustrate travertine's evolving position in Late Republican and Imperial architecture, deducing its significance in those contexts, while tracing its changing use over time.

Physical Properties and Ancient Knowledge of Travertine

In antiquity, travertine was known as *lapis Tiburtinus*[13] because it was quarried from an extensive 60-metre-thick deposit in the plains below the city of Tibur. Thus, its modern name derives etymologically from its Latin designation. The quarries were located only 20 kilometres to the east of Rome, so shipping to the city by riverboat was easy on the Aniene and Tiber Rivers; land transport was possible after 30 B.C., when the Via Tiburtina was cleared for heavy cargoes[14]. Travertine is a material that boasts many special properties. It has a light grey to yellowish colour, a horizontal stratification and presents numerous small and irregularly sized cavities[15]. With its banding set horizontally, it can withstand heavy loads. Experiments have concluded that travertine has a uniaxial compressive strength[16] of around 105 MPa in a dry state and 82 MPa when wet (Table 1).

Table 1: Physical properties of building materials in Rome, data after Vallardi 1982 [1], Jackson et al. 2005 [2] and Lamprecht 1984 [3].

	density (kg/m³)	uniaxial compressive strength dry (MPa)	water absorption Ab (%)	thermal expansion mm/m°C
Carrara marble[1]	2711	133.4	0.1	0.0063
travertine [2]	2580	104.8	0.6–0.8	0.006 [1]
tuff [2]	1440–1870	22–44	10.7–22.7	0.004
concrete [3]	1300–1800	7–17	-	-

10 For example, Prop. 2, 31, 9; Stat. Silv. 1, 5, 11–43; 2, 2, 85–94; 4, 2, 26–30; Vitr. De arch. 7 praef. 17; Scheithauer 2000, 225–227. 240; Newlands 2002, 96–100. 183 f. 209–211.

11 For example, Seneca (see n. 12) and Pliny (Plin. HN 36, 1); Scheithauer 2000, 240.

12 Sen. Ep. 115, 9: *Miramur parietes tenui marmore inductos, cum sciamus, quale sit quod absconditur.* [...] *quid aliud quam mendacio gaudemus?* See also Sen. Ep. 86 on the modesty of the Villa of Scipio Africanus, *exemplum virtutis*, contrasted with contemporary luxury.

13 Mentioned only in Str. 5, 3, 11; Vitr. De arch. 2, 7; Plin. HN 36, 5, 46; Amm. Marc. 16, 10, 14; CIL VI 13830.

14 For a description of quarries, see Giuliani – Mari 1983, 361–370; Mari 2002. For viability, see Str. 5, 3, 11; Giuliani – Mari 1983, 367. On the Via Tiburtina, see Giuliani – Mari 1983, 19. A series of painted inscriptions surviving on some blocks in the Colosseum (Conti – Orlandi 2012–2013) may refer to the shipping by *onerarias naves*.

15 For a petrographic description, see Jackson et al. 2005, 498 f.; Jackson – Marra 2006, 405. 415. 423; Pentecost 2005, 19–76; Giampaolo et al. 2008, 333–336.

16 The uniaxial compressive strength is a useful number for comparing the load bearing capacity of natural stones, and is measured in megapascals (in theory, one MPa equals the capacity of one square metre to carry c. 102 tons).

Since it absorbs very little water, the stone is highly resistant to weathering. According to Vitruvius' classification of soft, medium and hard building stones[17], travertine is placed in the middle category (the hard stones included basalt, with a compressive strength of up to 250 MPa, while the soft stones included tuff, which can bear a maximum of c. 45 MPa). According to Vitruvius, soft stones have the additional disadvantage of being more liable to wear. For example, the tuffs of Rome are highly absorbent and rapidly erode when exposed to the elements. But Vitruvius likewise noted an important disadvantage for travertine and similar stones: they are prone to breakage when exposed to fire, owing to their crystalline structure and tendency for thermal expansion (a problem not encountered with tuffs, which are generally much less affected by high temperatures[18]). Furthermore, the carving of fine details in travertine is relatively difficult because of its many cavities. According to Vitruvius, then, the ideal building stone was not travertine but a type of ash-grey volcanic stone quarried near the town of Ferento and primarily used there, for it best fulfilled his (and later Pliny's[19]) criteria for stones used in construction: *firmitas* (endurance) and *utilitas* (workability). Interestingly, Vitruvius seems not to have applied his third standard criterion for architecture, *venustas* (beauty), to such stones[20].

In comparison with other building stones available in the vicinity of Rome, travertine was the strongest and most durable material. It shares many characteristics with imported Carrara marble: both are of similar durability, although Carrara marble has a slightly higher uniaxial compressive strength, and, of course, greater workability (see Table 1).

Plastered Travertine in the Late Republic

Surprisingly, the introduction of travertine into the architecture of the city of Rome took place only after the arrival of marble. The latter occurred in the wake of the conquest of Greece in 146 B.C., after which the triumphant Quintus Caecilius Metellus Macedonicus employed marble in the construction of the Temple of Jupiter Stator[21]. Initially used for inscriptions and interior pavements, travertine seems to have made its appearance in Roman architecture soon thereafter[22]. It appeared

17 Vitr. De arch. 2, 7.

18 Jackson – Marra 2006, 426.

19 See Haug – Hielscher, this volume.

20 On the general criteria for architecture, see Vitr. De arch. 1, 3, 2.

21 Due to constraints of space, in all following notes I will provide only the most basic or recent bibliography. On the introduction of Greek marble into Rome, see Frank 1924, 33 f.; Blake 1947, 50–60; Lugli 1957, 328 f.; Bernard 2010; Popkin 2016, 72; Davies 2017, 93–100. Some scholars, like Maggie Popkin, have considered the Temple of Hercules Musarum (187 B.C.) as the first marble temple of Rome: see LTUR III (1996) 17–19 s. v. Hercules Musarum, aedes (A. Viscogliosi); Popkin 2016, 72, contra e. g., Albers 2015, esp. 49. For the Temple of Jupiter Stator (146 B.C.), see LTUR III (1996) 157–159 s. v. Iuppiter Stator, aedes ad Circum (A. Viscogliosi); Popkin 2016, 72 f.; Davies 2017, 95 f. For the round temple by the Tiber (dated to 145 B.C. if it is the Temple of Hercules Victor, or to c. 100 B.C. if it is the Temple of Hercules Olivarius = *Hercules Victor ad portam Trigeminam*?), see Rakob – Heilmeyer 1973; Ziolkowski 1988; LTUR III (1996) 19 f. s. v. Hercules Olivarius (F. Coarelli). 22 f. s. v. Hercules Victor, aedes (ad portam Trigeminam) (F. Coarelli). 23–25 s. v. Hercules Victor, aedes et signum (D. Palombi); Davies 2017, 97–100. For the Temple of Mars in Circo from 133 B.C., see LTUR III (1996) 226–229 s. v. Mars in Circo (F. Zevi); Kosmopoulos 2012.

22 The authoritative account of the introduction of travertine to Rome is still Lugli 1957, 319–326, with a list of buildings and inscriptions. For earlier accounts and lists, see Hülsen 1906, 187–189; Delbrueck 1912, 56 f.; Frank 1924, 32 f.; Blake 1947, 44–48. See also Giampaolo et al. 2008, 336; Giampaolo – Aldega 2013. An earlier inscription was recently published by Nunziata (2008), and another one is CIL I^2 626 of 145 B.C., if it is not a later copy, as some have suggested, e. g., LTUR III (1996) 23 s. v. Hercules Victor, aedes et signum (D. Palombi). There are several candidates for the first monument to use travertine structurally. The travertine surface located just below the marble pavement of the Basilica Julia but well above remains of the foundations of the Basilica Sempronia (which date to 169 B.C.) has been connected to the latter building: see Carettoni – Fabbrini 1961; LTUR I (1993) 187 f. s. v. Basilica Sempronia (I. Iacopi); Davies 2017, 136; Bernard 2018, 210. Furthermore, in the Basilica Fulvia, built in 179 B.C., remains of a travertine floor have been

first in the superstructure of the Temple of Concord, dedicated by Lucius Opimius in 121 B.C.[23]. This peripteral temple rose above a high podium with columns and an entablature made from travertine. Although the details of the decoration (such as the acanthus leaves of the Corinthian capitals and the fluting of the shafts) were carved in travertine, their porous surfaces were hidden completely beneath a coating of stucco. Angela Maria Ferroni, who studied the architectural fragments in detail, described the stucco as 'white and compact, with translucent crystals on the surface'[24]. No traces of colour were found during the scientific analysis of the original coating or the layers of whitewash applied twice in maintenance works between 121 B.C. and the temple's destruction in 9 B.C.[25]. This leaves little doubt, then, that the materiality of the temple was intended to mimic the appearance of white marble as closely as physically possible[26]. Over the next 20 years, at least three temples followed suit, employing travertine and a similar stucco coating. Lucius Caecilius Metellus Delmaticus rebuilt the Temple of Castor and Pollux in 117 B.C., and various remains from this rebuilding survive: the travertine steps, column plinths and capitals with white stucco, as well as numerous stucco fragments from the *cella* wall[27]. Cicero later accused Verres of pretending to restore the temple in 74 B.C., while in fact he only remounted and whitewashed four columns[28]. Some 150 travertine fragments of Corinthian capitals and an entablature with a stucco coating have been assigned to the second phase of the Temple of Victory on the Palatine, a complete reconstruction that took place in the years following the fire of 111 B.C.[29]. The same aesthetics are at work in the Temple of Fortuna Huiusce Diei (Temple B of Largo Argentina), dedicated in 101 B.C.[30]. Again, the plan of the round temple is clearly dependent upon Greek prototypes, with bases and capitals bearing sculpted acanthus leaves made of travertine. This time, however, the shafts and the rest of the temple are made of tuff, and a layer of stucco once created the appearance of uniformity. The sole remaining travertine capital (in the Italic style) from the second phase of Temple A of Largo Argentina was made a bit earlier: a date at the end of the 2nd century B.C. has been suggested[31]. The travertine cladding on the podium of the Temple of the Lares Permarini (Temple D of Largo Argentina) is of a similar date[32], and urban spaces paved with travertine follow soon thereafter.

The use of travertine with a stucco finish for temples remained commonplace for most of the 1st century B.C. A podium clad in travertine above a *crepidoma* and a travertine column base with stucco survived from the reconstruction of the *aedes Veiovis* on the Capitoline, which was built after the fire of 87 B.C. and the erection of the *tabularium*[33]. Even better preserved is the Temple of

assigned to a renovation phase of unknown date, but tentatively connected to events in either 164 B.C. or 159 B.C.: see Freyberger et al. 2007, 494 f.; Freyberger – Ertel 2016, 37–42; Davies 2017, 135; Bernard 2018, 209. If the round temple by the Tiber is indeed the Temple of Hercules Victor (see preceding note), then travertine was used in 145 B.C. to reinforce the stylobate below the columns, Rakob – Heilmeyer 1973, 3 Pl. 20. On the temple in Via delle Botteghe Oscure, see Márquez – Gutiérrez Deza 2006. Other candidates for the first use of the stone include a travertine-lined pit near the rostra (Davies 2017, 137 n. 413) and a series of travertine mooring rings found near the Tiber (Davies 2018, 139). At Ostia, travertine was not used before the Sullan period: see van der Meer – Stevens 2000.

23 On the 121 B.C. phase of the temple, see Lugli 1957, 321; Gasparri 1979, 31–36. 130; Ferroni – Meucci 1991; LTUR I (1993) 316–320 s. v. Concordia, aedes (A. Ferroni); Davies 2017, 155–159.

24 Ferroni – Meucci 1991, 426: '[...] bianco e compatto, con cristalli traslucidi in superficie'.

25 Ferroni – Meucci 1991, 430–433.

26 Compare the description of the polished whiteness of stucco in Vitr. De arch. 7, 3, 4–9.

27 For steps and plinths, see Nielsen 1992, 88–90. 111; for capitals, see Sande 2008, 210 f. EXC 1. 2.; for stucco, see Guldager Bilde – Slej 1992, 189 f. Group 1 (white).

28 Cic. Verr. 2, 1, 145; 1, 154. Cicero uses the word *dealbare* ('whitewashing'). On Verres' restoration, see Nilson et al. 2008.

29 Pensabene 1991, 14. 47–51.

30 Coarelli 1981, 19–23; Campisi 1987, 84 Pls. 2, b. c; LTUR II (1995) 269 f. s. v. Fortuna Huiusce Diei, aedes (P. Gros); Davies 2017, 156–159.

31 Coarelli 1981, 16 f. Pl. 6, 3; see Zink – Pflug 2019.

32 Coarelli 1981, 18 f.; LTUR III (1996) 174 f. s. v. Lares Permarini, aedes (F. Coarelli).

33 LTUR V (1999) 99 f. s. v. Veiovis, aedes (in Capitolio) (M. Albertoni); Davies 2017, 194 f.; Mazzei 2019, 811–817.

Fig. 1: Temple of Portunus, ionic capital with plaster additions.

Portunus, which has been securely dated to 80–70 B.C. Here again, the podium rests on a *crepidoma* and is faced with travertine, and all the bases and Ionic capitals (as well as the entire *pronaos*) are also carved from travertine. The remains of its stucco coating have been preserved, and this added, for example, small details such as flowers to the ornamental apparatus of the capitals prefigured in stone (Fig. 1)[34]. According to the most recent chronology, the Temple of the Nymphs in the Via delle Botteghe Oscure should be added to these temples[35]. Erected during the first half of the 1st century B.C. (possibly above an older and smaller temple) its podium also sits on a *crepidoma*. The podium's face and the column bases, produced in travertine, and the column shafts, produced in tuff, have been identified as part of a reconstruction following a fire in 57/56 B.C. I also assign the Corinthian capitals, which have smooth leaves, to this phase (rather than to the Flavian restoration)[36]. The various travertine sections of the unattributed stuccoed columns, entablature and Corinthian capitals (once again with smooth leaves) from the Palatine could be dated to roughly the same period[37], as well as the capitals extant today in the Porticus Dii Consentes, which are still awaiting a convincing assignment to one or more monumental buildings in the area[38]. Three further temples situated in the Forum Holitorium, dedicated to Janus, Spes and Juno Sospita, respectively, are dated to either c. 90 B.C. or to a reconstruction in A.D. 17[39]. All three are composed of travertine to varying degrees. Apart from temples, travertine was also used for a new pavement of the Forum Romanum in 78–74 B.C. (pavement VI)[40]. Even in large-scale urban projects such as the Theatre of Pompey (completed in 55 B.C.), the engaged columns on the façade were built in travertine, but in combination with tuff walls[41], and I therefore suspect that the entire façade was plastered.

34 Fiechter 1906; Campisi 1987, 86 Pl. 1, c; Ruggiero 1991–1992, 266–276; Adam 1994; LTUR IV (1999) 153 f. s. v. Portunus, aedes (C. Buzzetti); Davies 2017, 194 with n. 107.

35 Márquez – Gutiérrez Deza 2006.

36 Márquez – Gutiérrez Deza 2006, 310–312; Grawehr 2015, 487 n. 24.

37 Pensabene 2017, 396. 400 f. n. 8–10. 402 n. 25.

38 The pieces, (possibly re-)excavated by Antonio Nibby in 1838, have been variously discussed: see, e. g., von Hesberg 1995; Grawehr 2015, 488 f. Fig. 8; Davies 2017, 196 n. 115; Mazzei 2019, 891–895. They may have already been excavated once in 1527/28 and described by Pirro Ligorio in his 'Libro delle antiquità di Pyrrho Ligorio […], BNF, Ms ital. 1129, 290': see Lanciani 1902, 244 n. 1528; Reusser 1993, 77 Fig. 17. 201. According to Häuber (2005, 31 n. 161.), the excavation took place not near S. Omobono, but rather in the Temple of Saturn.

39 Lugli 1957, 320–323; Crozzoli Aite 1981; LTUR III (1996) 90 f. s. v. Ianus, aedes (apud forum Holitorium, ad theatrum Marcelli) (F. Coarelli); LTUR III (1996) 128 f. s. v. Iuno Sospita (in foro Holitorio), aedes (F. Coarelli); LTUR IV (1999) 336 f. s. v. Spes, aedes (F. Coarelli).

40 Giuliani – Verduchi 1987, 53–61; LTUR III (1996) 343–345 s. v. Forum Romanum (lastricati) (D. Palombi); Filippi 2012, 166. 168.

41 Monterroso Checa 2010, 63–65. 68. 70 Fig. 40b. 173–184, esp. 183; Filippi 2015, 324–327. On a single Corinthian capital with smooth leaves made of travertine (extant today in Piazza Cairoli), see Monterroso Checa 2010, 139–141 Fig. 159. For a general description of the theatre, see Davies 2017, 217–220. 228–236.

From these examples (others may be added) emerges a consistent record of the use of travertine and the appearance of Late Republican temples and public buildings. The commonality of travertine increased from the 120s B.C. onwards, appearing first in columns, then temple podia; the stone was also often employed in combination with various tuffs and a building core of *opus caementicium*. There are no traces of plaster coatings on podia[42]. However, from column bases up to the roof, the buildings were covered with stucco. While travertine provided architectural strength – and did so visibly when employed for pavements and podium revetments – it contributed nothing to the aesthetic of the temples' superstructure[43]. Vitruvius describes how calcite powder was added during the preparation of the stucco (*e marmore graneo*[44], but this was not necessarily *marble* powder). This powder was added to guarantee solidity and brilliance (*fundata soliditate marmorisque candore*[45]), and with the intention of creating a marble-like appearance.

A development can be seen at the end of the 1st century B.C., when builders began juxtaposing plastered travertine with marble, often to create the engaged orders that occupied the rear of pseudoperipteral temples. Some well-documented examples include the Temples of Apollo Sosianus, Bellona and Apollo Palatinus. For the Temple of Apollo Sosianus (34 B.C. – c. 25 B.C.) marble was used only in the *pronaos* for bases, shafts and capitals, while in the frieze, a marble revetment was attached to a travertine core. Tuff was employed for the podium's outer face and the *cella* walls. Travertine was only used in structurally important positions and to produce the Corinthian order engaged to the *cella* wall. Fluting and the acanthus leaves were carved in full detail in travertine. Again, a homogenous plaster coating of the non-marble sections gave the temple a uniform appearance[46]. Recently, a similar reconstruction has been proposed for the Temple of Apollo Palatinus (built in 36–28 B.C.) on the basis of several identical architectural fragments in marble and travertine, for example the splendid remains of Corinthian capitals (with smooth leaves in the travertine version)[47]. The same system was used for the Temple of Bellona (c. A.D. 5–15). Here, however, travertine was also employed for the entire back part of the temple's exterior[48].

To summarise, then, during the late 2nd and 1st century B.C., travertine was employed in the construction of temples and other important public monuments, such as the Theatre of Pompey. Stone surfaces above the level of the podium, however, were rigorously hidden beneath a stucco coating intended to imitate the aesthetic of marble.

The Use of Uncoated Travertine in the Imperial Period

Our discussion of Imperial travertine buildings begins with the Theatre of Marcellus (Fig. 2). The theatre was erected between 23 B.C. and 17 B.C. by Augustus, and his builders not only made careful use of travertine for the imposts of piers, springers and keystones of arches in the interior; travertine was also exploited for the entire three-storey façade, with its trabeated arcades[49]. While the façade is not richly ornamented, all details – for example, the Corinthian capitals – are cut in stone[50]. Was

42 See, e. g., Ruggiero 1991–1992, 272.
43 This is contrary to what had been assumed previously: see, e. g., Blake 1947, 50. Cf. Campisi 1987, 71–73.
44 Vitr. De arch. 7, 3, 6; Ferroni – Meucci 1991, 434 n. 16. For a general account, see Campisi 1987.
45 Vitr. De arch. 7, 3, 7.
46 Viscogliosi 1996, 43; Coletta 2011. A detailed study of the stucco remains attached to travertine has been announced by Marilda De Nuccio.
47 Pensabene 2017a, 396. 419–421. 435–437 n. 121–125.
48 De Nuccio 2011, 206–221.
49 Fidenzoni 1970; LTUR V (1999) 31–35 s. v. Theatrum Marcelli (P. Ciancio Rossetto); Jackson – Marra 2006, 416 Figs. 6. 7; Jackson et al. 2011; Ciancio Rossetto 2017.
50 Fidenzoni 1970; Ciancio Rossetto 2017.

Fig. 2: Theatre of Marcellus, travertine façade.

the façade ever refined with stucco, like the Theatre of Pompey? It was after all roughly contemporary with the nearby Temples of Apollo and Bellona, with their part-plastered travertine exteriors. But this remains a challenging question to answer. I would guess that the façade was not plastered. Although stucco has survived from the interior spaces[51], it was never detected on the façade, and the uniform travertine exterior of the theatre certainly would not call for a stucco finish. This, then, would be the first major public building provisioned with a *visible* travertine surface throughout. Structurally, the theatre's façade supported rows of seating, and the *cavea* façades of Greek and early Roman theatres often displayed rough stonework befitting this structural function. An earlier (albeit poorly preserved) example can be found in the Theatre of Gubbio/Iguvium (c. 40/30 B.C.)[52], which was built in limestone. The masonry of its two-storeyed façade, featuring trabeated arcades, clearly had a rusticated finish, while the engaged Tuscan pilasters and entablature were smooth and unornamented. The amphitheatres of Aosta, Verona and Pula (the latter two somewhat later) are comparable with these structures[53]. If the façade of the Theatre of Marcellus was not plastered, it would nonetheless have conformed to the *decorum* of substructures, conveying notions of stability and security, much like the earlier temple podia clad in travertine. It was also a highly decorative example of its kind, displaying three different orders superimposed atop one another. Compared to the stucco façade of the Theatre of Pompey, it no doubt appeared much less extravagant and ornamental.

Certain monumental tombs are closely comparable in date and also comparable in terms of the generous use of travertine[54] for their outer shell, albeit without plaster. These include the Tomb of Caecilia Metella (30/20 B.C.), with its travertine revetment on the square podium and drum[55], and the much smaller Tomb of Eurysaces (c. 30 B.C.)[56]. The Temple of Saturn, rebuilt in 42 B.C. by Lucius Munatius Plancus, featured massive blocks of travertine on the podium's outer face[57]. There

51 Ciancio Rossetto 1995; Ciancio Rossetto – Pergola 2017.

52 Marcattili 2007, 21–24 Fig. 19. 62 f. Fig. 46.

53 On the amphitheatre of Aosta, built soon after 25 B.C., see Mollo Mezzena 1981, 90 Figs. 29. 30; Maggi 1987, 39–41 Pls. 18–25; Tosi 2003, 559 f. Pl. 13 Figs. 1–5; Marquet 2003–2004. For the correct dating, see Lugli 1957, 480; Wilson Jones 1993, 422. On the amphitheatre of Verona, erected during the first half of the 1st century A.D., see Coarelli – Franzoni 1972, 37; Tosi 2003, 537. On the amphitheatre at Pula, constructed soon after A.D. 20, see EAA I (1958) 377 s. v. Anfiteatro (H. Kähler); Tosi 2003, 521–523; Džin et al. 2008.

54 While I cannot offer detailed calculations, the amount of travertine that went into these building projects from c. 40 B.C. seems to be much larger than that employed in earlier buildings.

55 Gerding 2002.

56 Ciancio Rossetto 1973. An earlier example of a tomb with a travertine exterior is that of C. Poplicius Bibulus, built c. 70/60 B.C.: see Tomassetti 2000.

57 Pensabene 1984, 20–22; LTUR IV (1999) 234–236 s. v. Saturnus, aedes (F. Coarelli).

are some additional buildings from this period about which doubt remains regarding the plastering of their façades, like the Horrea Agrippiana and the Porta Esquilina[58].

These early examples of unplastered travertine buildings are followed by a series of four ornamental travertine arches provisioned with engaged orders. Each arch is part of an aqueduct:

1) In 5 B.C., Augustus restored the lines of the Aqua Marcia, Aqua Julia and Aqua Tepula. These events were recorded in an inscription on an arch located at the spot where the aqueducts crossed the Via Tiburtina, which later became the Porta Tiburtina in the Aurelian wall circuit (Fig. 3). Amidst the series of tuff arcades, the crossing of the Via Tiburtina was emphasised by the creation of a single travertine arch decorated with an engaged Tuscan order[59].

2 & 3) When Claudius restored the Aqua Virgo in A.D. 46, the builders employed rusticated travertine masonry to erect some of the arcades within the city[60]. This was unusual, as these features had previously been constructed of tuff, and here Claudius seems to have made an effective change, using a material especially famed for its solidity instead. Where the aqueduct crossed two side streets near the Via Lata, the arch was emphasised by an engaged Tuscan order in travertine, inscribed on both sides with details of the restoration[61]. The use of travertine in this restoration corresponded to the overall interests of Claudius regarding the safety and well-being of his people. The rough, rock-like appearance of the travertine blocks may have underlined this message, although it was also in accordance with the usual design of substructures[62], as explained above.

4) When Claudius had the newly built Anio Novus and the Aqua Claudia extended across the junction of the Via Praenestina and Via Labicana, his architects inserted a magnificent travertine arch with a rusticated surface amidst the tuff arcades (Fig. 4). The Porta Maggiore[63], with its roughly finished masonry and ornamental, Corinthian *aediculae*, displayed capitals with smooth leaves (certainly not stuccoed), and its overall design corresponded to the established aesthetics for aqueduct arcades.

Under the Flavian emperors, travertine façades boomed. Although there are many examples, I will discuss only four of the most famous ones: the platform of the Temple of the Deified Claudius, the Colosseum, the Stadium of Domitian and the Domus Flavia.

Immediately following the death of Claudius in A.D. 54, a decree was passed declaring his deification and an immense building project for his temple began on the Caelian Hill, transforming part of the hill into an artificial platform. Soon after, however, the decree was annulled by Nero. The project fell into decline, and the eastern face of the platform was transformed into a nymphaeum that was included in the Domus Aurea. Following Vespasian's ascent to power, Claudius was once again declared a deity and his temple was inaugurated. The platform was enlarged on the western and northern sides by a series of two storey *tabernae*, outfitted with their famous travertine arcades, which again displayed a rusticated finish (decisively *not* plastered) as well as Tuscan capitals[64]. Of

58 In the travertine court façades of the Horrea Agrippiana, which were built in 20/10 B.C. and equipped with Corinthian semi-columns, the capitals are not ornamented and the acanthus leaves left smooth. This may suggest they were plastered. On this monument, see Bauer – Pronti 1978, 118 Fig. 8 Pls. 54, 1. 2; LTUR III (1996) 37 f. s. v. Horrea Agrippiana (F. Astolfi). The same holds true for the city gate on the Esquiline Hill, the Porta Esquilina (or Arch of Gallienus), which dates to the first half of the 1st century A.D.: see Lugli 1937 (with an Augustan dating); Heilmeyer 1970, 141 (first half of 1st century A.D.). On its possible stucco coating, see Campisi 1987, 74; Blasi et al. 1990, 93.

59 Ashby 1935, 145 f.; LTUR III (1996) 312 f. s. v. Porta Tiburtina (G. Pisani Sartorio).

60 Ashby 1935, 175 f.; LTUR I (1993) 72 f. s. v. Aqua Virgo (S. Le Pera). The Aqua Virgo was famed for the coldness and quality of its water and may therefore have been chosen for its propaganda value.

61 Ashby 1935, 175 f.; LTUR I (1993) 85 s. v. Arcus Claudii I (E. Rodriguez Almeida); Scaglia 1998.

62 The same holds true for utilitarian structures, such as the warehouses in Portus with the Portico di Claudio: Lugli – Filibeck 1935, 114–119; Mannucci 1992; Liljenstolpe 2000/2001, 63.

63 Coates-Stephens 2004.

64 Prandi 1953, 373–420; Domingo et al. 2013, 323–329.

Fig. 3: 1909 photo of the travertine street arch (later the Porta Tiburtina) carrying the Aqua Marcia, Aqua Julia and Aqua Tepula (5 B.C.).

Fig. 4: Travertine street arch (later Porta Maggiore) carrying the Anio Novus and Aqua Claudia (A.D. 52).

course, as part of the same series of actions meant to return the Domus Aurea to the people of Rome, Vespasian began to build the Colosseum, which was inaugurated under Domitian in A.D. 80[65]. The organisation and materiality of the Colosseum's façade bore some relation to earlier amphitheatres (those in Aosta, Pula and Verona, for example, with their rough stonework and Tuscan orders), but resembled the Theatre of Marcellus, which Vespasian had likewise restored, even more strongly in certain details. The capitals on the exterior of the Colosseum take the most basic forms, universally without ornamentation (Fig. 5), and once again no traces of plaster have been recorded on the façade. In A.D. 357, Ammianus Marcellinus explicitly spoke of the *amphitheatri molem solidatam lapidis Tiburtini compage* ('the huge bulk of the amphitheatre, strengthened by its framework of Tiburtine stone')[66], leaving no doubt that the façade was never stuccoed. The Stadium of Domitian, located in the northern Campus Martius, was inaugurated in A.D. 86 and is closely related to the Colosseum. It displays a two-storeyed façade comprising 150 travertine arcades with attached Ionic

65 Coarelli et al. 1999, 99–126.
66 Amm. Marc. 16, 10, 14.

Fig. 5: Colosseum, Corinthian capitals with smooth leaves from the façade.

and Corinthian semi-columns. In front of the main (northern) entrance, a *prothyron* with portasanta marble columns survives[67]. Even if these three structures – the platform on the Caelian, the Colosseum and the Stadium of Domitian – were interpreted as substructures, the following example was most assuredly not. When the Flavian emperors constructed their palace on the Palatine, they integrated a travertine colonnade into the external façade. This colonnade faced toward the forum, where one of the main public approaches to the palace was positioned. The travertine façade hovered above the visitors who glanced at it, as well as those who walked through the street arch that formally marked the entrance to palace area, acting as a modest cloak for a splendid interior[68].

Thanks to the increasing popularity of *opus latericium* from the end of the 1st century A.D., travertine waned in importance, and was thereafter only occasionally used to build utilitarian structures, such as the *horrea* in the Forum Boarium and on the Via Lata (both adorned with rusticated finishes), which date to the Severan period[69].

Style

Where travertine architecture was not stuccoed, it demonstrates certain distinctive stylistic features. There are around a dozen extant engaged orders, although this only includes two freestanding examples. Discounting the Theatre of Marcellus, which has some peculiarities of its own[70], we can make the following generalisations. First, these orders generally lack detailed ornamentation: columns are not fluted, Corinthian capitals have smooth leaves and mouldings are quite simple. In addition, all of marble's usual refinements are absent: shafts do not taper and thus there is no evidence of entasis. Mark Wilson Jones has demonstrated that these are also general characteristics of amphitheatre façades, regardless of the varieties of stone employed[71]. The engaged orders that decorate the arches of aqueducts share the same characteristics, and this can be explained by the

67 Colini 1943; LTUR IV (1999) 341–343 s. v. Stadium Domitiani (P. Virgili); Bernard – Ciancio Rossetto 2014; 2014a; Ciancio Rossetto 2015.
68 Finsen 1962, 11–15 Fig. 3; Pflug 2014, 370 Fig. 8; Grawehr 2015, 488 Fig. 11.
69 Pisani Sartorio et al. 1986; Laurenti 1992; cf. Scheithauer 2000, 260 n. 345.
70 The Theatre of Marcellus is decorated with ornamental capitals and tapering columns, and is therefore an earlier version of travertine architecture, pre-dating any 'travertine style', or it was in fact plastered.
71 Wilson Jones 1993, 432.

fact that both types of buildings are interpreted as *supports* or *substructures* (either for a water channel or rows of seats). This may also account for the common use of a rusticated finish, which would have been appropriate for all kinds of foundations and supports. Nevertheless, the freestanding travertine portico in front of the Domus Flavia shares precisely the same style. Indeed, also in the Stadium of Domitian, the marked contrast between the marble columns of the *prothyron* (which were produced with entasis) and those made of travertine (which lack refinement)[72] enables us to identify a distinctive style of travertine architecture. During the 2nd century A.D., this style was also found in columnal orders crafted from brick. Thus, if we compare the style used for travertine architecture with the better-known 'marble style', we may judge it to be generally less refined. This aspect of travertine architecture coheres with the connotations and significance of this material in the Imperial period, as will be discussed below.

Before that discussion, however, let us consider one late example. In the Trajanic restoration of the Temple of Venus Genitrix in the Forum of Caesar, the building's entire front was composed of marble. The rear, however, which was barely visible due to the restricted space behind the temple, was produced in travertine, including the gable. Here, the profiles of the entablature – which are complex in the front – are treated summarily as a single large and simple *cyma recta*. There is no way this *cyma* could have been transformed into the complex shapes that correspond with those that appear on the front of the building through the addition of stucco alone. In this late case, then, adherence to the 'reduced' style of travertine trumped desires to create a uniform appearance between front and back.

The Significance of Travertine in the Imperial Period

The above survey of the use of travertine in the city of Rome makes it clear that a specific meaning for this material could only develop after it was employed without a plaster finish from the Augustan period onwards. Before this, unplastered travertine was visible only in pavements and on podia, which may have appeared as durable, rock-like substructures for lofty temples. However, when travertine finally was employed visibly in the superstructure of public buildings, from around 30 B.C. onwards, it was by no means used as an inferior substitute for marble, but was favoured particularly for production of representative substructures, such as the façades of theatres, amphitheatres and aqueducts. By the Flavian period at the latest, travertine was being used for other colonnades, such as those in the Flavian palace. As discussed above, travertine colonnades were provisioned with an aesthetic that stands in contrast to that of marble, one that can be identified broadly as a 'plain' style that eschewed refinements such as the tapering of columns. Temples are therefore conspicuously absent from the list of 1st century travertine buildings. *Lapis Tiburtinus* (travertine, without a stucco finish) was not an appropriate choice in these cases, with marble preferred instead. Looking at the use of travertine in Late Republican and Early Imperial buildings, it is clear that a down-to-earth notion of high quality and stability can be ascribed to this stone. As such, it carried a meaning opposite that of elaborate marble construction[73]. Indeed, there is a marked contrast between the two materials, as can be observed in the main entrance of the Stadium of Domitian. When used in excess, marble connoted overindulgence and *luxuria*, at least for authors like Seneca or Pliny, who were writing in the Neronian and Flavian periods. In the ancient sources, the contrast between the Colosseum and Nero's projects was routinely emphasised[74], with the use of sturdy travertine for

72 Colini 1943, 40 f. On indications that the *prothyron* might be an addition commissioned by Alexander Severus in A.D. 227, see Caruso – Pergola 2014, 301.

73 See Beck and Barker, this volume.

74 Mart. 2: *hic ubi conspicui venerabilis Amphitheatri / erigitur moles, stagna Neronis erant*; see also poem 28 and Scheithauer 2000, 276 f.

such state-of-the-art buildings like the Colosseum befitting the image of Vespasian, an emperor who personally kept a low profile even while overseeing high quality building projects. A characteristic episode is reported by Suetonius, who describes how Vespasian once rebuked a young, excessively perfumed military commander with the words *maluissem allium oboluisses* ('I would have preferred if you would have smelled of garlic'[75]). The emperor eschewed luxury, so in his judgment, the sweet smell of perfume did not befit a soldier. Indeed, in the same way, I would argue, he encouraged the use of 'utilitarian' travertine for public monuments. The only written source that directly addresses this pragmatic conception of travertine comes from Pliny the Elder. In his book on stones, completed shortly before his sudden and unexpected death in A.D. 79, Pliny exhaustively addresses different varieties of coloured marble, and comments extensively upon them as an unnatural luxury. Disparaging marbles' distasteful overuse, Pliny cites Cicero – a man held up as an exemplum of Republican morality. In Pliny's account, the visual qualities of coloured marbles were first discovered by accident on the island of Chios when the inhabitants used coloured marble for their city wall. When the people of Chios proudly showed this beauty to Cicero, asking him whether he liked it, he dismissed it curtly: *multo magis mirarer, si Tiburtino lapide fecissetis* ('Much more I would admire it, if you would have made it of travertine'[76]). A city wall – the epitome of utilitarianism – needed to be strong, not beautiful; its beauty was as misplaced as the perfume adorning Vespasian's military commander.

Conclusion

Although travertine has certain properties that are comparable with marble (its strength and ability to withstand weather, for example), it lacks the inimitable luminous brilliance of the latter material, presenting instead a creamy white, porous surface. Travertine was used as a building material in the city of Rome beginning in the second half of the 2nd century B.C. It was employed primarily for structural purposes, occupying positions that were key to a building's overall stability. It was also used to produce columns, but in these instances was always hidden beneath a layer of stucco. During this period, travertine was visible only in temple podia. At the beginning of the Imperial period, travertine began to take its place in the visual aesthetic of Rome. Its use remained limited to utilitarian elements and sub-structures, however, and *decorum* forbade it on the exteriors of temples, where marble dominated. Travertine's popularity reached its peak near the end of the 1st century A.D., when it was used to construct the visible shell of buildings such as the Colosseum and the Stadium of Domitian. From the available evidence, travertine seems to have been a material that was perceived as solid, down-to-earth and reliable, and it may therefore have been especially attractive for the Flavian emperors, who publicly renounced Neronian luxury. For Vespasian and many of his contemporaries, marble's popularity began to develop something of a saccharine aftertaste. In this context, it is fitting that a travertine colonnade became the 'public face' of the Flavian Palace on the Palatine. In accordance with these semantics, colonnades and entablatures produced in travertine were designed in a 'plain' style that lacked refinement and ornamentation (this can be observed, for example in the smooth form of the acanthus leaves on Corinthian capitals). Later, brickwork usurped travertine as the primary material to project a functional aesthetic. Indeed, by the 2nd century A.D., the use of travertine began to decline in Rome.

Regarding the discussion of materiality and aesthetics in architecture, the case of travertine in the city of Rome provides a welcome example for examining the semantics embedded within a

75 Suet. Vesp. 8, 3; the translation is mine.

76 Plin. HN 36, 5, 46; the translation is my own. I doubt the authenticity of this anecdote: if we look at the writings of Cicero himself, there is little hesitation in using marble wherever possible. Even in his invectives against Verres, it is not the luxury of marble that comes under criticism.

building material *beyond* its mere physicality. Travertine, above all, demonstrates how the semantics of a construction material can change and develop over time, and consequently how building materials depended upon specific historical contexts for their precise meaning. In this respect, some questions have been left unanswered in the preceding discussion. We might ask, for example, why travertine began to be used visibly at the beginning of the Imperial period, and why it was substituted by brickwork in the 2nd century A.D.? Furthermore, while the semantics of travertine (as well as marble, especially if coloured) can be deduced relatively easily, other materials (such as Roman tuffs) await further study. These questions apply also to other types of material, such as different varieties of timber, which furnished Roman houses and may often have carried similar connotations of luxury (as in the case of lemonwood) or modesty. Due to preservation issues, such an analysis is challenging. However, the task of unearthing the semantics and aesthetics of materials beyond marble is still a promising venture in the field of Classical archaeology.

Matthias Grawehr
Johannes-Gutenberg-Universität Mainz
Institut für Altertumswissenschaften
Arbeitsbereich Klassische Archäologie
55099 Mainz – Germany
mgrawehr@uni-mainz.de

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Fig. 3: Florence, Archivi Alinari.

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Materiality of Objects

Adrian Hielscher

Four-Legged Marble Tables (*mensae*) in Pompeian Houses: The Intersection of Function, Aesthetics and Semantics

Abstract: In this paper, marble will be considered outside of its use in architecture through the examination of a special case study: four-legged tables, or *mensae* from the Vesuvian area. This type of furniture is of particular interest for two reasons. First, its form was originally designed for a different material (wood) and transferred to marble afterwards, meaning that form and material were not initially coordinated. Second, these pieces of furniture are embedded in different contexts and actions inside a household. Consequently, these marble tables constituted an important focal point within Pompeian houses. Here, this small group of objects will be analysed on the basis of its interplay with materiality. This analysis will be based on a theoretical concept of dividing the aesthetics, semantics and function of the material substance, but without prioritising any of these three aspects. The basic assumption of this contribution is that depending on the analytical perspective, the spatial context and the ancient situation, different qualities of the material come into play. Consequently, it would be wrong to reduce the qualities of marble down to one single aspect, for example its nonverbally communicated economic value (semantics).

Function, Aesthetics and Semantics: The Qualities of Material Substances and Objects

In recent years, a new basic and systematic understanding of objects has been developed in the humanities. In accordance with the central methodological concept of the 'Materiality as Decor' conference, this paper considers the function, aesthetics and semantics[1] of a specific material, namely marble[2]. But materials in general only reveal these qualities when they are shaped into an object[3]. Consequently, material properties become object properties to a certain extent[4]. The form of an object is partially bound to the choice of material and vice versa, due to the physical properties of each material and the manufacturing techniques employed. However, before the relationship between the aesthetics, function and semantics of marble can be explained with reference to a concrete category of objects (*mensae*), these qualities must be briefly defined.

Function: Physical properties such as form, size and material are mostly determined by the purpose for which objects were produced. Furniture, tools, vessels and other objects for daily use are created to satisfy pragmatic needs. These objects had to function. At this point, the term 'function' is used exclusively to describe the practical usage of things[5]. The physical presence of these

1 In contrast to the title of this conference volume, the order of these qualities has been changed. In this paper, 'function' is considered first, because the materiality of *mensae* is understood primarily within the contexts of action and use.

2 On function, aesthetics and semantics as three basic qualities of 'things' and as parts of Roman object design, see Hielscher, forthcoming.

3 Wagner 2005, 867; Raff 2008, 13; Haug – Hielscher, this volume.

4 On these three object qualities or 'thing properties' (Dingeigenschaften) in material culture studies and design theory, see Hartmann – Haubl 2000, 9 f.; Hahn 2005, 26–144; Böhme 2016, 44–46; Heufler 2016, 27–58.

5 Another type of function is an object's culturally constructed one. This cannot be deduced directly from the object and it can change over time: see Fox et al. 2015, 67; Swift 2017, 6. It describes the cultural handling of things in the sense of a secondary function. In order to be able to grasp this, archaeological contexts as well as written and visual sources must be included.

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things creates a diverse range of possible actions for using them[6]. This relationship between the physical properties of an object and the capacity of an actor can be referred to as 'affordance'. Affordances do not simply comprise the absolute attributes of objects, but rather the sum of all possible forms of interaction between subject and object[7]. In the case of precious objects decorated with numerous ornaments and images, the functional aspect often takes a back seat. They are treated in research as luxury objects or carriers of images[8], which is a very simplistic, one-dimensional interpretation. The choice of a (more or less) appropriate material is particularly important because it is directly connected to the usability of an object. Materials make things light or heavy, hard or soft, rough or smooth and so on. The material affects the object's manageability as well as its resistance to external conditions. But finally, neither things nor materials can be reduced exclusively to their usability[9].

Aesthetics: This quality brings together all of the sensually perceptible properties of things that have no effect on their function or meaning[10]. Every object has an 'aesthetic presence' (ästhetische Präsenz)[11]. It is possible for a beholder to have an 'aesthetic experience'[12] through an object. However, to differentiate an everyday object from our general perception (Mitwahrnehmung)[13], sensually perceptible markers are required. Such markers include single- or multi-coloured surfaces, texture, transparency, and the shine of objects. All these visual characteristics emerge specifically from the material. Consequently, material affects the 'aesthetic experience' that we can have with objects.

In aesthetic theory, different varieties of aesthetic perception have been distinguished. Of these, the most important and comprehensive modes of aesthetic perception are 'contemplation' (Kontemplation)[14] and 'impressive experience' (impressives Ausdruckserleben)[15]. A 'contemplative perception' excludes all functional or symbolic ascriptions to the object in the outside world[16]. The observer loses him- or herself in the act of perception[17], to the point where the course of

6 Erlhoff – Marshall 2008, 154; Keßeler 2016, 346 f.

7 On affordance in perception- and design-theory, see Gibson 1966, 266–286; Knappett 2004, 43–51; Norman 2013, 10–13; for its role in archaeology, see Swift 2014, 203; 2017, 5; Fox et al. 2015, 63–70; Keßeler 2016, 347; Plant, this volume.

8 On marble objects as a form of luxury consumption, see Wallace-Hadrill 2008, 356–440; Lapatin 2015, 321–342; Sinn 2015, 301 f.; explicitly concerning marble tables, see Richter 1966, 110; Cohon 1984, 7.

9 Böhme 2016, 44–46.

10 Concepts drawn from aesthetic theory from the late 20th and early 21st centuries are suitable for approaching ancient material culture. Neither during postmodernism nor in antiquity was there a dogmatic concept of 'art' like that established during the early Modern period. Technical innovations and growing standards in the reproduction of (art-) objects, as well as the rise of new media for their depiction resulted in a dissolution of the conventional paradigms of 'art'. The terms 'art' and 'artwork' disappeared in their traditional understanding, just like the classical dichotomy between art and everyday life, or rather between artwork and everyday objects (see Marcel Duchamp's 'Readymades', 1913–1917). In postmodern art, and consequently in art philosophy and art theory, there arose a conceptual interconnectedness of everyday life and art: see Liessmann 1999, 97–121. 149–158; Kleimann 2002, 160–170; Beer 2018, 69–77. Concerning the non-existence of 'art' in antiquity, see Debray 2007, 151–171. On the (Greek and Roman) concept of so-called art in classical archaeological research, see Borg 2015, 2–4. Hallett (2015) tried to define 'Roman art', showing, amongst other things, that it is a modern construct based on an appreciation of periods and styles rather than a concept that was understood at the time by contemporary society. Hallett (2015, 22. 29–31) argues for a concept of 'visual culture' instead of 'art'.

11 Seel 1996, 48.

12 The 'aesthetic experience' has been developed as an overarching concept in the aesthetic theory of recent decades, and is used to describe visual qualities of art, nature or everyday life. For a summary of the numerous attempts to define aesthetic experience, see Kleimann 2002, 52–55; Brandstätter 2012, 174; Fuchs 2015; Lehmann 2016.

13 On this phenomenon of unspecific, undirected, inattentive aesthetic perception in everyday life, see Kleimann 2002, 81 f.

14 Kleimann 2002, 94–101.

15 Kleimann 2002, 101–113.

16 Kleimann 2002, 95.

17 Seel 1996, 48; Gumbrecht 2003, 203–222; Brandstätter 2012, 176.

time[18] and the surrounding space disappear. In contrast, the realisation of the impression that an object leaves with us can be described as an 'impressive experience'. Gernot Böhme therefore uses the phrase 'ecstasies of the things' (Ekstasen der Dinge)[19] to characterise a mode of the 'aesthetic presence' (atmosphärische Gegenwärtigkeit) of objects. 'Contemplation' and 'impressive experience' both describe a kind of pure attention given to an object and its sensuality, without applied knowledge or intentional will. Shapes, ornaments, images and especially the material of an object, with its colour and surface effects, are the elements of this aesthetic experience[20]. No previous stock of knowledge, norms or experiences are therefore required for this experience to take place[21]. It is all about the interplay of appearance and the purely sensual experience of the things.

Semantics: In addition to aesthetic or functional reasons for choosing particular materials, the latter can also be selected or combined because they have specific semantic qualities[22]. Design theory refers to the connection between semiotics and object design as the creation of a 'product language' (Produktsprache). The term 'product language' means that in addition to practical functions being derived from the physical aspects of an object and aesthetic functions being derived from the sensual aspects of an object, actual design elements (such as materials) can also be understood semantically[23]. Consequently, the material design of objects offers symbolic meanings which can be comprehended or interpreted by the observer[24]. These significations are not native properties of the material substance, but are rather (socio-) cultural ascriptions produced by the viewers themselves.

Like images and other non-verbal signs, objects and materials are polysemic[25]. They are carriers of meanings (Semiophoren) and can also be classified as 'imprecise signs' (unscharfe Zeichen)[26]. Furthermore, a material's meaning cannot not be interpreted in a blanket way but is rather activated in certain situations or social contexts[27]. Material can be 'semantically charged', 'de-charged' and 're-charged' over time[28]. For example, a specific material can be assigned to certain milieus, social classes or social identities[29]. The materiality of things could thus symbolise social or cultural conceptual worlds[30]. This signification attached to material becomes concrete when we consider how some unpretentious objects have been classified as prestigious or luxury goods because of their precious materials[31].

The material substance is related to its usability, but this affects the aesthetic appearance and meaning of an object[32]. The three object properties outlined above always occur simultaneously. They are closely interwoven, inseparable, and can also merge with one another[33]. Precisely which

18 This timelessness experienced during aesthetic perception is described by Seel (1996, 50) as 'Modus des Verweilens', by Iser (2003, 176–202) as 'Gegenwart des Ästhetischen' and by Mersch (2001, 273–300) as 'Sensibilität des Augenblicks'.
19 Böhme 1995, 32–34; Kleimann 2002, 107–112.
20 Böhme 1995, 51–56.
21 Maase 2007, 89–93.
22 Hahn 2003, 29–51; 2015, 31 f.; Scholz 2019, 20.
23 Steffen 2000, 6–8; Heufler 2016, 23–25. 33–35; Reinhardt 2018, 7 f.
24 Bürdek 2015, 148–154; Heufler 2016, 46 f.; Reinhardt 2018, 7 f. 15.
25 Hodder 1989, 250–269; Hahn 2003, 29–51; 2005, 137–142; Kienlin 2005, 6 f.
26 Hahn 2005, 122–129.
27 Raff 2008, 14. 22 f.
28 Raff 2008, 15.
29 Bosch 2014, 75; Swift 2014, 203.
30 Kienlin – Widura 2014, 31–38; Heufler 2016, 33 f. For example, on the magic and healing capabilities of materials, see Raff 2008, 42–46. On the use of certain materials as historical references, including the use of spolia, see Raff 2008, 83–87.
31 See Haug – Hielscher, this volume. On the relationship between semiotics, status symbols and prestigious goods in archaeology, see e. g., Burmeister 2009, 73–102; Hildebrandt et al. 2014, 237–240.
32 The same applies to an object's form, ornament and images: see Hielscher, forthcoming.
33 Hahn 2005, 117; Böhme 2016, 44–46.

aspect of materiality is perceived depends upon the context of the object, the particular circumstances of action and the disposition of the subject[34]. This will be discussed in detail below using the example of the marble tables. Prior to that discussion, this group of objects, known as *mensae*, will be briefly introduced.

Mensae: A Short Definition, the Development of the Type and their Intermateriality

Mensae are a special type of Roman marble table[35]. They are characterised by the construction of their four legs, each of which had a rectangular base and decoration on the outward-facing side (Fig. 1). The legs consist of three areas: an upper end ('capital') which could carry ornamental motifs and occasionally figurative elements, a straight or downward tapering shaft with or without flutes, and feet in the form of sculpted feline paws[36]. The tabletop is always rectangular. Numerous examples of this group of marble tables have been found in the *atria* of Pompeian *domūs*[37].

Mensae have been chosen for the following analysis because they hold a special position in the genre of marble tables[38]. Compared to other types, these four-legged examples presented numerous disadvantages from a rational, technical and functional perspective. They were extremely fragile, breakable, expensive and difficult to transport. They remain the most unstable of all known stone tables and statistically have the highest breakage rate. The paws and the narrow shafts of the legs are extremely difficult to carve and had to be secured with additional grouting and struts[39]. Consequently, form and materiality contradict one another to a certain extent. These static problems serve as one argument for the scientific hypothesis that wooden predecessors had to exist[40].

The existence of this table form can be traced back to the 5th century B.C. when they appear on Attic vase paintings in the context of *symposia* (Fig. 2a–b)[41]. This Greek furniture, made with timber rather than marble, has the same fluting on the front of the legs, the carved feline feet and round bosses at the top of the supports (Fig. 2b)[42]. These design features are almost identically reproduced on the marble tables from Pompeii – the round, ornamental bosses can be identified on many

34 Hahn 2005, 18; Kalthoff et al. 2016, 26–29.

35 Moss (1989, 44–52. 794–853) defined them as 'Type 10'. This paper focuses on one single, particular type of marble table, with the intention of bringing together shape-related objects. Creating a typology of marble tables by the number of (or decoration applied to) their legs, however, is methodologically inappropriate in terms of reflecting the role of this type of furniture in the ancient household: see Dickmann 1999, 110 n. 320. The development, design and use of *mensae* cannot be understood by a material-inherent typology, but rather by the transformation of domestic architecture and the integration of these tables into it: see Dickmann 1999, 108–121. 125 f. 301–309. 375–378.

36 Moss 1988, 45–47. In rare cases they may also depict the claws of a griffin. Moss (1989, 48) gives six examples, including Moss 1988, cat. nos. 51. 54 from Pompeii.

37 Sixty tables and table fragments of this type are preserved in Pompeii, Herculaneum and in the Museo Archeologico Nazionale di Napoli: see Moss 1988, 799–816. 821–848 cat. nos. D8 – D31. D39 – D74 and Dickmann 1999, 115. Eight *mensae* are completely preserved and still carrying their tabletops. A list of them can be found in the appendix.

38 Marble tables in general have rarely received scientific attention, despite their richness of form and artistic elaboration. Those from Pompeii were discussed for the first time on a smaller scale by Pernice (1932, 1–12). In the 1980s, Robert Cohon and Frederick Moss created different typologies and chronologies for various kinds of Roman marble tables: see Cohon 1984, 20–151; Moss 1988, 11–54. Here we find types like 'multiple/standing/seated figures', 'protomes on feline feet', 'squared pillars', 'knotty clubs' or 'tables with three/four supports'. These studies and the observations formulated therein on the *decor* and functional spectrum of this furniture still constitute the current state of research: cf. De Carolis 2007, 110–114; Sinn 2015, 304–306.

39 On these negative criteria, see Moss 1988, 44 f.

40 Deonna 1938, f.; von Hesberg 1980, 434; Cohon 1984, 21; Moss 1988, 49 f.

41 Boardman 1990, 122–131; Andrianou 2006, 251–257; 2009, 50–59.

42 See, for example, the bowl of Makron (New York, Metropolitan Museum of Art, inv. 20.246); Murray 1990, Pl. 16 Fig. A.

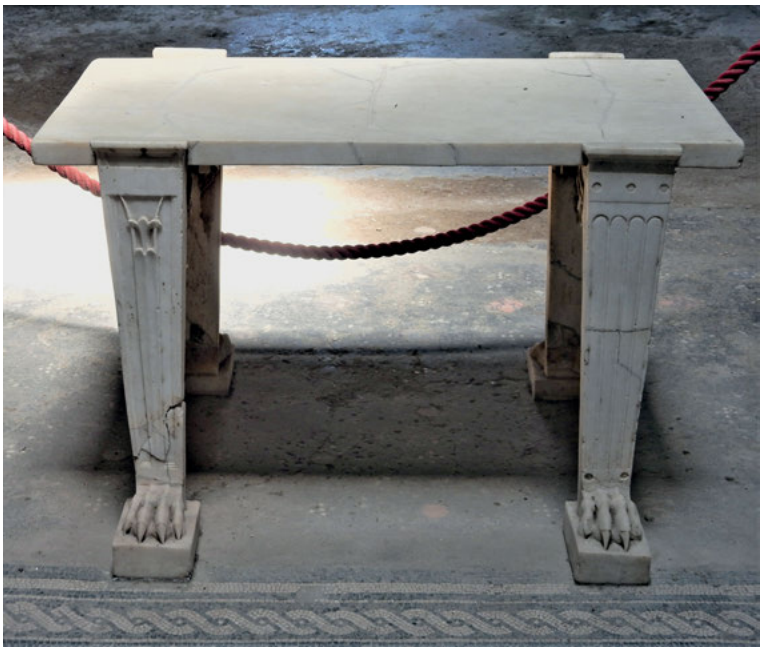

Fig. 1: Pompeii, Casa di Marco Lucrezio Frontone (V 4,a), atrium with *mensa*.

mensae (Fig. 3) and are interpreted as a visual reflection of the nail heads on wooden tables. Two different and separately discovered *mensae* table legs from Pompeii support this interpretation[43]. Made of grey and white marble, designed with ornamental flutes and standing on paws, each of these leg fragments is topped with a flat panel with several (two[44] and three[45], respectively) small drill holes in it. According to Christopher Moss, these holes are intended to hold light decorative attachments made of bronze, such as bosses. They may thus refer even more clearly to the original materiality of the metal nails. Furthermore, scattered finds of bronze *mensae* legs (for example in the cargo of the Mahdia shipwreck[46]) and bronze fittings for wooden legs provide evidence for the existence of *mensae* in materials other than marble[47]. One such fitting has even been found in Pompeii[48].

However, a direct and linear development or connection between the Greek *symposion* tables, the bronze fragments and the marble tables of the Early Imperial period is not supported by current research. Studies of these pieces of furniture are too fragmentary. Yet the previous considerations show that the formal design of *mensae* already existed before they became popular in Roman domestic spaces. The material transfer to marble was obviously particularly attractive, in spite of the disadvantages of marble *mensae* described above[49].

Usually, the *mensae* from Pompeii were made from white marble, with coloured stones only rarely used. However, no local marble was employed (from Luni, for example), but rather Pentelic marble from Attica[50]. Regional workshops in Italy were apparently able to obtain materials from the entire Mediterranean area and process them. In Pompeii, one marble workshop in the Casa dello

43 Moss 1988, 826 cat. no. D 45. 836 f. cat. no. D 55.
44 Moss 1988, 826 cat. no. D 45.
45 Moss 1988, 836 f. cat. no. D 55.
46 Fuchs 1963, 29.
47 Richter 1966, 350–352; Moss 1988, 50 f.
48 This fragment was found during excavations east of Insula I 4: see Spano 1910, 277 f. Fig. 10.
49 The phenomena of material transfer, trans- and intermateriality are more profoundly addressed in the contributions by Flecker and Engels, this volume.
50 On this, compare all entries in Moss 1988, 799–816. 821–848 cat. nos. D8–D31. D39–D74.

Fig. 2a–b: Terracotta *kylix*, ca. 480 B.C.; a: general view; b: detail of the *symposion* tables; New York, Metropolitan Museum of Art, inv. 20.246.

Fig. 3: Pompeii, Casa di M. Obellius Firmus (IX 14,4), table leg of the *mensa* (detail).

Scultore (VIII 7,24)[51] is documented. The findings attest to the production of herm tables: five completely preserved examples were found, alongside 15 small herm busts, various shafts, slabs and plaques of marble[52]. Apparently, the workshop imported and acquired a wide selection of pieces and combined them to create a finished product that also used local materials[53]. In the following, the focus will be on the material qualities marble offered, because it can be assumed that the creation of marble *mensae*:

- fulfilled a *functional* need in the furnishing of the living space;
- brought certain *aesthetic* qualities to the interior design;
- could communicate certain *meanings* to an observer.

Mensae in Pompeian *Atria*: A Functional, Aesthetic and Semantic Perspective

During the final years of the Roman Republic, the interior design of the atrium changed. Water fountains and playful arrangements were installed in the centre of this characteristic reception area of the Roman *domus*. These ensembles included elaborate marble *impluvia*, fountain figures,

51 In addition to numerous chisels, squares, compasses and a saw still embedded in a block of marble, six *trapezophoroi* (table legs), five pieces of broken sculpture, two herm shafts, and numerous blocks, cut pieces and slabs of marble were documented: see Fiorelli 1861, 63. 70 f.; Sievers 1938, 36; Mustilli 1950, 215 f.; Moss 1988, 239; Eschebach 1993, 392.

52 Earlier research suggested that large-format sculptures were manufactured here: see Romanelli 1811, 204 f.; Mazois 1824, 16; Bonucci 1827, 187; Vinci 1831, 38; D'Aloe 1861, 155; see also Moss 1988, 229.

53 A few pieces of figurative sculpture were found, but unlike the herm tables these were all broken. It has been argued that the sculptures were being stored here while awaiting repair by pinning and gluing (Moss 1988, 232).

Fig. 4: Pompeii, Casa di M. Obellius Firmus (IX 14,4), arrangement of *mensa*, *labrum* and basin base beside the *impluvium*.

labra and marble tables (Fig. 4)[54]. By the end of the 1st century B.C., these tables no longer stood in front of an atrium wall, but rather directly adjacent to the *impluvium*[55]. The four-legged *mensae* appear during this developmental period[56]. Nine of the twelve examples with known findspots in Pompeii were set up immediately next to the *impluvium*[57]. They were placed along the visual axis of the entrance and (ideally) in the symmetrical centre of the room. Sometimes they stood alone and thus became a visual centrepiece, emphasised by virtue of their positioning, size and physical presence. This practice corresponds remarkably well to descriptions provided by Varro[58] and seems to have remained popular until the destruction of the city in A.D. 79[59]. All in all, these

54 Dickmann 1999, 114 f.; Haug 2020, 484 f. 488–493. This 'filling' of the atrium with furnishings could only occur because the garden area was established as a living area: see Dickmann 1999, 125. The living rooms previously located around the atrium were moved to the peristyle in the posterior part of the house. Concerning this relocation of the living quarters, see Dickmann 1999, 144–151.

55 Dickmann 1999, 114. Solid stone tables – initially mostly made of travertine – had already been an important furnishing element in Pompeian *atria* since the 2nd and early 1st century B.C. These early examples were intended to stand against a wall because they were carved on only three of their four sides. This is true for *monopodia* as well as two-legged tables with closed sides: see Pernice 1932, 1–5; Dickmann 1999, 108 f.; Haug 2020, 201.

56 Dickmann 1999, 115 f.

57 For this list, see Moss 1988, 333 f. Eight of these nine examples are mentioned in the appendix (nos. 2–9). One more table from I 4,9 must be added: cf. Moss 1988, 829 f. cat. no. D49. This table, made of medium grain, semi-translucent white marble with mica and decorated with vine scrolls and volutes, is stored in the site's magazines (Granai del Foro) today. The ornamental motifs are unique, with the decoration varying from one leg to the other. Thanks to the presence of production marks, this table has been interpreted as an ancient pasticcio. Moss (1989, 828) suggests that we can identify different artisans working in one single workshop.

58 Varro Ling. 5, 125.

59 Since the Augustan period, interiors included herms with portraits of the ancestors: see Dickmann 1999, 118–121; Haug 2020, 490–493.

marble tables were probably the most impressive and most expensive pieces of furniture in Pompeian houses[60].

A functional perspective: In Roman Pompeii, there was no fixed, canonical interior design, as established in Western European Modernism. Most furniture from Roman households could be used flexibly depending on the situation. Dining couches, stools, side tables, lighting equipment and so on were not bound to one single room but were rather arranged situationally[61]. It is self-evident that, unlike their wood or bronze counterparts, marble tables do not comply with these requirements. They were definitely not easily moved. By using marble for these tables, artisans created something new, something quite heavy and made of a material that is resistant and durable when compared to timber. Because all of these marble tables stand with their feline feet on pedestals or small plinths[62], they evoke a statuesque impression[63].

On the basis of literary sources[64], the most common assignment of function states that these tables served as a representative place to display the precious tableware of the household (*aenea vasa*) in the atrium (*ad impluvium*)[65]. And indeed, numerous objects and finds matching that description have been documented together with marble tables in Pompeian households[66]. Of course, the location of the objects must be critically examined in each individual case, but the general impression is sufficient evidence to suggest that at least vessels, devices and other objects were probably presented on these tables in the atrium. There is also evidence to suggest that small format bronze statues were displayed on *mensae*[67]. In these cases, the tables create a special and highly visible place of display by positioning them on an elevated surface within the room; from a practical perspective, then, *mensae* thus served as large, impressive marble bases for smaller objects of particular value or significance. This spatial setting highlighted the objects, excluding them from the 'everyday' world. The positioning of the marble tables in the atrium, preferably on the central axis with *fauces* and *tablinum*, meant that they were prominently staged for every visitor and passer-by (when the front door was open). Their function as magnificent 'display tables' thus becomes absolutely clear. Ironically, the archaeological record suggests that these tables were also used as a place for the pots and pans of everyday life, as well[68].

Some *mensae* from Rome and other cities in Latium can be identified as donations made to patrons on the basis of their inscriptions. As 'quasi-public monuments of dignity'[69], these examples

60 Eck – von Hesberg 2004, 158.

61 Mols 1999, 129 f. 146; Dickmann 1999, 108. 281 f.; Deppmeyer 2011, 225. For wooden and bronze tables, see Mols 1999, 37–43; Croom 2010, 68–74. Some bronze tables even had a folding mechanism consisting of collapsible legs and a tabletop: see Klatt 1995, 349–573; Hielscher, forthcoming.

62 Moss 1988, 45.

63 Placing three-dimensional objects on pedestals can be compared with the framing of two-dimensional images. In visual studies (Bildwissenschaften), frames are considered devices that separate an image from its surroundings, making it distinguishable. A frame creates distance, removes the image from the real world surrounding it and assigns it an independent space. On frames in Classical Antiquity, see Platt – Squire 2017; Haug 2015, 10–12. Identifying frames for three-dimensional objects is problematic in so far as object boundaries and image boundaries are usually congruent: see Gombrich 1982, 137. An image-like quality of things can, however, be achieved by using bases and pedestals. The principle of creating the pictoriality through the use of bases was applied in Greek vase painting of the Classical period: see Schefold 1934, 30–75; Oenbrink 1997, 194–197.

64 Varro Ling. 5, 125: *Altera vasari mensa erat lapidea quadrata oblonga una columella; vocabatur cartibulum. Haec in aedibus ad compluvium apud multos me puero ponebatur et in ea et circum eam aenea vasa: a geredo cartibulum potest dictum.*

65 Pernice 1932, 9; Moss 1988, 281–290; Dickmann 1999, 110; Eck – von Hesberg 2004, 159; Croom 2010, 79–84; Sinn 2015, 304. Although literary sources after Varro (Liv. 39, 6, 7; Plin. HN 34, 14) equate *cartibula* with *monopodia* (single support tables), this function can also be assumed for the two- and four-legged stone tables. Eck and von Hesberg (2004, 159) remain uncertain as to whether a *cartibulum* is a concrete table form or a functional designation.

66 Moss 1988, 281–290.

67 Moss 1988, 277–281; Eck – von Hesberg 2004, 162; Haug 2020, 485 f.

68 Caruso 1979, 139; Moss 1988, 240.

69 Dickmann 1999, 118.

transform the atrium of a *domus* into a 'public space accessible to the inhabitants of the city'[70] and represent an extraordinary declaration of loyalty and materialised form of public honour. At this point, it is difficult to maintain the division between the functional and semantic qualities of marble tables. It is possible that Pompeian *mensae* also brought a new, politically representative dimension to the furnishing of *atria* by imitating this practice identified in other cities. However, since no inscribed *mensae* have been found in Pompeii, this function must remain hypothetical in that location[71].

Due to the material properties of marble, *mensae* occupy fixed spots in the house and their spatial setting is invariable. Everyday life and activities must have either moved around them or incorporated them. The tables could be used for display during ceremonies or festivities, such as weddings or births, or could have been actively integrated into such celebrations through practical use[72]. The contexts of numerous marble tables in Pompeii indicate that they were also involved in domestic cult activities, serving as altars in front of niches and household shrines, for example[73].

An aesthetic perspective: Creating a four-legged table in marble not only affected its mobility, it also gave it a completely unique aesthetic appearance[74]. The visual impression created by *mensae* was influenced to a great extent by their materiality, but their formal design, ornamentation and spatial setting were also important aesthetic factors. As already described, *mensae* were highly visible, emphasised and staged as centrepieces in the house. Their general visual impression was quite balanced due to their rectilinear scheme and symmetrical linear form. The preferred frontal view must have been directed towards the tables' long side. *Mensae* were designed to be symmetrically identical ('spiegelsymmetrisch') and therefore possess a clear axis; their orientation was typically in harmony with the spatial axis of the room, emphasising it[75]. The corner-facing feline paws established directionality, facilitating views from the front, back and sides[76].

Sunlight shining through the *compluvium* created a 'spotlight' on the marble tables, so that they would have attracted a great deal of attention. The material aesthetics of the marble could thus be experienced in great and precise detail. There is no evidence that these objects were painted or stuccoed. Their materiality was prominently visible, and thus the impression that they made depended upon the type of marble employed. The Pompeian pieces were made of white, glossy varieties[77] and depending on the structure of the marble, the table legs could appear opaque and dull, translucent or sometimes even transparent[78]. The four supports of the *mensae* were extremely slender, and in some cases, they tapered towards the bottom. Together with the fluting, which removed even more material from their form, this permitted light to permeate the material, which makes some examples appear almost glassy. Marble varieties with a high component of mica are characterised by glittering effects under light, sometimes with a golden shimmer. These marbles thus give the tables a fine glimmer or glow, which attracts the eye. Other types of marble have distinctive grains running in different directions, splitting into countless fine linear patterns[79]. The eye follows their individual courses, and their complex mergers and separations (Fig. 5a–b).

70 Dickmann 1999, 118; see also Eck – von Hesberg 2004, 158.

71 Moss 1988, 251 f.; Dickmann 1999, 116 f.; Eck – von Hesberg 2004, 143 f.

72 Haug 2020, 118 f. 484.

73 A marble table discovered next to the eponymous fountain in the Casa della Fontana Grande (VI 8,22), has been interpreted as a support for a portable altar, bronze patera, vases and lamps. A comparable set of objects (including figures of the Lares) was found on a marble table in the Casa di Trebio Valente (III 2,1). These and further examples are discussed by Moss (1989, 260–268).

74 For the aesthetic perception of marble in Roman antiquity, see the contributions by Beck and Barker, this volume.

75 Moss 1988, 334; Haug 2020, 493.

76 Wolf 2019, 13.

77 Moss 1988, 797 cat. no. D6. 812–824 cat. nos. D39. D40. 825 cat. no. D43. 826 f. cat. no. D46. 827–840 cat. nos. D47–D61. 842 cat. no. D64. 844–847 cat. nos. D67–D73.

78 On transparency as an aesthetic quality of materials in Pliny's *Naturalis historia*, see Haug – Hielscher, this volume.

79 Moss 1988, 826–828 cat. nos. D46. D48; Appendix, no. 3.

Fig. 5a–b: Pompeii, Casa di Poppaeus Sabinus (IX 5,11), atrium with *mensa*; a: general view; b: detail of pavonazetto table legs.

Only two of the eight tables with preserved tabletops were produced from a single material[80]. In all the other examples, different types of marbles were combined. The table in the Casa del Fabbro (I 10,7), for example, was made from two different types of white marble[81]. The legs and tabletop do not differ in colour, but rather in their crystalline structure and translucence. It is notable that the more translucent marble was used for the slender legs, presumably to emphasise the fragility of the construction. Another unique material combination can be found in the Casa degli Scienzati (VI 14,43). In this case, the legs were produced from pinkish portasanta and combined with a tabletop of white Breccia di Settebasi[82] (Fig. 6). Here a bi-chromatic and visually conspicuous distinction between the legs and the tabletop becomes apparent. By contrasting with each other via their materiality, these individual parts of the table come into visual competition, vying for the beholders' attention. Further, the pigmentation of the coloured marble gains significance through this contrast with the white. This decorative phenomenon is not an isolated case, however. In three further examples, white marble table legs were combined with bardiglio, a fine-grained grey marble with white mottling[83] (Fig. 7). Here again, the aesthetic effects of dichroism and contrast become apparent. Unfortunately, we do not know whether there were inverse examples of this colour combination, in which table legs produced in grey marble were combined with white tabletops[84].

In summary, these marble tables are clearly an aesthetically pleasing furnishing element. The visual qualities of the marble are used in a variety of ways to highlight these pieces. The colour, shine and translucence of the white and coloured marble were not simply composed in an unthinking way but were rather combined with the intention to produce specific aesthetic effects.

A semantic perspective: With regard to the meaning of marble tables, three sets of semantic oppositions will be addressed: placement in public versus private space, the use of imported versus regional materials and the creation of luxurious versus 'standard' types. Impressive tables made of marble or other stones find their origin in public space. They most commonly are found in sanctuaries, where they have been identified as votive offerings, monuments of honour or sacrificial tables[85]. In public space, especially two-legged tables that were quite similar in design to

80 Appendix, nos. 4. 8.
81 Appendix, no. 5.
82 Appendix, no. 9.
83 Appendix, nos. 1. 7. 8; Moss 1988, 823–826 cat. nos. D41. D42. D44. D45. 842 f. cat. no. D65. 847 cat. no. D73.
84 Moss 1988, 823–826 cat. nos. D41. D42. D44. D45. 842 f. cat. no. D65. 847 cat. no. D73.
85 Deonna 1938, 24–29; Moss 1988, 241–244; Dickmann 1999, 109; Eck – von Hesberg 2004, 163–166. Further examples of public stone tables are the *mensae ponderariae* from Tivoli and Pompeii (Eck – von Hesberg 2004, 144), as well as prize tables ('Preistische') in *gymnasia* (Eck – von Hesberg 2004, 162 f.). Two-legged marble tables were erected as funerary monuments from the Early Imperial period: see von Hesberg 1980, 433 f. It is assumed that the function of

Fig. 6: Pompeii, Casa degli Scienziati (VI 14,43), atrium with *mensa*.

Fig. 7: Herculaneum, Palaestra (Ins. Or. II 4), western apsidal room with *mensa*.

four-legged *mensae* (although closed on the sides) appeared[86]. A handful of such examples from public spaces have been preserved in the Vesuvian area, including tables from the Area Sacra Suburbana of Herculaneum and the Sanctuary of Isis in Pompeii, which likely served as offering tables or were used for other cultic activities[87]. Furthermore, stone tables were erected in funerary contexts as grave markers[88], while the largest *mensa* from the Aula Absidata in Herculaneum was supposedly a base for the statue of an emperor (Fig. 7)[89].

In domestic space, *mensae* would have been eye-catching pieces of furniture with functions that were flexible and situational[90], but their characteristic form and materiality created a specific impression or atmosphere in public spaces. White marble, which was used to build the majority of Pompeian *mensae*, was also employed to construct large public buildings, squares and temples, and thus it was associated with a kind of urban or public atmosphere. If we transfer this materiality to a domestic context, perhaps objects such as *mensae* seemed to be elements of architecture more than mobile furniture. Their central position in the atrium, in combination with their marble composition, gave these tables a more public/representative character[91].

In general, marble tables could be fabricated from up to seven different types of marble[92], which originated from throughout the entire Mediterranean area. In addition to numerous white marbles, every coloured marble known in Roman architecture (over 20 separate varieties) was used to build *mensae*[93]. Unique varieties of coloured marbles were located topographically and labelled according to their region of origin[94], e. g., *marmo numidicum* or *marmor phrygium*[95]. Imported stones could thus be classified as 'foreign' or 'native', and naturally the former had the charm and

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the table corresponds to that of an altar (von Hesberg 1980, 438). Marble tables were also used as bases for equestrian statues during the Early Imperial period.

86 Eck – von Hesberg 2004, 146–158.

87 Moss 1988, 244 f.

88 Moss 1988, 253–260.

89 Suggested by Maiuri 1958, 182; Moss 1988, 244. This concrete definition of function needs to be proven in detail. For further public contexts, see Moss 1988, 250–252.

90 Dickmann 1999, 109; Eck – von Hesberg 2004, 166.

91 Dickmann 1999, 118.

92 Moss 1988, 55 cat. no. A 219.

93 See Moss (1989, 66–82) for an alphabetical list of the different types, their origins and exact use. White, coloured, regional and imported marble types were often combined in a single piece.

94 On the symbolism of different stones, see Raff 2008, 39–31. This symbolism changed over the course of time: various sources show that during the Imperial period, porphyry was associated mainly with Ptolemaic Egypt, whereas in Byzantine times this material was mainly understood as a reference to Rome; see Raff 2008, 15.

95 See also the contributions by Beck and Barker, this volume.

attraction of the exotic[96]. Furthermore, the economic value of a marble was linked to the costs of quarrying and transporting it from its point of origin[97], something that Pliny strongly criticises in connection with the use of marble in domestic architecture[98]. Consequently, the materiality of *mensae* could symbolise the costs associated with their production, communicating the wealth and prosperity of their owners[99]. From this perspective, these tables did not need precious *aenea vasa*, statuettes or tributes from devotees placed upon them in order to appear representative. Their special materiality meant that they themselves were a symbol of the influence and prestige of the *dominus*. But let us have a closer look at the *mensae* of Pompeii.

Deducing semantic interpretations from the varieties of marble employed in Pompeian *mensae* is methodologically delicate. Moss' observations provide us with the basic evidence to determine stone types and their origins. To confirm or (where appropriate) clarify Moss' marble identifications, a comprehensive re-evaluation of the marble tables from Pompeii would be necessary, but we can at least make some brief remarks here.

First of all, it is striking that Pentelic marble from Attica was favoured over white marble from Luni. This is particularly remarkable because most of the tables were produced after the quarries at Luni had been opened, meaning that a cheaper high-quality material was already available in Italy[100]. Together with other marble objects[101], tables are generally considered to be imported luxurious furnishings[102]. Their forms, decoration and especially choice of material are generally defined as the work of the 'neo-Attic'[103] workshops. Influenced by discoveries such as the Mahdia shipwreck, marble tables have generally been included in a group of furnishings thought to have been imported from the East[104].

But many marble tables do not fit into this common interpretation[105], including the *mensae* from Pompeii. Among these we find numerous crossovers between different types of marble, some of which were imported, some of which had an Italian origin. A small group of *mensae* in Pompeii[106], Herculaneum[107] and the Museo Archeologico Nazionale di Napoli (MANN)[108] share similar forms, proportions and ornaments: their legs, which are produced in Pentelic marble, are fluted and topped with panels depicting bosses; they stand universally atop sculpted paws[109]. Identical legs

96 Raff 2008, 74. 79 f.

97 Eck – von Hesberg 2004, 159; Raff 2008, 46–49; Sinn 2015, 302.

98 Plin. HN 36, 2; Sinn 2015, 302–304. Vitruvius (De arch. 1, 2, 8) suggests using locally available materials for the construction of buildings in order to save money.

99 Dickmann 1999, 118; Hölscher 2017, 32.

100 On this observation, see Moss 1988, 56–59.

101 Tables are only one of many object categories that appear in marble over the course of the late 2nd and 1st centuries B.C.; others include *candelabra* (Cain 1985; Cain – Dräger 1994), *putealia* (Golda 1997) and craters (Grassinger 1991), for example.

102 Eck – von Hesberg 2004, 159; Sinn 2015, 302. On the marble furnishing elements from Pompeii that are now in the MANN, see Carrella (et al. 2008) with a list of further literature.

103 This term describes the notion that the increasing demand of the Roman consumer classes for furnishings of 'Greek' style during the 2nd century B.C. was initially regulated by imports but could no longer be met over time. This led to a migration of craftsmen and workshops – and with them a migration of stylistic forms – from the 'Hellenistic' east to the 'Roman' west. The imported products influenced local decorative forms, which led to adaptation; these forms were then produced on the Italian peninsula. The research on the phenomenon of Neo-atticism is too extensive to be listed here in its entirety (see, among others, Börker 1973, 283–317; von Hesberg 1981, 201–245; Cain – Dräger 1994a, 809–830; Cain 1995, 893–896). Today, however, the simple linearity of this process is being questioned: see Maschek 2008, 185–217; Wallace-Hadrill 2008, 315–434; Reinhardt 2018a, 299–325.

104 Moss 1988, 196 f. For the rise of marble in Late Republican and Early Imperial architecture, see the contributions by Beck and Barker, this volume.

105 See Moss 1988, 193–206.

106 Appendix, no. 7; Moss 1988, 836 cat. no. D54. 846 cat. no. D71.

107 Moss 1988, 797 f. cat. no. D6.

108 Moss 1988, 813–815 cat. nos. D21. D25. D28.

109 Moss 1988, 203.

have been found in Kos[110], Delos[111] and Delphi[112], and thus it is unlikely that they are of Italian provenance. Yet the preserved tabletops from the corresponding *mensae* in Pompeii are made of Italian marble. It seems obvious, then, that the legs were imported to Campania and then combined with tabletops made from regional material[113].

Consequently, there is less reason to interpret these *mensae* a priori as 'exotic' luxury imports on the basis of their materiality[114]. Rather, they appear to be innovative creations that utilised materials and forms drawn from a wide range of available and accessible design ideas[115].

Summary: The Interconnectedness of Materiality and Object Properties (Function, Aesthetics, Semantics)

A distinction between the function, aesthetics and semantics of materials and object properties is methodologically necessary. Only by distinguishing these different qualities can we systematise our perspectives on material objects, the 'things' of the world. However, this relates to the theoretical and methodological realm, rather than to the de facto perception of materials and things. In the real world, function, aesthetics and semantics are connected in objects and when they are perceived, these categories create a network of relationships and can thus begin to blur together. Accordingly, it is necessary to think about materiality in very specific situations and perceptual contexts, as well as from concrete perspectives.

Marble tables are a good example of this approach. Marble was neither arbitrarily nor pragmatically employed for the construction of *mensae* in Pompeian houses. Marble tables were not mobile. In this respect, they were clearly distinguishable from the other furniture in the household. Consequently, they could not have served as dining and side tables, but were rather static furnishings, much like sculpture and or architectural elements. The plinth upon which the tables were set and the visuality of the marbles enhanced this impression. Their 'solidification' and 'petrification' allowed four-legged tables to become statuary elements of representation, 'staged' in terms of their aesthetic and semantic effects. Carving a four-legged table out of marble was a technical challenge, because the material and form were not compatible, since these tables were originally produced from timber. At the same time, *mensae* derived their decorative charm from the use of marble. The slender legs, for example, looked more spectacular when made from a translucent marble, although this choice of material also emphasised their static fragility. The various combinations of different stones – some local, some imported (and thus exotic) – left no doubt that the choice of materials was an intentional decision integral to the tables' designs. The combination of the characteristic shape and the use of marble in the production of *mensae* gave rise to a 'product language' that was specific to these tables. For the observer, this language opened up various semantic interpretations and potential associations: for example, the indication of a 'public' space, or the display of the owner's economic power. The different types of stone were consciously combined, staged and displayed. This was intended to achieve certain functional changes, aesthetic effects

110 Mendel 1914, 37 f.; Moss 1988, 203.

111 Deonna 1938, 23 f.; Moss 1988, 203.

112 Moss 1988, 203.

113 On the downside, complete marble tables were rarely imported (Moss 1988, 206).

114 The importance of Greek workshops in the production of marble tables is probably overestimated, with Italian workshops of much greater import: see Moss 1988, 206; Maschek 2008, 186. Stonemasonry workshops extended across the Italian peninsula and are documented especially near quarries: see Moss 1988, 224–229.

115 Haug (2020, 11 f.) introduces therefore the concept of 'Decoscapes'. Wallace-Hadrill (2008) describes this phenomenon as a part of Rome's cultural and consumer revolutions. In this reading, Roman craftsmen and workshops acquired forms, materials and products from abroad and transformed them into something new, independent and original (Wallace-Hadrill 2008, 360 f).

and symbolic statements. But to reduce a marble table to only one of these characteristics would be far too simplistic.

Adrian Hielscher
Christian-Albrechts-Universitat zu Kiel
Institut für Klassische Altertumskunde/Klassische Archäologie
Johanna-Mestorf-Str. 5
24118 Kiel – Germany
hielscher@klassarch.uni-kiel.de

Appendix: List of Four-Legged Marble Tables (*mensae*) from Pompeii and Herculaneum

The *mensae* from Pompeii and Herculaneum that are particularly relevant to this paper are listed below. These pieces were selected because their precise findspots are documented, they are visible in situ today and their tabletops are preserved as well. The information collected here is based on the catalogue produced by Moss (1989).

1. Herculaneum (Aula Absidata) (Fig. 7)
Reference: Moss 1988, 797 cat. no. D6.
Leg material: Pentelic marble (fine-grained, fairly translucent white marble with golden tinges and mica streaks).
Leg decoration: The fronts of the shafts are fluted with four round reeds; at top and bottom of each shaft is a framed panel with three round bosses and an astragal frame; legs end in paws.
Tabletop material: Bardiglio nero.
Date: Julio-Claudian/Flavian.
Comments: This decoration appears with slight variations in many domestic contexts in Pompeii (Moss 1988, cat. nos. D50–D53).
Bibliography: Maiuri 1958, 122–126; von Hesberg 1980, 425; de Vos 1982, 283.

2. Pompeii (VII 12,28, Casa del Balcone Pensile)
Reference: Moss 1988, 822 f. cat. no. D40.
Leg material: Medium/fine-grained, translucent, white marble with prominent crystal structure.
Leg decoration: Tops of the legs decorated with bead and reel moulding; on the capitals of the legs comic masks, bucrania and garlands are carved in relief; sides of the bracket adorned with a scroll motif with palmettes.
Tabletop material: No tabletop preserved.
Date: Julio-Claudian/Flavian.
Comments: Only legs in Italy decorated with comic masks.
Bibliography: Fiorelli 1875, 292; Engelmann 1898, 59; Döhl – Zanker 1984, 202 f.

3. Pompeii (IX 5,11, Casa di Poppaeus Sabinus) (Fig. 5)
Reference: Moss 1988, 827 f. cat. no. D47.
Leg material: Pavonazetto (medium-grained, semi-translucent creamy white marble with delicate purple and black veins).
Leg decoration: Each shaft is crowned by a cavetto moulding; two volutes on the capital rise to the top of the support; area between the volutes is filled by a palmette; only one paw has survived.
Tabletop material: Breccia di Settebasi (brecciated stone with white clasts of various sizes in a purplish-black matrix).
Date: Mid-Julio-Claudian to A.D. 79.
Comments: Tabletop has been reassembled on a modern plate.
Bibliography: Fiorelli 1877, 247; Mau 1879, 194; Grant 1975, 56 f.

4. Pompeii (V 4,a, Casa di M. Lucretius Fronto) (Fig. 1)
Reference: Moss 1988, 830–832 cat. no. D50.
Leg material: Medium/large-grained, translucent white marble.
Leg decoration: Fluted and reeded legs with different ornament motifs.
Tabletop material: Medium/large-grained, translucent white marble.
Date: Julio-Claudian/Early Flavian.

Comments: This combination of disparate elements has no parallels elsewhere in Italy. Two supports (A + B) came from the same workshop but have different ornamentation. The other two legs (C + D) were recycled from a previous table. All four legs are carved from precisely the same quality of marble and are similar in their proportions, fittings and bases. In general, they are carved and finished in similar fashion. The four legs must represent the products of a single shop, patched together (in a final phase?) into a single table.
Bibliography: Sogliano 1900, 203–205.

5. Pompeii (I 10,7, Casa del Fabbro)
Reference: Moss 1988, 832–834 cat. no. D51.
Leg material: Very fine-grained, fairly translucent white marble.
Leg decoration: Fluted legs crowned with a cyma recta moulding; lower portion of the capital presents a frame around three bosses.
Tabletop material: Fine-grained, opaque white marble.
Date: Mid-1st century B.C. to Julio-Claudian period.
Comments: Common model of decoration (see also Moss 1988, cat. nos. D47.D50. D52. D56).
Bibliography: Della Corte 1933, 308; Elia 1934, 279; Allison 2006, 161.

6. Pompeii (IX 14,4, Casa di Obellio Firmo) (Fig. 3–4)
Reference: Moss 1988, 834 f. cat. no. D52.
Leg material: Pentelic (fine-grained, semi-translucent white foliated marble with mica streaks).
Leg decoration: Four round-headed reeds with fillets decorate the shaft; at top and bottom a beaded frame around three bosses.
Tabletop material: Bardiglio (Fine-grained, opaque grey and white marble).
Date: Julio-Claudian.
Comments: Similar models of decoration have been found on Delos (Deonna 1938, 23 f.).
Bibliography: Sogliano 1905, 250; Spinazzola 1953, 337; de Vos 1982, 207.

7. Pompeii (I 7,11, Casa dell'Efebo)
Reference: Moss 1988, 835 f. cat. no. D53.
Leg material: Pentelic (fine-grained, semi-translucent white marble with mica streaks).
Leg decoration: Top of each shaft is crowned with a *cyma recta* moulding and a frame with three bosses; four reeds run down the shaft.
Tabletop material: Bardiglio (Fine-grained, opaque grey and white marble).
Date: Mid-1st century B.C. to Julio-Claudian.
Comments: Similar models of decoration have been found on Delos (Deonna 1938, 23 f.).
Bibliography: Maiuri 1927, 40; Caruso 1979, 1318.

8. Pompeii (VI 7,19, Casa d'Inaco ed Io)
Reference: Moss 1988, 837 f. cat. no. D56.
Leg material: Fine-grained, opaque white marble with some grey mottling.
Leg decoration: Undecorated tops; body has three reeds; paws were carved separately.
Tabletop material: Fine-grained, opaque white marble with some grey mottling.
Date: Julio-Claudian.
Comments: Shares two extraordinary features with appendix entry no. 5: the unusual fitting of the bracket and the addition of rubblework masonry between two opposed legs.
Bibliography: Fiorelli 1875, 113; Fadda 1975, 1679.

9. Pompeii (VI 14,43, Casa degli Scienzati) (Fig. 6)
Reference: Moss 1988, 840 f. cat. no. D62.
Leg material: Portasanta (?) (fine-grained, opaque pinkish-buff stone with fine brecciation).
Leg decoration: Without decoration on the front, volutes on the sides of the brackets.
Tabletop material: Breccia di Settebasi (brecciated stone with thin, light-coloured clasts in a dark matrix).
Date: Mid-Julio-Claudian/Early Flavian.
Comments: Another piece of this table is probably stored in the Granai del Foro magazines (Moss 1988, 841 f. cat. no. D63).
Bibliography: Avellino 1846, 90; Breton 1855, 287. 379–381; Fiorelli 1875, 430; Nissen 1877, 21. 419 f.

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Ellen Swift

Materiality and Object Design and Function: Perspectives from Artefacts

Abstract: The aesthetic qualities of materials used for artefacts have rarely been considered, and aesthetics in relation to the functionality of objects is especially neglected. The paper addresses these issues through an examination of a particular object category, vessels and containers, with a focus on three types of materials, namely glass, metal and organic materials. Firstly, definitions relating to aesthetics are discussed, followed by an overview of our knowledge of aesthetic cultural values in the Roman period. The paper then investigates evidence, principally from the surviving objects of the Early Roman period, but also drawing on written sources, that allows us to gain an understanding of the ways that these materials may have been aesthetically valued in contemporary culture. It finally considers the social functions of the aesthetic features of artefacts.

Defining Aesthetic Qualities

Philosophical approaches to aesthetics provide a broad spectrum of definitions, ranging from those that seek to investigate aesthetic features as abstract qualities considered completely separately to their social context, to those in which aesthetics is embedded within social relations and cannot be considered separately[1].

There are also differences in whether aesthetic responses are considered to be truly aesthetic only when they are a reaction to exceptional or extreme experiences, or are contemplative in nature, or whether they are regarded as habitual to everyday life and a part of ordinary social actions and responses[2].

Aesthetic responses are generally agreed to be those grounded in the senses, but often involving a cognitive aspect; in practice it is impossible to separate sensory and cognitive responses[3]. They are widely agreed to involve pleasurable sensations or feelings, and this was also central to ancient aesthetic understanding[4]. Functionalist approaches originating in Socratic thought, in which objects are considered beautiful only if their properties and material qualities are well-suited, or 'appropriate' to their function[5], are clearly situated in the context of real-world, everyday uses and involve both sensory qualities and cognitive values.

For the purposes of this paper I am following Yuriko Saito's definition of an aesthetic response as one that is a reaction to the sensory or design qualities of an object, and can be a part of quotidian experience[6]; also, one that is socially situated, and which has implications for social relations[7]. In this view, aesthetic judgements are not absolute but contextual, socially constructed, at

1 For discussion, see Hanfling 1992; Leddy 2012, 23–54.

2 See e. g., Saito 2007; Leddy 2012. In this volume, Adrian Hielscher's paper takes the former approach, defining aesthetics as primarily contemplative and detached from context, separating out aesthetics from questions of function and meaning. I take the latter approach, situating aesthetics within the social context and viewing sensory aesthetic responses as interrelated with experiences that relate to other artefact properties.

3 Collinson 1992, 113; Saito 2007, 9 f.; Leddy 2012, 30.

4 Collinson 1992, 170; Destrée 2015, esp. 472–478. As Destrée describes, the importance of pleasure and the senses in ancient aesthetics is clear in debates in ancient philosophy, which discuss whether aesthetic pleasure, including that related to multiple senses, could be distinguished from more prosaic bodily pleasures.

5 For an overview, see Leddy 2012, 24–27. See also Haug – Hielscher, this volume, on the ways in which materials may be suited to diverse uses, and so termed 'polyfunctional'.

6 Saito 2007, 9 f.

7 Wolff 1982; Sorell 1992.

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least in part, and subject to change[8]. The approach taken is consistent with the attitudes that we find in ancient sources, as further discussed below.

Since aesthetic experiences are sensory experiences, so-called phenomenological approaches, which in archaeology encompass a range of divergent perspectives, are also relevant. Those that consider bodily experience, sensation and sensorial worlds are most useful in considering the aesthetics of materials[9]. A principal critique of phenomenological approaches in archaeology is that any individual and subjective sensory account differs too much from the socially embedded world of past sensory experience to be meaningful[10]. Yet it may still be useful to delineate possible sensory experiences in relation to examples of artefacts, especially since we can integrate what we know of Roman material experience from written sources (considered further below) into our approach. This is done not in any belief that modern perceptions replicate ancient experience, but rather to broaden our range of perspectives when thinking about the networks of sensory relationships within which ancient artefacts and their materials would have been situated.

In addition to exploring a range of likely or possible aesthetic factors impacting design choices for artefacts, I am interested in the potential for social action created by the aesthetic aspects of objects – what do the aesthetic features of objects, including the qualities of their materials, achieve in terms of social relations for their makers, owners, users and viewers? Anthropological perspectives that stress the socially situated nature of artefacts as things that have agency in the social world are important to the approach taken[11], as is Thorstein Veblen's theory of conspicuous consumption, which has much to offer, especially in any examination of Roman elite culture in particular[12]. There will be a focus on material choices for objects and the aesthetic qualities of these materials, but other aesthetic features of objects will also be mentioned where relevant[13].

Ancient Perspectives on Materials and Aesthetics

Roman writers interested in aesthetics drew on perspectives from the Greek and Hellenistic periods encompassing aspects such as mimesis, unity and proportion, harmony and balance, and variegation including a variety of senses[14]. Their influence on everyday aesthetics during the Roman period can be traced in books such as the architect's manual by Vitruvius[15], as well as in surviving art works from the Roman world[16]. In particular, Pliny's *Naturalis historia* constitutes a Roman discourse drawing on this wider tradition. It can be considered broadly representative of traditional aesthetic convention among the elite, providing some insights into Roman perceptions of material aesthetics, although naturally Pliny also has his own agenda, which must be taken into account, and this often involves critique of luxury[17]. Most of Pliny's remarks relate to luxury materials, although occasionally other types of material are considered. His observations about functional materials imply that value judgements for functional objects were based on practical

8 Bourdieu 1984; Saito (2007, 54–103) provides a modern case study in relation to environmental aesthetics.

9 For an overview, see Thomas 2006. Olsen (2010, 130–132) and Hamilakis (2013, 65–68) provide further perspectives on the philosophical writings of Maurice Merleau-Ponty, which largely inspired this approach.

10 Thomas 2006, 48. A fully reflexive approach that first documents a scholar's own sensorial biography has been suggested as a remedy (see Hamilakis 2013, 119), but is beyond the scope of a short article like this.

11 Gell 1998.

12 Veblen [1899] 1928.

13 In a paper of this length, it is not possible to systematically cover all materials. Ceramics is a very large field of study and so this category of material has been omitted.

14 Contributions in Destrée – Murray 2015, part 3.

15 Vitr. De arch.; Thomas (2015) discusses Vitruvius in relation to the aesthetics of buildings.

16 See Ravasi 2015.

17 See Anguissola and Haug – Hielscher, this volume, on Pliny's attitude to luxury; for further consideration of Pliny on materials, see Bradley 2009, 100–110.

features. Yet these are often also features that had an aesthetic aspect owing to their sensory qualities[18]. Paper, for instance, is judged on its breadth, fineness, whiteness, stoutness and smoothness. Changes in the ways that grades of paper were valued/used based on their functional performance are also noted by Pliny, including the practical drawbacks of thin high-quality paper, which led to its eventual use for correspondence only[19]. Qualities that are described as particularly valued for gemstones include specific colour tones and consistency of colour, brilliance or shine, and transparency; other aspects mentioned include weight and smell[20]. Pliny's value for natural features here contrasts with his account of the value of other materials such as metals, in which auxiliary features such as economic value play a stronger role[21].

For metals, positive intrinsic qualities such as resistance to corrosion and reflectivity are mentioned by Pliny, as well as unpleasant aspects like the taste of metal[22]. As part of his critique of luxury, Pliny stresses the importance of choosing uses appropriate to particular materials by criticising inappropriate use of gold and silver for prosaic everyday functional objects like shoe nails or cooking equipment. The concept of *decorum*, which can be broadly defined as appropriateness in terms of nature, culture and/or tradition, was widely felt to be important in Roman elite culture and governed many aesthetic decisions[23]. To give an example pertinent to the specific class of objects under consideration – vessels and containers – Martial's epigrams prescribe that luxury containers should have similarly luxurious contents[24]. Mimetic qualities were also important in Roman material choices – for instance, it is evident from a range of ancient sources that ivory was thought to be the optimal material to represent flesh in statuary, based on not only its colour, but also its texture, lustre and warmth on handling, which mimicked the properties of skin[25]. Colour terms in themselves were often derived from materials, and may have had additional connotations relating to material qualities across a range of senses – for instance 'marbled' as smooth, cold and white[26].

Returning to Pliny's observations in his *Naturalis historia*, they display his awareness of how contingent aesthetic choices and values could be. The established, desirable and yet apparently abstract sensory qualities of materials are clearly interrelated with other scales of value, including rarity, exoticism and currency[27]. Fashions in materials are recognised, showing his perception that material value is not necessarily absolute[28]. It is also clear that for Pliny, the value of materials could be enhanced through craft practices[29]. Discourses of luxury more widely emphasise the same factors, as features that enhance the value of luxurious materials with prized aesthetic qualities[30]. Pliny notes that the worn appearance of silver plate and so-called 'murrhine ware' gives both value by attesting to their antiquity[31], elucidating further the subjective nature of aesthetic appreciation, in which a feature such as wear (with both visual and haptic aspects) could become desirable in a particular context. These examples illustrate that aesthetic judgements in the Roman period were

18 Destrée and Murray (2015) provide an extensive treatment of all aspects of ancient aesthetics including sensory ones.

19 Plin. HN 13, 24.

20 Plin. HN 37. See Lang, Anguissola and Haug – Hielscher, this volume.

21 Anguissola, this volume.

22 Plin. HN 33. See also Anguissola, this volume, on gold in particular, which she suggests was valued because it was impervious to change and thus reliable.

23 See Rowland – Howe 1999, 151; Swift 2009, 16 f.; Haug 2020, 1–3.

24 Mart. 10, 49; 14, 12. 97.

25 Lapatin 2001, 16; Platt – Squire 2018, 91–97.

26 Bradley 2009; 2013.

27 See also Anguissola, this volume, on the tension in Pliny between economic and aesthetic values for gold.

28 Plin. HN 33, 55 on fashions in different metals, for example.

29 Haug – Hielscher, this volume.

30 Lapatin 2015.

31 Plin. HN 33, 55; 37; Mastrorosa 2014, 106. Murrhine ware is probably fluorspar: see Tressaud – Vickers 2007; Lapatin 2015, 122–123.

not disinterested, but were rather entangled in the attribution of social values and the assertion of status and power, and also had wide implications for social relations.

Of course, these perspectives only show us viewpoints from elite culture, and we know very little about how aesthetic appreciation may have differed among those of lower social status or diverse, non-Roman cultural backgrounds, especially in the western Roman provinces that had no history of deep Hellenistic cultural influence. We can however see that everyday artefacts in non-elite materials do often conform to elite aesthetic norms. Many ordinary Roman artefacts, as well as prestigious ones, show careful attention to established Roman aesthetic values such as symmetry, proportion and cultural 'appropriateness' or *decor*.

Two principal points we can take from the above discussion when examining objects used in everyday life in relation to design, aesthetics and materials are as follows:

1. An aesthetics of all the senses is needed when considering objects – visual qualities, but also smell, texture, temperature, weight and taste may all have been important considerations in constructing a pleasurable experience for users, or minimising qualities that were perceived as unpleasant.
2. Aesthetic judgements were not absolute but context-dependent – for instance depending on aspects such as the fashions of the time, cultural preferences that varied among different social groups, and judgements on what material was felt to be appropriate in a certain situation or for a particular function. Aesthetic objects did not have abstract qualities, perceived in a disinterested way, but were implicated in social relations.

Glass

In this section, we will investigate some of the ways in which glass vessels conform to, or diverge from, the norms of elite Roman aesthetic appreciation, and how they illustrate other aspects of aesthetics in Roman culture.

One of the ways that glass as a material was valued in Roman culture was for the aesthetic qualities it shared with precious and semi-precious stones, which included degrees of transparency, colour (or colourlessness, to imitate rock crystal), relative hardness and shine. Glass was often used to imitate these more valuable materials[32]. To give an example, marbled and layered glass was sometimes used to create a resemblance to variegated marbles or other semi-precious stones, with this practice developing alongside the increasing use of ornamental stone during the 1st century B.C. and peaking during the 1st century A.D. The imitations, used mainly for vessels such as dishes and bowls, are often quite specific and have been well-documented for particular types of semi-precious stone such as agate, alabaster, onyx, red and green porphyry, as well as cipollino and giallo antico marbles[33]. To mimic the natural veining and imperfections of stone, an irregular appearance to the decorative detail is needed, and this can be created readily due to the flexibility and versatility of glass as a material, thus meeting the established aesthetic criterion of variegation. Another short-lived fashion dating from the 1st century A.D. was for strongly coloured, thick-walled cast glass vessels (Fig. 1), which may have also originated as an imitation of vessels made from semi-precious materials, although the association is not so clear in this case[34]. The phenomenon of imitation is a complex one, covered in other contributions to this volume[35]. Here, we can make the broader

32 On rock crystal and its glass imitations, see Vickers 1996; Stern 1997.

33 Cisneros Cunchillos et al. 2013. For some examples of stone vessels, see Belli Pasqua 1989. See also Lang, this volume, on valued qualities of precious and semi-precious stones.

34 Tait 1991; see also Cisneros Cunchillos et al. 2013.

35 Flecker, this volume, speaks of 'creative appropriation and emulation and intermaterial exchange'; Engels, this volume, argues for complex interdependencies between similar forms in different materials. Both question the assumption of one-directional influence from a so-called original to its apparent imitation.

Fig. 1: Cast glass vessel; New York, Metropolitan Museum of Art, inv. 81.10.128.

point that although these types of glass vessels illuminate adherence to established aesthetic norms such as symmetry, variegation and so on, the way that they ceased to be fashionable after the 1st century A.D. illustrates that aesthetic conformity did not necessarily give them enduring value.

Vessels produced in glass often contained food or drink. One aspect of glass as a material in relation to the design of containers is its pliability[36]. It can be easily moulded into diverse forms, which can be designed to suit the intended use of the object as a vessel for various commodities, following the Roman concept of *decorum* (appropriateness). Matching the theme of decoration to the function of a vessel, for example, is very common in Roman culture. This can constitute either the decoration applied to the vessel, or the figurative form of the vessel itself[37]. Instances in moulded glass include grape-shaped flasks that would be considered appropriate as wine containers, or date-shaped bottles that probably contained date oil[38].

Clearly the visual qualities of glass were regarded as important, and a passage from Achilles Tatius provides evidence that transparency was a visual material quality that could be admired. It compares the transparency of a glass drinking cup to that of the water from the Nile that it contains[39]. This immediately suggests that glass vessels may have been perceived as particularly 'appropriate' for drinks such as water and wine[40], because the colour and transparency of the glass vessel itself mimicked the aesthetic qualities of the liquid that it was designed to hold. The material evidence provides support for this view. Completely colourless drinking vessels with watery themes in their decoration are relatively common in surviving glassware (Fig. 2 shows a 2nd century A.D. example), and it is evident from Roman conventions of *decorum* or 'appropriateness', as described above, that they were designed to hold water[41]. The choice of colourless glass, which was not easy to produce, was significant in how it resembled the water itself[42]. There is also some evidence of

36 This quality is the subject of comment (if misunderstood) in Roman literary sources: see Stern 1994, 441 f.

37 See Swift 2009, 123–127 for examples, including dining vessels with Bacchic themes and toilet articles depicting Venus. For the Late Roman period, see also Schneider 1983, 32–34; Elsner 1995, 265 f.; 2003.

38 Multiple examples of each are known, for instance, Stern 1995, 149–157. 232–238; Grossmann 2002, 40 f., Figs. 34 f.; New York, Metropolitan Museum of Art, inv. 91.1.1295; 17.194.255; New Haven, Yale University Art Gallery, inv. 1955.6.64; 1955.6.65; 1930.394; London, British Museum, inv. 1878,1230.60; 1856,1226.1178; 1856,1226.1168; 1868,0110.502. See also Swift 2021.

39 Ach. Tat. 4.18, with thanks to Anna Anguissola for her reference to it at the conference.

40 These are the two types of drinks shown within drinking cups depicted in Roman wall paintings: Naumann-Steckner 1991, 95 Pls. XXb; XXIIa.

41 Swift 2009, 133 f.; for some examples, see Painter 1975; Fleming 1997, 9.

42 Discussed further in Swift 2009, 132–137. Both decolourised and deliberately coloured glass were available from the Hellenistic period onwards: see Stern 1994, 475. On methods of decolourisation, see Jackson 2005.

Fig. 2: Colourless glass cup with Nilotic scene; London, British Museum, inv. 1868,0501.919.

purple glass being used for wine jugs, whose function can be inferred from their decoration with Bacchic imagery[43]. The coloured translucent glass imitated the wine that the vessels were designed to contain. These kinds of associations appear to be long-lived, with examples from both the earlier and later Imperial periods[44].

Vessels are often important in aesthetic terms in the way that they present their contents to the user[45]. The quality of translucency/transparency corresponds to functionalist aesthetics in the way that the user could see immediately how much liquid was left inside a vessel without having to look into the top of it, for instance. Choices in whether to use opaque or translucent glass could relate to the desire to conceal or reveal the contents of a vessel (discussed further below for metal vessels) – in the case of transparency, displaying the promise of the experience to be enjoyed, and/or assuring its quality[46]. The use of transparent glass also heightens the quality of fragility that can potentially be associated with this material.

Roman literary sources cite friability as a negative characteristic of glass, as well as ceramic and stone[47], and this fragility does not, at first sight, seem to suit a functionalist aesthetic. Thick-walled cast glass vessels were less fragile than the semi-precious stone vessels they may have imitated; for example, the mineral structure of fluorspar can lead to planar breakage (cleavage) which does not occur in glass. Yet cast glass was susceptible to conchoidal fracture, and complex forms such as diatreta were difficult to create without breakage[48]. Glass blowing facilitated the production of thinner walled vessels, increasing in degree the desirable quality of transparency (discussed above) but also considerably increasing vessel fragility[49]. It might be supposed, therefore, that the choice of glass for tableware does not conform to functionalist aesthetics. However, for vessels intended for food and drink, an aesthetics of all the senses is important, and on these terms glass has positive attributes from a functionalist aesthetic perspective. It would have been considered

43 Swift 2021. For a specific example from the Late Roman period, see Whitehouse 2001, 127–129. 633.

44 For later Roman examples, see Whitehouse 1997, 199; Swift 2009, 135, Figs. 3. 20.

45 Saito 2007, 120; Swift 2009, 108.

46 Martial (4, 85) observes that a transparent vessel allows the user to assess the quality of its contents.

47 Mart. 14, 115. The problem of glass cracking when used with heated liquids was addressed by Roman authors: see Mart. 12, 74; 14, 94; Matthews 1969, 41.

48 On cleavage and fracture, see Hall 1994; on fluorspar in particular, including references to its fragility in Roman literary sources, see Tressaud – Vickers 2007, 148. For *diatreta*, see Vickers 1996.

49 For an account of glass-blowing techniques and the production of very thin walls, see Stern 1994, 444–450.

aesthetically appropriate as a material despite its fragility, because of its demonstrable value in fostering a pleasant eating and drinking experience, one that did not involve the unpleasant tastes and smells associated with metal vessels[50]. Glass bottles could be used to store liquids without any contamination of the contents, and glass jugs and cups as tableware were particularly suited to mildly acidic substances like wine or grape juice, which reacted with metal surfaces.

Beyond functional practicality, fragility can be considered useful as a material property in other ways too. It was important in the social construction of relative value for glass as a material, for instance, performing conspicuous consumption by its frequent need for replacement. Its fragility during the production process increased the economic value of complex forms like *diatreta*[51].

Glass vessels, in general, conform to established aesthetic principles of unity, balance and symmetry[52], in both their design and decoration or its absence. Shapes that dominate, such as circular bowls, platters, beakers and dishes, are obviously symmetrical, and handled vessels often maintain mirror-image symmetry and balance through the presence of paired handles, for instance on the popular kantharos and amphora forms. Techniques such as casting and moulding facilitate symmetry and a uniform appearance. Particular decorative motifs are normally disposed to construct a balanced design, rather than irregularly positioned. A more marked departure from Roman aesthetic conventions is sometimes evident, however. Let us consider as an example mosaic glass bowls produced during the 1st century B.C. to 1st century A.D. (Fig. 3). The bowls are circular and therefore symmetrical in overall form, and feature recognisable flower motifs, but these are distorted and composed into designs that are very irregular and lacking in symmetry and balance[53]. Unlike the marbled or layered glass described above, from which this decorative style probably developed, the effect is very singular and does not mimic a natural material, the main context in which such variegation otherwise occurs[54]. Judged against conventional Roman aesthetic standards, it would perhaps be thought disordered and unappealing. However, such bowls were clearly valued items, and their appearance must have been judged aesthetically pleasing to their purchasers[55]. The effects that could be produced by experimentation with materials and techniques are likely to have been valued because they were distinctive innovations and displayed well the capabilities of the materials used. They make use of the singular properties of glass, and show how distinctive design could create value for a glass object in its own right, rather than as a proxy for another substance.

Some colours of glass were more difficult to produce than others. The technological demands of producing opaque red glass[56], for instance, can be suggested to have affected the incidence of its use, since among the many catalogues of Roman glass vessels that exist, opaque red as a base colour is unusual, while at the same time terracotta red was highly favoured for ceramic vessels (e. g., Arretine ware, or terra sigillata)[57]. As a further example, we can take a representative selection

50 Its value in this regard is documented in literary sources: see Petron. Sat. 40–41; Plin. HN 34, 48; see also Stern 1994, 479; Ingemark 2014, 207; Swift 2017, 110.

51 Precisely this relationship between fragility and economic value is expressed in Plin. HN 33, 2 in relation to semi-precious stone.

52 Vitr. De. Arch 1, 2; discussed in Swift 2009, 16 f.; see also Destrée – Murray 2015, part 3; Ravasi 2015, 250–251.

53 For more on mosaic glass, see Tait 1991a, 48–56; Dawes 2002; Facchini 2011; Freestone – Stapleton 2015. The overall pattern in this type of vessel also has the effect of disguising its form: see Haug – Hielscher, this volume.

54 The phenomenon is an example of the 'creative appropriation' discussed by Flecker, this volume.

55 This is evident both from the fact of their existence, and because their value is indexed through their complex technique of manufacture and requirement for specialist craft knowledge: see Dawes 2002. The flourishing of new workshops in Italy for the production of mosaic glass (see Facchini 2011) seems likely to relate to its distinctive and desirable aesthetic qualities, rather than wider characteristics general to glass vessels as a category, which could be met by other types of production.

56 Bateson 1981, 74; opaque red requires the control of internal oxidation processes (Freestone – Stapleton 2015, 71). For more on the production methods of coloured mosaic glass, including opaque red, see Freestone – Stapleton 2015.

57 See, for example, Whitehouse 1997; 2001, 210. 774 (the former glass catalogue has no examples; the latter has one probable opaque red vessel, decorated with other colours). In a catalogue of 184 examples, Facchini (2011) has one

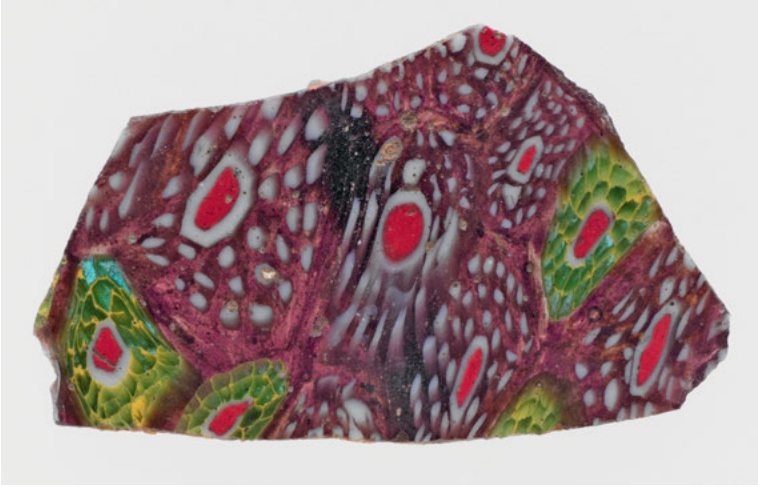

Fig. 3: A fragment of a mosaic bowl; New York, Metropolitan Museum of Art, inv. 17.194.396.28.

of mosaic glass fragments from the Princeton University Art Museum. Fifteen fragments from fourteen glass vessels (bowls, dishes and plates), all dating from the late 1st century B.C. to the early 1st century A.D., illustrate typical colour combinations. Five fragments contain no red glass[58], eight include red as one among the multiple minor colours used[59], and only two are predominantly red in colour, with other colours used as accents[60]. Although it has been proposed that opaque red glass was made to imitate stones such as haematite and red marbles[61], the challenges presented by its production could also have led to an enhanced economic value that extended beyond its imitative properties, and this would certainly have been the case for its use in the above mosaic glass, which cannot be argued to mimic semi-precious stones.

Following this discussion of the qualities of glass as a material for vessels, let us illuminate these further by considering the vessel shown in Fig. 1 from a phenomenological perspective. This will further highlight some of the possibilities offered by glass as a material, in relation to experience and sensation. The vessel is heavy, of similar weight to an equivalently sized stone vessel[62], and its bevelled rim and carinated form provide both visual and tactile variation. Like stone vessels, it is cold to the touch. The way that the vessel wall changes shape provides a contrast with its uniformly smooth surface. The glass is translucent and strongly coloured, so that in good lighting conditions, light shines through its walls (contrasting with darker areas such as the base), and cast a green light onto the surface on which it was placed. These effects would be most visible in daytime or under well-lit conditions, when colours are more visible to the human eye. If such effects were valued in Roman culture, the object may have mainly been used in this kind of context in order to maximise them[63]. The colour and light effects would change when the vessel was filled with particular contents, for instance, making the filled areas look more opaque. The colour of any contents could have been chosen to either harmonise or contrast with the strong

vessel with an opaque red base colour (Facchini 2011, 115. 125), one with a translucent red base colour (Facchini 2011, 115. 129), and three with a red base colour for which the opacity is not specified (Facchini 2011, 132. 178–180). For some further examples of rare opaque red vessels, see Cisneros Cunchillos et al. 2013, 288.

58 New Jersey, Princeton University Art Museum, inv. y1939-87c. y1939-49a-b. y1939-87 f. 1995-155.

59 New Jersey, Princeton University Art Museum, inv. y1939-50. y1929-295. y1939-87a. y1939-87g. y1939-87i. y1931-25. y1939-87d. y1939-87b.

60 New Jersey, Princeton University Art Museum, inv. y1939-87e. y1939-87h.

61 Cisneros Cunchillos et al. 2013, 288.

62 Glass has a similar specific gravity to that of rock crystal, and slightly less than that of marble.

63 See Swift (2021) on objects which, by contrast, have contrasts in lightness and darkness which would have been evident in poorly lit conditions. For more on the valued qualities of colour, see Bradley 2009; Sassi 2015.

colour of the vessel; perhaps the former is more likely if the Roman value for *decorum* (see above) is taken into account.

To sum up, the aesthetic features of glass that were clearly valued in Roman culture include its quality of resemblance to other substances (especially as regards colour and degree of transparency), yet also its more distinctive features that could not be easily replicated in other materials, as well as qualities beyond the visual, such as those of touch, and the absence of strong taste and smell.

Metals

Metal vessels are opaque, can exist in a variety of colours, and have surface textures ranging from matte to highly polished. Let us examine these various features in relation to aesthetic appearance. While the physical properties of the material are generally well-suited to the common functions of vessels used in dining and toiletry, surface properties such as oxidation do have implications for their effective practical function, and so will be considered in detail.

The colour of metal is an obvious aesthetic property that was important in antiquity, and although metal is not as versatile in terms of colour as glass, much variety can be created with the use of a range of metals and their combination in different alloys. The existence of polychrome objects, created by using gilding, patination and/or inlays of different metals, shows the purposeful deployment of colour as an aesthetic feature of metals. A well-studied example is a group of bronze objects with a black patinated surface, which Alessandra Giumlia-Mair identifies as the prized alloy 'Corinthian bronze'[64]. They have multi-coloured inlays (red, silver, gold and orange) and scientific analysis has determined that these were made from different metal alloys of varying composition. The group includes two vessels, a jug and patera, and all were probably produced in Egypt during the 1st century A.D.[65]. Further examples of bronze vessels with silver or other inlays can also be cited[66]. More commonly, silver vessels often feature gilding as an element of their decoration, creating a subtler polychrome effect[67].

As has been mentioned above, the opacity or relative transparency of a vessel can relate to the way it presents its contents to the user. That the designers of Roman vessels were interested in the possibilities that opaque metal vessels held for concealment and revelation is well illustrated by the extant objects which, when used with particular contents, would have concealed a visual surprise at the base of the vessel. The most famous examples are the Hercules and Cybele bowls from the Hildesheim treasure (Fig. 4 shows the Hercules bowl or *phiale*)[68]. However, other less elaborate instances can also be cited, which are perhaps also more likely to have had a functional use than the Hildesheim bowls, such as a 1st century A.D. copper alloy patera with a modelled head of Medusa

64 Giumlia-Mair 2015; see also Jacobson – Weitzman 1992. See Haug – Hielscher, this volume, for Pliny's remarks on Corinthian bronze. For patination more widely, see La Niece – Craddock 1993.

65 Giumlia-Mair 2015.

66 For example, London, British Museum, inv. 1884,0409.4, a bronze cup dating to the early 1st century A.D. with silver inlay, and inv. 1853,0218.6–7, two inkpots with a black surface decorated with silver and gold-coloured inlay. For polychrome metal inlays in furniture, see Devogelaere 2017.

67 See, for example, 1st century A.D. examples in London, British Museum (inv. 1867,0508.1410 and 1872, 0604.1100); see also Lapatin 2015, 101–104 Pls. 75–79, for further 1st century B.C.–1st century A.D. examples. For more on gilding, see Oddy 1993; Lapatin 2015, 32.

68 It has been suggested that such elaborate vessels were for display rather than for use. See Painter 2001, 24 f., for discussion of a similar *phiale* (M14, Pl. 14) from the Insula of the Menander hoard at Pompeii, which was found with a stand for display. Matthews (1969), however, proposes that *phialae* were used for wine; Lapatin (2015, 37) cites their earlier use as ritual vessels in libations. There is wider evidence that valuable pieces of silver in general, such as antiques, were actually used: see Mastrorosa 2014, 105.

Fig. 4: Hildesheim Hercules bowl; Berlin, Altes Museum, inv. 3779,2.

projecting from the centre bottom of the vessel[69]. Her terrifying gaze was revealed as the contents were poured out[70].

Objects made from materials like copper alloy (especially brass) would be bright and resemble gold when freshly made, but would quickly tarnish. Silver also tarnishes over time to a grey or black colour. The scales of value that Pliny sets out for metals are based on how different materials age, with gold the favoured material, as it was impervious to change, and the oxidation of base metals, especially the rusting of iron, noted as a significant drawback[71]. However, as noted above, for some metal objects that were markedly aged in appearance, this could constitute a positive feature, as it attested to their antiquity[72]. This prompts a consideration of the aesthetics of ageing in relation to metals.

Although deliberate patination of metals did exist, and for silver it has been argued that this was intended to imitate the natural patina that would build up on the surface over time[73], there is also plenty of evidence that the original appearance of vessels was valued and maintained through cleaning and polishing. There are references in Roman literary sources to vessels made of copper alloys and silver being polished. Beetroot juice is mentioned as a cleaning product for silver and copper in a list of recipes, and other cleaning substances included ashes, vinegar, chalk, brine and alum. The polished vessels were coated with a protective layer of oil or fat that also enhanced their shine[74].

69 For the Hildesheim bowls, see Gehrig 1967; Hitzl et al. 1997, 32–87; Faust 2015, 91–101; Medusa patera: London, British Museum, inv. 1882,0405.1.

70 This example was found in a grave, but a similar patera with Medusa is depicted in the frieze decorating the late 1st century A.D. Temple of Vespasian and Titus in Rome (see Ludi-Blevins 2017, 242 Fig. 5), depicting objects used in ritual practice.

71 Plin. HN 33 f. He also discusses other factors that affect value: see Haug – Hielscher, this volume.

72 Pliny (HN 33, 55) suggests that wear on silver increased its value. Martial (8, 6) refers to antique silver as 'smoky silver', which seems to refer to tarnish on silver as a feature that indexed its prized age (many thanks to Dunstan Lowe for an opinion on this). The value that antiquities (including silver tableware) enjoyed, and Roman practices of collecting, are discussed by Mastrorosa (2014).

73 As noted above; see also references to patinated silver in Plin. HN 33, 46; Vickers 1995, 191 f., on naturally patinated silver. Boardman (1987) argues that silver was never deliberately blackened; however, Pliny (HN 20, 46) gives a recipe for this. See also discussion in Flecker, Engels, and Haug – Hielscher, this volume.

74 Croom (2011, 89–91) brings together the primary evidence; her sources include especially Leyden Papyrus X.

If we contemplate what polishing achieves beyond the immediate result of a shiny reflective surface, we can consider the idea that it aims to return a vessel to the appearance of newness, although since no one who had seen the vessels on more than one occasion would be deceived by this, the value of polished silver perhaps relied instead on other factors. Certainly, the aesthetic qualities of brilliance and shine were admired[75], but this is unlikely to represent a disinterested form of aesthetics, when we consider that labour was required to keep silver in this condition: the richest households would employ a slave specifically to look after silver plate[76], and this knowledge no doubt informed the viewer's pleasure in, and admiration of, these qualities as something only the rich could afford to maintain. We can even consider that the value of silver would actually be enhanced on account of the known labour costs of maintaining it in good condition[77], so its susceptibility to tarnishing could be considered as a property that increased its value from a design perspective. A more immediate factor from the point of view of functional aesthetics is that the shiny, polished surface of metal vessels offered an assurance to the user that the metal was free of unpleasant-tasting corrosion products. Any verdigris remaining on copper alloy vessels, for example, significantly impaired flavour, and might even cause illness[78]. Evidence from other types of objects demonstrates analogous actions taken by craft producers to minimise unpleasant tastes, for instance coating copper alloy spoons in white metal ('tinning') to prevent the mouth coming into contact with the unpleasant tasting copper underneath[79].

At one extreme, returning an object to an appearance of newness could merely have been part of a regular cycle of cleaning tasks, which both demonstrated and renewed its aesthetic value[80], or it may have been carried out especially to prepare an object for a special occasion. In this scenario, polishing became a way of ritualising an important occasion by marking out the items involved as different to the norm.

Although there is much evidence that the shiny appearance of metals was highly valued, as we have seen above, patinas were sometimes deliberately created. Black patinated silver could have been produced to resemble natural patinas on antique objects, giving the illusion of age[81], and we should also consider whether the oxidised, green appearance of bronze was valued in particular circumstances, instead of a bright, reflective surface. There are many extant Roman period bronze vessels with a green surface; some have been 'restored' to a coppery appearance through conservation (Fig. 5). However, it is difficult to establish their original appearance during the period of their use. Experimental archaeology research has established that artificial patinas of a green colour, along with other colours such as red, black and metallic tones, can be created using acid and alkali reagents, and so this can also be considered as a possibility. Further scientific analysis may help to establish their use more certainly, for instance identifying areas of patinated metal that lie underneath other original features[82].

Lead-glazed ceramic vessels made principally in Asia Minor during the 1st century A.D. (Fig. 6) have a green colour on their exterior surface similar to oxidised bronze and occur in a range of forms that also exist in metal, such as drinking cups, bowls, jugs and paterae[83]. A deliberate imitation of

75 Plin. HN 33; Haug – Hielscher, this volume, for further discussion of Pliny on this topic. See also Sassi 2015 on the admiration of these qualities in ancient aesthetics.

76 Croom 2011, 90.

77 On conspicuous waste, including activities that are deliberately time-consuming, see Veblen [1899] 1928, 68–101.

78 Croom 2011, 89 f.

79 See, for instance, London, British Museum, inv. 1922,0701.1; 1978,0102.532; 2010,8043.1; from metal analysis of a sample from Richborough, tinning appears to increase as a practice in the later Roman period: see Bayley 1984.

80 For more on the aesthetics of cleaning, see Saito 2007.

81 See n. 79 f., above. Some scholars have further argued that ceramics with a black colour may imitate patinated silver, for instance Vickers (1995) but this is widely disputed: see Flecker, this volume; Boardman 1987.

82 Devogelaere 2017.

83 Hochuli-Gysel 1977, 21–50 Pls. 1–18. 43–65; Greene 2007, 659.

Fig. 5: Roman copper alloy jug; New York, Metropolitan Museum of Art, inv. 96.18.3.

Fig. 6: Example of a green lead-glazed ceramic vessel; New York, Metropolitan Museum of Art, inv. 43.11.2.

metalware has been suggested[84], although it has also been pointed out that the relief decoration commonly found on the ceramic vessels is rarely found in bronze[85]. As regards form, parallels with silver have been more frequently documented[86], but some of the particular forms used are certainly found in both 1st century A.D. bronze specifically and lead-glazed ceramic[87]. The question is not a simple one and is discussed in more detail by Manuel Flecker[88]; he concludes that such glazed fabrics were probably inspired by metal vessels, in line with wider trends observable during the 1st century A.D. for the imitation of one material by another[89], but the vessel fabrics, forms and glazes show some notable differences from the metal originals, and also continued to develop in a more independent fashion through their period of production.

Although we cannot argue, therefore, that lead-glazed ceramics were intended to deceive a viewer through their imitation of patinated bronze vessels, the green glaze that was chosen for these vessels may well have been chosen for its superficial resemblance to verdigris, and could thus be taken as indirect evidence that a patinated green surface was valued as an index of antiquity for some bronze vessels, in a similar way to the wear on antique silver mentioned by Pliny above[90].

84 Gabelmann 1974; Vickers 1995, 191 f.; Greene 2007, 659; see also Flecker, this volume.

85 Hochuli-Gysel 1977, 23.

86 Hochuli-Gysel 1977, esp. 22 f.

87 Paterae with handles terminating in a ram's head: in bronze, see New York, Metropolitan Museum of Art, inv. 1989.281.87 and London, British Museum, inv. 814,0704.906; 1814,0704.907; in lead-glazed ceramic, see Hochuli-Gysel 1977, 187 W25–26, Pls. 60–61. One-handled drinking cup with flat base and flaring rim (*kalathos*): in bronze, see London, British Museum, inv. 1884,0409.4; in lead-glazed ceramic, see Hochuli-Gysel 1977, 173 W8–11, Pl. 11. Small trefoil mouthed jug with flattened top to body and relief decoration at the handle base: in bronze, see London, British Museum, inv. 1856, 1226.656; in lead-glazed ceramic, see Hochuli-Gysel 1977, 174 W12–13, Pl. 57. For Late Republican forms in bronze more widely, see Feugère – Rolley 1991, esp. the chapter by Boube (1991) on jugs.

88 See Flecker, this volume.

89 See Flecker, and Engels, this volume; above, on marbled glass; Bradley 2009, 87–110 on imitation of materials more widely.

90 In another example, extant green-dyed bone objects can be shown to have been dyed using copper oxides, and so had an even more similar appearance to copper objects which had developed verdigris: see Ferrand et al. 2014. They were probably made as deliberate imitations of such antique objects. As with the vessels, verdigris-covered metal furniture or fittings for furniture may have been valued since the oxidised coating indexed the furniture's antiquity. There is some evidence of furniture with green-dyed hinges (from Pompeii, for example: see Ferrand et al. 2014, 1038), which could have been successfully used to mimic antique furniture: see Swift 2021.

Such vessels in copper alloy would presumably have been employed for display purposes rather than actual use, unless the interior was kept free of oxidation through assiduous cleaning; similar vessels in ceramic were more practically useful, while still conforming to an aesthetic that valued the aged appearance of antique bronze.

As a final example of potential aesthetic experiences in relation to metal vessels, let us briefly examine the Hildesheim bowl (Fig. 4) from a phenomenological perspective, as we did above using the example of a glass bowl. Its central figure in high relief is the stand-out feature and would also have been so in antiquity[91]. Silver vessels generally had thin walls, both to eke out expensive materials[92] and to facilitate repoussé work, and although this central figure appears to be a solid cast figurine, in fact its interior is hollow, meaning that the vessel would appear much heavier visually than it actually was when held in the hand[93]. If the bowl was intended mainly for display, this might be a deliberate deception, since a heavier item would be more valuable. Yet evidence of wear to the central figurine in particular suggests that it may have been handled repetitively, perhaps with enjoyment of this tactile experience[94]. The directionality of the central motif means that the vessel would have been viewed and handled predominantly from one angle. Other visual features are the colour contrast between the silver of its body and the gilded rim, and the reflective shine of the silver, each perhaps juxtaposed with the aesthetic qualities of any contents. If used as a dining vessel, the taste of the silver would be less obtrusive than that of copper alloy, even if it did not offer the neutrality of glass.

It is clear from this brief discussion that although metal did not offer quite the range of qualities that glass did in terms of aesthetic features, a range of surface textures and colours could be exploited, and the changes that occur to metal surfaces over time were a notable feature of the aesthetics of this material, creating problems in functional terms, as well as new aesthetic possibilities.

Organic Materials

Organic materials like ivory, bone, wood, amber and jet were used widely in the Roman period for small artefacts[95]. These materials have distinctly different sensory qualities to those of inorganic materials like glass, metal and stone. Compared to the latter, they are relatively light in weight and less cold to the touch. Their particular features were utilised in ways that are consistent with the known aesthetic preferences of elite Roman culture, for example the use of ivory to mimic flesh in statues, as mentioned above. However, organic materials also had qualities that are likely to have been perceived unfavourably in aesthetic terms with regard to use in making vessels for eating and drinking. Even in the waterlogged and dry contexts in which wood survives well, there is relatively little evidence that wood was used for utensils intended to handle food and drink, like spoons, for example[96]. Use of wood for such items may have been avoided because it was a relatively porous

91 Cicero's account of the Verres scandal makes clear that figurative elements in silver plate were highly prized in the Late Republic (Cic. Ver. 2, 4). See Lazzaretti 2014 on Verres and Cicero's attitudes towards collecting; see also Lapatin 2015, 36–38.

92 Vividly illuminated in Mart. 8, 33.

93 Kent Hill 1943. Manufacturing techniques for the Hildesheim silver plate are discussed by Niemeyer (2007) who concludes that there is no evidence the central figurine was filled with a substance such as solder: see Niemeyer 2007, 175.

94 The wear could also result from particular attention to the figurine when cleaning the object. The bowl's history must also be considered; since it was found in the antiquarian period, wear to the object could have occurred after it was found, although this is perhaps less likely.

95 For an overview of the use of organic materials for luxury objects, see Lapatin 2015, 171–192.

96 Pugsley (2003) studied Roman domestic wood from Britain; the most prolific sites for wooden artefacts, Carlisle, London and Vindolanda, collectively produced only four examples, not all of them definitely spoons: see Pugsley 2003, 8 f. 157 f. cat. nos. T061. T062. T065. T075.

material that absorbed the flavours and smells of the food that it was used with[97]. Wood was possibly also avoided for eating vessels for the same reasons, at least by those who could afford to buy ceramic wares[98]. Instead, organic materials were used to make containers for other purposes[99].

In many instances there is likely to have been a reflexive relationship between the properties of particular materials that were useful in functional or symbolic terms and the way that these materials came to be valued aesthetically. Textual evidence illustrates that boxwood, for instance, was well understood in the Roman period as optimal for the manufacture of small wooden objects, thanks to its density, hardness, fine grain and light colour. Many of these properties made it especially suited to the creation of small, turned wooden containers[100]. The way that it resembled ivory was probably also important, especially as a similar material – bone – was only available in relatively small lengths and thicknesses. The popularity of boxwood is borne out by the existence of many extant examples of small cylindrical boxes turned in boxwood, as well as other objects, like combs[101].

Qualities that made specific woods suitable for particular uses are likely to have been valued also for their utility from the perspective of functionalist aesthetics[102].Yet these qualities would also have been admired because they were shared with more valuable materials, and it is also not difficult to see how qualities such as the weight, smoothness and light colour of boxwood could have been perceived to be, or developed into, pleasing and desirable features irrespective of their functional utility in practical terms. Such qualities were probably felt to be appropriate and valuable in part merely because they were established as the 'correct' qualities for the categories of objects concerned and thus adhered to established cultural conventions.

A substance like amber or resin had multiple sensory qualities in aesthetic terms, including visual qualities such as transparency, colour and light reflectivity, which caused a shiny appearance, as well as the warmth and possible resinous smell that might be generated on rubbing this substance in the hands[103]. Amber as a material thus corresponded to ancient aesthetic preferences for variegation across the senses, making it easy to understand how it brought pleasure to its elite users when used as a material for a range of artefacts, including easily handled small containers[104]. It also had perceived magical and medicinal properties that would have been enhanced by its sensory aspects[105]. Pliny tells us that different grades of amber were available, and these were judged according to aesthetic qualities such as colour and transparency. Notably, he criticises amber as a singular material, in the sense that it had neither a practical nor a display function, providing only a personal satisfaction. By this, he presumably means that amber was not available in sufficiently large pieces to be used as a material for display purposes, as in furniture or architectural decoration, for example[106]. Yet amber usage probably did have a display element, albeit in smaller objects like figurines, *pyxides* and caskets that often have deeply cut relief decoration providing tactile as

97 Swift 2017, 110. Beechwood may be an exception, as according to Ulrich (2007, 250), the seasoned wood has an absence of odour and taste. Pugsley's corpus of wooden vessels and kitchenware from Roman Britain, however, does not contained any examples in beech among those with the type of wood identified: Pugsley 2003, 155–158.

98 Pugsley 2003, 100–108.

99 For more on boxes in organic materials, see Sobel 1991; Pugsley 2003, 60–82; Swift 2017, 197–200.

100 Ulrich 2007, 231. 245 f. Ulrich notes that the Greek word for boxwood is *pyxos*. See also Mols 2002, 226.

101 Pugsley (2003) provides many examples across the range of objects produced.

102 An exceptional example is citrus wood that was extremely durable, and resistant to wine stains: see Matthews 1969, 31; Lapatin 2015, 180 f. However, this wood was prized because of its scarcity, exoticism, decorative grain and aromatic smell as much as for any functional qualities.

103 Probably the scent referred to in connection with amber mentioned by Pliny and Martial emanated from resin that had not yet become completely fossilised: see Plin. HN 37, 11 and Mart. 3, 65.

104 See Calvi 2005 and Strong 1966 for some examples. For more on amber in the ancient world, see Causey 2011; Lapatin 2015, 181–182. On variegation as an aesthetically desirable feature, see Grand-Clément 2015.

105 Causey 2011, 70–88; Davis 2018.

106 Plin. HN 7, 12.

well as visual interest[107]. It is also interesting to consider Pliny's remark about private enjoyment in relation to the function of a luxury material like this in providing private, personal confirmation and reassurance to its owner of their own elevated position in society. This stemmed from not only the aesthetic pleasures that the object afforded the visual, olfactory and haptic senses, but also from the owner's ability to purchase such an object, and its status as a luxury material because of its rarity and exoticism as an imported material from beyond the Roman frontier.

This brief survey of organic materials highlights the contrast between wooden objects, with their many possible modes of aesthetic appreciation, from functional efficiency to imitative qualities, and elite substances like amber, easily judged by established Roman aesthetic criteria. It also illuminates the differences in sensory qualities between organic and inorganic materials.

Discussion

It is evident that aesthetic preferences in relation to objects, and in particular with regard to the materials chosen for vessels and containers, were complex. There were a variety of reasons why specific materials were deployed. Valued aesthetic features could include appreciation of the functional suitability for a specific purpose displayed by particular materials (for example, boxwood's suitability for the manufacture of small boxes). However, there was also appreciation of a more indirect conformity to the principles of *decorum*, or 'appropriateness', in which the imitative nature of material qualities were particularly appreciated, whether because they imitated more precious materials across multiple senses (for example, bone for ivory), or resembled the products that the artefacts were used with (transparent glass vessels for water). Concepts of *decorum* could have also extended beyond imitation, so that, for example, using the 'correct' materials for a particular object may sometimes have been regarded as a necessary component in that object's completeness.

Aesthetic features of vessels and containers often corresponded to visual aspects valued in Roman aesthetics, such as symmetry, balance and harmony, although there is also evidence of different aesthetic principles in operation, as discussed above for mosaic glass. We can see that qualities such as reflectivity, and the opacity or transparency of a material, were valued alongside more obvious features such as colours. Sometimes the potential of particular materials to create innovative effects is demonstrated in a way that suggests it was also valued. The importance of other sensory qualities beyond the visual can also be demonstrated, such as weight, pleasant odours and an absence of strong taste. Visual aesthetic qualities (for instance, reflective surfaces of vessels and equipment used for dining, illuminating an absence of unpleasant-tasting surface corrosion) could, on occasion, stand as an assurance that other sensations would also be pleasant in relation to the experience of using an object. The use of substances such as amber, which possessed a range of notable sensory qualities, exemplifies the way in which Roman elite culture made full use of the variety of sensual stimulation that given materials made possible.

As mentioned at the beginning of this paper, and as is also very evident from the examples discussed, aesthetic preferences with regard to objects have to be understood in the context of social relations, most obviously, in the assertion of status and power. These affected how particular material qualities were regarded, and this is worth exploring in a bit more detail.

At the most basic level, pleasing aesthetic qualities exist in order to attract and attach people to objects. Most obviously, we can consider this from the perspective of conspicuous display, for instance, the way in which the desirable and pleasing visual and (other) sensory features of an object, including its material qualities, might create admiration or envy in an onlooker. This then

107 For some examples of amber containers, see London, British Museum, inv. 1866,0412.3a; 1866,0412.3; 1877,0309.1. See also Calvi 2005, cat. nos. 497–499 Pls. 117 f.

enhances the pleasure that the object's owner enjoys and the value that they themselves place upon the object[108]. We can also consider it, however, from the producer/seller's point of view (in the ancient world, this was often the same person). During the manufacturing process, the craft producer's own scale of aesthetic values would assist them in producing an artefact from specific materials. These would also be likely to please others, and the producer would gain enjoyment and a sense of pride in their craft from successfully endowing an object with a range of desirable aesthetic material qualities, such as those discussed above for glass, metal, wood and amber vessels and containers. As Saito notes, aesthetic qualities are an important factor in the decisions people make about purchasing goods[109], and the craft producer's motive – to attract the consumer and to foster consumption – was aided by the use of materials and designs that were considered pleasing in cultural terms, whether visually, or in the creation of the pleasant sensory experiences of touch, taste, smell and hearing. It is clear from the design features and materials used for artefacts that fostering aesthetic pleasure was a concern of those producing not only elite goods, but everyday ones as well.

Material qualities like the fragility of glass, potentially appreciated in aesthetic terms, could also be exploited in the pursuit of power relations (as we see in Pliny's reference to the fragility of 'murrhine' ware and vessels made from expensive materials like rock crystal)[110]. Apart from the cheapest items of this kind, fragile objects could only be readily replaced by the wealthy, and so formed a perfect arena for conspicuous consumption. Materials that were particularly susceptible to tarnishing, like shiny metal, had aesthetic qualities that were also useful in status assertion due to their demanding maintenance requirements.

As noted already, aesthetic judgements were contingent on context. For instance, marks of ageing in materials, such as surface oxidation, patina or wear marks, were sometimes perceived as desirable features because of the way that they indexed the antiquity of an object, even though in other contexts these qualities were perceived negatively in aesthetic terms.

Evidence for changing fashions in the types of vessels and containers that were considered aesthetically pleasing has also been discussed, for instance in relation to glass vessels. Aesthetic preferences would therefore have been complex to navigate for those unfamiliar with prevailing cultural conventions and the ways in which these could vary. Moreover, the display of objects that exemplified accepted aesthetic preferences (or 'good taste') attested to an education in the correct cultural values – a process that was in itself an expensive one. Luxury objects exhibiting aesthetic preferences that differed from established conventions, noted above, are likely to have been significant in status assertion. They could have been used in status games that played with the opposites of established norms, perhaps within particular social cliques. They might also reflect rapidly changing aesthetic values, or demonstrate the influence of new technology in relation to specific materials that brought about such changes over a period of time.

Ellen Swift
University of Kent, Division of Arts and Humanities
Dept of Classical & Archaeological Studies
Cornwallis Building
University of Kent
CT2 7NF Canterbury
KENT
E.V.Swift@kent.ac.uk

108 Gell 1998.
109 Saito 2007, 56.
110 Plin. HN 33, 2.

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Jörn Lang

Non Arte, Sed Naturae? Remarks on Roman Cameos and their Visual Effects

Abstract: In the aesthetic evaluation of objects, a regular conflict (one that dates back to antiquity) has been constructed between material as the passive object of human craftsmanship and the primacy of the material itself. In this conflict, primacy must be held by either the craftsmanship or the material's own qualities. Precious stones, however, represent a vivid example of the vagueness in this supposedly sharply defined opposition. Following the idea that is transmitted in the textual sources – namely, that both material and design have a share in the perception of jewels and contribute to their value – the following discussion will attempt to trace the optical effect of precious stones in the context of Roman society. The first step is to the relationship between materiality and optical appearance on a physical-phenomenological level (1), in the second step, the handling of the material will be focused upon (2). On the premise that natural materials do not have a solely ontological meaning (that is, a meaning limited to the statements they make), and that their perception does not always necessitate someone 'understanding them as' something, both of these perspectives will finally be brought together (3). In doing so, the relationship between natural-material disposition, artificial modification, perception and cultural significance will be taken into account.

Prologue

In the aesthetic evaluation of objects, a regular conflict (one that dates back to antiquity) has been constructed between material as the passive object of human craftsmanship and the primacy of the material itself. In this conflict, primacy must be held by either the craftsmanship or the material's own qualities. At the beginning of the 20th century, the architect and designer Henry Clement van de Velde (1863–1957) concluded that a material could not be beautiful in and of itself. Beauty was much more the result of the craftsman's work[1]. According to van de Velde, a material's properties are only historically classified as 'beautiful' via alteration and cultural attribution. The connection between perception and a particular cultural environment is obvious here[2]. Nevertheless, this approach neglects the fact that certain materials are considered to have comparable value in different cultural contexts, and its conclusions also lack historical depth: from Classical antiquity onward, there is

Note: The ideas in this article owe a great deal to discussions held during the colloquium and exchanges afterwards with Annette Haug (Kiel) and Andreas Grüner (Erlangen). I would further like to thank Markus Deufert (Leipzig) and Anna Anguissola (Pisa) for their advice and assistance.

1 van de Velde 1910, 13: 'An sich ist kein Material schön, und es wären leicht Beweise hierfür aufzubringen. Holz, Metall, Steine und Edelsteine verdanken ihre eigenartige Schönheit dem Leben, das die Bearbeitung, die Werkzeugspuren, die verschiedenen Arten, in welchen die begeisterte Leidenschaft oder die Sensibilität desjenigen, der sie bearbeitet, äußert, ihnen aufprägt. […] Die Grenzen des ästhetischen Genießens, das der Stoff durch seine Belebung ermöglicht, sind zu dehnbar, um genau bezeichnet werden zu können; sie verändern sich von Individuum zu Individuum, von Periode zu Periode'. For subject matter, see Mareis 2015.

2 Bender – Hanus 2016, 51–58. The correlation between the anthropological constant of cognitive perception and historico-cultural impressions has not been convincingly demonstrated in detail. Wertsch (1985) postulates a clearly recognisable dependence of perception upon cultural conditions. However, there remain significant faults in this argument: see Damerow – Lefèvre 1998, 77–113. This is grounded in the fact that we must constantly weigh up to what extent differences lie in perceptive processes themselves, or even in differing communicative processes concerning perception: see Bender – Beller 2016, 509.

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evidence of the appreciation of the beauty of objects as regards both their natural appearance *and* their craftsmanship[3].

Precious stones provide a vivid example amongst the materials introduced by van de Velde. They are the embodiment of objects whose high value is borne in their very name[4]. In his influential work on precious stones, Anselmus de Boodt (1550–1632) assigned to gems the quality of beauty, crediting nature as the originator of this property[5]. This assessment, which prioritises of the *natural* beauty of precious stones, may also be found in virtually any source we care to examine[6]. The idea that a material cannot be beautiful in and of itself, as illustrated by the modern example of van de Velde, can therefore be placed in opposition to the idea that precious stones are naturally beautiful, as illustrated by the early modern example of de Boodt. The intentional sharpening of the opposition constructed here between the primacy of natural materials (*natura*) and art (*ars*), defines at first glance the outer limits of a space within which the optical effect of objects, as well as their perception, can in principle 'move' or play out. Precious stones, however, represent a vivid example of the vagueness of this supposedly sharply defined opposition.

Antique descriptions of precious stones in particular allow us to understand how intensely natural appearance and artificial alteration were interlocked with one another. The Hellenistic poet Posidippus described the entire production path of a jewel in one of his epigrams. He begins with the stone's natural origin, then portrays the process of transformation under the hands of the engraver Kronios, and continues on until the stone is a pendant set in gold on the necklace of a lady named Nikonoe, describing its optical impact in that context[7]. No carved imagery is discussed in this case, rather the luxuriousness of the material is given priority, as is its chromatic effect in interaction with the physical appearance of the wearer. On Nikonoe's breast the gem reveals a honey-like shine and creates an enticing contrast with her white skin. Simultaneously, stone and skin begin to blend artfully through the combination of honey's culinary sweetness and the alluringly 'sweet' skin of Nikonoe[8]. The epigram itself can be seen as a literary transformation of the material world. However, it testifies to markedly different levels of perception. The natural appearance of the gem draws the eye of the beholder, initiating the association with honey and its conceptual attribution of 'sweetness'. The stone therefore exhibits natural qualities that initiate an impulse for the process of its reception. Objects generally provide us with prompts based on their functionality, so based on this I will refer to this impulse as an 'aesthetically-generated prompt'. Following the (functionally constructed) affordance of objects, this impulse will be described as an 'aesthetically generated prompt to perception' in the following discussion[9].

3 For example, Xen. Mem. IV 6, 8–10.

4 In German, the term 'Edelstein' is derived from the root 'edel' ('precious' or 'noble'), which in turn is descended from the Old High German word 'adel' ('nobility' or 'aristocracy'). 'Edel' or 'adel' refers to something that is considered particularly valuable due to its specific native properties: see DWDS 2020.

5 de Boodt 1647, 13: *Pulcher (scil. lapis) gemme* [sic] *nomen meretur. Erit itaque gemma lapis parvus, rarus, durus, & pulcher a natura procreates* ('A beautiful [scil. stone] earns itself the designation "gem". Hence a gem will be a small stone, rare, hard and brought forth in beauty by nature'). I would like to thank M. Deufert (Leipzig) for his help in translating this passage from Latin into German.

6 See Bauer 1932, 206 f.

7 Posidip. (Austin – Bastianini 2002, 29): 'Rolling yellow [the rubble] from the Arabian [mountains], / the winter-flowing [river] quickly [carried] to the sea / the honey-coloured gem engraved (*eglyphe*/ἔγλυψε) by the hand of Cronius. / Mounted in gold [it lights up sweet] Nikonoe's / inlaid necklace, as on her breast / the hue of honey glows with the whiteness of her skin'. See also Kuttner 2005, 141–161; Strocka 2007; Seidensticker et al. 2015, 50 no. 7.

8 See Seidensticker et al. 2015, 53. A similar effect can be found in a further example from this series of epigrams: see Seidensticker et al. 2015, 46 n. 6.

9 On the concept of 'affordance', see Gibson 1977. On functional affordance in objects from an archaeological perspective, see Fox et al. 2015.

Pliny the Elder's observations suggest that this was a quite widely disseminated idea. For Pliny, precious stones allowed for a perfect aesthetic experience of the natural world in all its facets[10]. He notes that 'nature's grandeur' reaches such a height in precious stones that some people regard it a sin to tamper with certain kinds by engraving them as signets, although this is the prime reason for their use'[11]. This conflict, in which van de Velde came down on the side of design, is not solved here, but rather presented in its disunity. Thus, Pliny acknowledges that the violation of natural splendour via human intervention can be seen as a sin against the natural order of things (*nefas*)[12]. At the same time, he emphasises the functional necessity of committing this sin in order to bring the natural form to its actual purpose or destiny. Here it is clear that precious stones are valuable in and of their nature, but are also a material destined to be altered by human intervention.

Following the idea that is transmitted in the textual sources – that both material and design have a share in the perception of jewels, and both contribute to their value – the following discussion will attempt to trace the optical effect of precious stones in the context of Roman society[13] in an illustrative way. Special attention will be paid to the entangling of natural appearance with artificial design throughout. Recognising the basic lack of empiricism in the quantification of observable appearances, two questions comprise the main thrust of this paper: to what extent can we reconstruct the perceivable effects of these stones as the result of natural appearance and intentional design? And to what degree can we connect the stones' significance to natural, material qualities, as well as to the design process?

The first step, then, is to explore the relationship between materiality and optical appearance on a physical-phenomenological level (1). Using surviving literary sources as our foundation, we need to demonstrate first and foremost which material aspects and optical qualities of precious stones were perceived in antiquity, which part of the appearance of cut stones was considered natural, and how the latter was represented in texts. Thus, we will pay less attention the material's performance in terms of concrete agency[14]. In the second step, the handling of the material will be the focus. Using case studies, we will outline how changes in material properties could increase the natural performance of materials and for what purpose such changes were made (2). Cameos[15] offer a highly appropriate type of object for examination here, because they were used only as jewellery and their relief engraving (Fig. 1) had a decorative function[16]. A central consideration here is the possibility of categorisation, following regularly used procedures. On the premise that natural materials do not have a solely ontological meaning (that is, a meaning limited to the statements they make), and that their perception does not always occur in the sense of someone 'understanding them as' something[17], both of these perspectives will finally be brought together. In doing so, the relationships between natural-material disposition, artificial modification, perception and

10 Plin. HN 37, 1: 'Hence very many people find that a single gemstone alone is enough to provide them with a supreme and perfect aesthetic experience of the wonders of nature' (*ut plerisque ad summam absolutamque naturae rerum contemplationem satis sit una aliqua gemma*).

11 Plin. HN 37, 1: *violare etiam signis, quae causa gemmarum est, quasdam nefas ducentes*.

12 On the meaning of this word, see Cipriano 1978.

13 It will be taken for granted in the following discussion that this political entity can in no way be understood as a singular socio-cultural unit; see, among others, Alföldy 2011, 60.

14 On the powers of various precious stones, see, among others, Orph. *lithika* or Damig. *lithika* (both dating to the 2nd century A.D.); see also Quack 2001.

15 The term is of medieval, rather than ancient origin: see Zwierlein-Diehl 2008, 14. It is retained here as the established term in scholarship.

16 For intaglios this cannot be posited so easily, since various functional aspects overlap and are difficult to separate from one another: see Zwierlein-Diehl 2007, 6–20; Lang 2012, 98–107; 2020.

17 See Gadamer 2010, 97. This is different to Cassirer ([1929] 2002, 124). For Cassirer objects always have an expressive character (Ausdrucksform). This expressive character precedes the perception of meaning and is not replaced by meaning – it remains unchanged or is intensified. According to Cassirer ([1929] 2002, 114) only the triad of expression, representation and meaning facilitates a perception-based understanding of reality. To the best of my knowledge, only Schweitzer, in his 1941 analysis, the 'Grand Camée de France', has given consideration to these aspects of cameos.

Fig. 1: How a cameo is made. Carving by Gerhard Schmidt, Idar-Oberstein.

cultural significance will be taken into account (3). Since the issues outlined here are only relevant where the objects were used or observed, in this context we must also look for concrete, active situations in which the objects were embedded.

The Effect and Meaning of Natural Forms: Fluorite and Agate

Approaching historical processes of perception is a methodological challenge[18]. The density of the data available is nevertheless sufficient, at least in terms of Roman society, to reconstruct the material aspects and optical qualities that were perceived in precious stones, and how these were represented in texts.

In 'On Stones', which dates to the late 4th century B.C. and is thus one of the earliest complete surviving treatises, the author Theophrastus of Eresos pursues the source and geographical origin of precious stones[19]. While he lists over 40 different types of stone, the *Naturalis historia* of Pliny the Elder, which dates to the Imperial period, lists over 300. Like Theophrastus, Pliny initially classified the stones according to how they were formed, and then used a combination of each stone's durability and optical characteristics (such as colour, transparency and gloss) in order to differentiate them[20]. These classifying properties describe the particular optical qualities of precious stones. The spectrum is quite wide, and the minerals and properties named in the sources often cannot be matched definitively to the established modern designations of precious stones. Because of this, the following discussion will concentrate on just two examples that are described well enough in ancient sources to permit their identification: fluorite and agate. This means, in turn, that the descriptions and actual optical appearances of the materials can be considered in relation to one another.

Pliny describes in detail the optical qualities of vessels referred to as *murrhina vasa* (murrhine ware), which was considered in antiquity to be amongst the most sumptuous objects in the world[21].

18 See the attempt by Porter 2010, in which there is no mention of precious stones, however.

19 Theophr.

20 Bradley (2011, 101–106) spends much of the text referencing one of the precious stones treated by Pliny, the *smaragdus*.

21 Plin. HN 37, 21 f.: 'The substance is thought to be a liquid which is solidified underground by heat. In size the pieces are never larger than a small display stand, while in bulk they rarely equal the drinking vessels that we have discussed. They shine, but without intensity; indeed, it would be truer to say that they glisten rather than shine. Their value lies in their varied colours: the veins, as they revolve, repeatedly vary from purple to white or a mixture of the two, the purple

Fig. 2: Barber Cup, fluorspar, 1st century A.D.; London, British Museum, inv. 2003,1202.1.

The precision of Pliny's observation allows us to identify the material as fluorite (calcium fluoride, CaF_2), a mineral belonging to the halide class[22]. With a degree of hardness of four on the Mohs scale, this mineral is comparatively easy to work with. The 1st century A.D. 'Barber Cup' (Fig. 2), a vessel decorated with vine branches, is held in the British Museum in London and is one of the few surviving ancient objects made from this material[23]. The small number and high quality of the surviving pieces in fluorite emphasise, from the perspective of the *material* legacy, that they were almost certainly considered sumptuous luxury objects[24]. By applying a direct source of light to the stone, it is possible to observe how crimson and white blend together and refraction of the light produces a rainbow effect. This effect is particularly noticeable when the vessel is rotated, an optical effect also recognised by Pliny, who described this movement using the verb *circumagere*[25]. This passage demonstrates that the vessel was actively used, as only then could the effect be observed[26].

Agate (*achates*) belongs to the mineral class quartz (Silicone dioxide, SiO_2), and in antiquity was mainly sourced from India or the Rhodope Mountains in southern Bulgaria. It also represented a particularly characteristic material for the carving of cameos. The banded or layered agate[27] was named after the Achates River (now known as the Dirillo or Acate River) in Sicily by Theophrastus of Eresos, student of Aristotle, and a great number of varieties of this stone were known in antiquity[28]. This example allows us to observe that precious stones could be graced with a naturally occurring

becoming fiery or the milk-white becoming red as though the new colour were passing through the vein. Some people particularly appreciate the edges of a piece, where colours may be reflected such as we observe in the inner part of a rainbow'. For the existing comprehensive discussion of the ancient sources, see Christ 1743; Thiersch 1833, 443–509.

22 See Thiersch (1833, 492 f.) for discussion of the state of research from the Renaissance on. For extensive discussion on the history of research, see also Del Bufalo 2009, who nonetheless does not speak convincingly of agate as the material employed in *murrina vasa*. For a summary, see Harden 1954; Tressaud – Vickers 2007, 143–152; Del Bufalo 2016; Thoresen 2017, 176. 180–182.

23 On the vessel, see Lapatin 2015, 258 f. Pls. 133 f.; Butini 2019, 53 Fig. 7.

24 The other known objects are the Crawford Cup (London, British Museum, inv. 1971,0419.1), which is thought to have come from the same burial site as the Barber Cup (see Lapatin 2015, 258), and a small statuette of Asclepius (see Henig 1990, 109 n. 181 Pls. 40 f.).

25 Plin. HN 38, 2, 8.

26 See the convincing discussion in Thiersch 1833, 476.

27 Theophr. 5, 31.

28 Thoresen 2017, 155–217, esp. 168.

Fig. 3: 'Landscape agate' from Blue Hole near Montrose; Edinburgh, National Museum of Scotland, inv. heddle-g-210–453.

figurative quality. In the context of his natural history, Pliny provides a long list of agates that appear to exhibit landscape-like elements, as well as trees, groves, animals and rivers[29]. In agates typically described as sardonyxes in glyptics[30], the remarkable structures of the mineral make Pliny's associative interpretation understandable. Generally such agates have a layered structure, and the individual layers mostly display a colour spectrum of grey, red, brown or yellow. There are also largely colourless examples and some that are even translucent[31]. Even today some agates are described as 'landscape' or 'dendritic' agates, because their layers exhibit outlines that remind us of landscapes or vegetation (Fig. 3). These peculiarities, already noted by Pliny, are actually crystalline structures the take the shape of trees or shrubs[32]. In this case, then, there is an existing natural form that gives the impression of being something else[33]. This appearance in fact is nothing more than a chance occurrence, but is perceived as a pictorial-artificial element.

This conclusion becomes clear, in a much-enhanced form, in a further passage from Pliny's *Naturalis historia*. During a discussion of famous rings, Pliny comes to an agate in the possession of King Pyrrhus that, without any proof of human intervention, appears to exhibit an image of Apollo and the nine Muses[34].

Here, then, the characteristic banding of the material undergoes a content-based or textual interpretation. The natural form is perceived as an image, ascribed to it by the figurative imagination

29 Plin. HN 37, 139–142. 193; see recently Micheli 2020.

30 On the synonymous usage of onyx, sardonyx and agate, see Thoresen 2017, 179.

31 For a comprehensive discussion on the ancient designations, see Zwierlein-Diehl 2008, 16 f.; on layered stones, see Platz-Horster 2012, 29–32.

32 There are numerous invented names for the extremely varied manifestations of agate transmitted in the ancient sources: see Okrusch – Matthes 2014, 186.

33 On this property of the objects, see Sommer 1999, 80 f.

34 Plin. HN 37, 5 f.: 'After this ring, the most renowned gemstone is that of another king, the famous Pyrrhus who fought a war against Rome. He is said to have possessed an agate on which could be seen the Nine Muses with Apollo holding his lyre (*in qua novem Musae et Apollo citharam tenens spectarentur*). This was due not to any artistic intention, but to nature unaided (*non arte, sed naturae sponte*); and the markings spread in such a way that even the individual Muses had their appropriate emblems allotted to them (*ita discurrentibus maculis, ut Musis quoque singulis sua redderentur insignia*)'. On the opposition between nature and art in the work of Pliny, see Platt 2018, though exclusively in reference to the famous Zeuxis episode.

of the author and the reader of his text[35]. The particular material quality manifests above all in the fact that nature is credited with the ability to create its own inherent imagery[36]. It shapes semantic effects in the sense of stimulating pictorial perception, wherein the pictorial plane is superimposed on the natural appearance of the agate. In one moment, the observer's gaze represents an instance of 'seeing as', whereby the natural properties of the materials are initially suppressed. However, the evidence of the material's 'markings' makes it plain to see that the natural form is constantly present[37].

Pliny's perception would only have been possible in the context of a relevant socialisation with images. Nature does not, therefore, display her artistic potential universally, but rather in culturally specific contexts and situations where her forms may be comprehended as pictorial impulses. If fluorite gains attention via the optical qualities exhibited as the result of a play of light and colour, then our perception of agate concentrates on the figurative aspects of the stone. The latter make it clear that perception itself ultimately co-determines the shape of the observed object and ascribes meaning to it[38].

The Effect of Cameos as the Result of Artistic Design: Case Studies

Although the naturalness of precious stones' optical impact is constantly brought to the fore, the fact remains that the visual effects exhibited by ancient cameos are in no way the result of natural processes. Rather, there were many different processes used to enhance the optical characteristics of cameos. Without being able to reconstruct how these characteristics were perceived by viewers, the regularity of the manifestations considered below suggests that we recognise in them less coincidence than intention. To begin with, the figurative shaping of the raw material will be outlined. Then we will look at the production of the finished object, which could include colouring, gilding and/or the decoration of the cut gem with additional jewels, before turning to the final setting of the stone in precious metal.

In the simplest manner, the natural form was typically enhanced by active, figurative representation, and thus there are a series of ancient cameos that were cut from natural, mostly translucent minerals. These cameos often display frontal busts of gods or humans, such as the example depicting a bust of Athena wearing the aegis held in the J. Paul Getty Museum (Fig. 4)[39]. In this instance, the uniformity of the monochrome green chalcedony is broken here and there with characteristic black flecks. The overall effect of the piece can still be experienced, thanks to the survival of the original ring setting (dating to the 1st century A.D.)[40]. In such works, the engraver based his

35 Depictions of the nine Muses are relatively rare in glyptics, but there is some evidence for them. They were certainly known to ancient observers: see Sena Chiesa 2002, 202 f. n. 37; Scarisbrick et. al. 2017, 14 f. n. 28.

36 On nature as 'maker of things', see Gombrich 1982, 17 f.; Platt 2018, 221. 228. G. Julius Solinus' transmission of the idea of naturally occurring images, and the capacity of nature to create such images in precious stones, was used in the medieval *lapidaria* and was thus disseminated far beyond antiquity: see Zwierlein-Diehl 1998, 69.

37 From a physiological perspective, the recognition of textures (the grain of the agate) and forms (in this case the nine Muses) are not competing, but rather complementary processes: see Nänni 2009, 15.

38 See Cassirer [1929] 2002, 126 f. 134.

39 See, e. g., Pannuti 1983, 128 no. 213 (cornelian, female bust, Claudian period); Platz-Horster 2012, 53 f. Pls. 1.4 (cornelian, portrait of Livia); Tondo – Vanni 1990, 59 no. 17 (topaz, female portrait, Antonine period); Spier 2010, 70 f. no. 49 (amethyst, female portrait, Antonine period); Vollenweider – Avisseau-Broustet 2003, 69 f. no. 74 col. Pl. 10 (cornelian, portrait of young man, Julio-Claudian period). The regular use of a frontal pose was grounded in the fact that monochrome material did not allow sufficient contrast for a profile and obscured the necessary differentiation between the figure and background: see Nänni 2009, 32.

40 Los Angeles, J. P. Getty Museum, inv. 88.AN.13; Spier 1992, 158 no. 435; Platz-Horster 2010, 195 no. 89.

Fig. 4: Chromian chalcedony cameo with Minerva set into a hollow ring, 1.8 × 1.1 × 1.3 cm, 1st century A.D.; Los Angeles, The J. Paul Getty Museum, inv. 88.AN.13.

work entirely upon the natural colour of the material, which showed off different aspects of its colouring according to the way the light fell upon it. Nature did not create the form, since the figurative composition was definitely the result of human intervention, but this intervention relied heavily on the natural properties of the material.

In contrast, within the agate group there is a significant departure from the natural appearance of the stone. The characteristic contrast between darker and lighter layers we know today is not naturally so intense, but is rather the result of a colouring process. While the blue and white layers of agate are marked by great density and are therefore difficult to affect, the more porous red, brown, grey and black layers can easily be recoloured. To achieve this, the mineral is placed in a sugar solution derived from honey. A solution of this kind absorbs unevenly into the agate, because of the varying density and porosity of its layers. Finally, the stone was treated with sulphuric acid, which penetrates predominantly in the direction of the stone's growth and burns out the absorbed sugar up to a maximum of 15 mm into the surface. In antiquity, this process was described by Pliny using the expression 'boiled in honey'[41]. The process produced a stark contrast between the agate's layers and could be repeated multiple times during the engraving[42]. Thus, only in the finished piece would the naturally beige or brown layers emerge as a bright red-brown or deep brown. These layers create the contrast between light and dark that is characteristic of agate cameos. How this could be used to accentuate the cameo figures is illustrated using several case studies.

The contrast achieved by colouring the agate is of central significance. It often meant the background layer had a very dark tone, which accentuated the actual pictorial motif worked into the lighter layer of stone. The Claudian cameo portrait of Augustus can provide an example here (Fig. 5). The cameo is held in the Metropolitan Museum of Art in New York and depicts a naked bust of Augustus in three-quarter rear view, wearing the aegis[43]. The bust and attributes stand out in

41 Plin. HN 37, 193–195: *quas* melle excoqui *tradunt septenis diebus noctibusque sine intermissione*.

42 Helm 1978, 77–80; Giuliani – Schmidt 2010, 86–89; Platz-Horster 2012, 30; Thoresen 2017, 194; Schmidt 2019.

43 On sardonyx, see Zwierlein-Diehl 2007, 436 Fig. 622, with further bibliography; Boardman et al. 2009, 54 no. 52; Cadario 2014, 116 no. 79.

Fig. 5: Sardonyx cameo portrait of Augustus ('Cameo Marlborough'), 1st century A.D.; New York, Metropolitan Museum of Art, inv. 42.11.30.

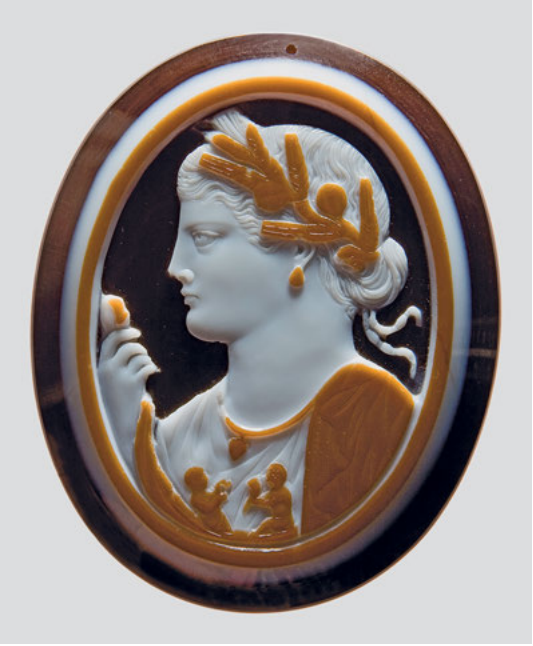

Fig. 6: Cameo with bust of Julio-Claudian woman (possibly Livilla), 1st century A.D.; Berlin, Antikensammlung, inv. FG 11096.

uniform white relief against the dark brown background. This figural representation is not brought to the fore by the carved sculptural form alone. The colouring has also altered the material to maximise the contrast. This was a useful device for engravers when they depicted lighter figures on a darker background, or when (no less often) they created darker motifs on a lighter background[44]. As a design option, the two-layer cameo model was disseminated across the whole of the Roman Empire.

Multi-layer agate could also be used to produce other visual effects. For example, the surface of the pictorial or figurative motif might be enlivened with colour, using the individual layers[45].

In other cases, the layers were employed to create distinctions with respect to content. This can be seen in depictions of heads, in which hair and beard were regularly sculpted from different surfaces[46]. This approach is particularly evident in a group of portraits produced in three-layer sardonyx thought to depict Livilla, the sister of Claudius. Here we shall focus on the example held in the Antikensammlung of the Staatliche Museen Berlin. (Fig. 6)[47], in which the mostly white bust stands out against a dark background. The significant iconographic elements, including the wreath made from ears of grain and poppy, earrings and heart-shaped pendant, are all created from the

44 One of the best-known representatives of this type is the large Eagle Cameo held in the Kunsthistorisches Museum in Vienna: see Walters 1926, 346 no. 3674; Pannuti 1994, 200 f. no. 168; Zwierlein-Diehl 1998, 158 Fig. 28; 2008, 84–91 no. 4; Sena Chiesa 2002, 218 no. 61; Boardman et al. 2009, 149 no. 323; Wagner – Boardman 2018, 229 no. 214.

45 Megow 1987, Pl. 44, 1; Giuliano 1989, 152 no. 26. See also a cameo with the head of a young athlete held in the Hermitage Museum in St. Petersburg (inv. ГР-12485). Here part of the hair (for example on the brow and back of the head) is worked in the white layer of agate, while another section is brown or dark brown. As much as this can be attributed to the irregular fall of the hair, it also ensures that the figure's bandage/hair-binding is accentuated.

46 Pannuti 1983, 6–8 nos. 5. 6; 127 no. 212; Megow 1987, Pls. 18, 2. 3. 6. 7; Zwierlein-Diehl 1991, 217 no. 2469 Pl. 152; Henig – Molesworth 2018, 41 f. nos. 32. 33. Harpokrates' characteristic lock of hair, which is iconographically significant, is also emphasised: see Pannuti 1983, 71 no. 108; Kagan – Neverov 2000, 1377 no. 159/66.

47 Berlin, Staatliche Museen, inv. FG 11096. See Platz-Horster 2012, 78 f. no. 55 Pl. 11 with further bibliography. On the group, see Megow 1987, 294–298 no. D21–27 Pl. 12.

Fig. 7: Sardonyx cameo with mythological scene, 1st century B.C.; Naples, Museo Archeologico Nazionale, inv. 25834/2.

topmost layer of agate, ochre in colour. The same layer is used sculpt the mantle that lies over the figure's left shoulder, the end of which is held in the right hand. Another important iconographic element, the depiction of two children amidst the mantle's billowing folds, also stands out in brown against the white background. Because of these contrasts, the eye is drawn immediately to the most important attributes: the wreath, which signifies fertility, the jewellery, which indicates wealth, and the two children, who are recognisable as twins, and thus assist with the identification of Livilla[48].

There is also evidence of comparable engravings outside the realm of portraiture. In depictions of multiple figures, for example, clothing is often differentiated from the uncovered parts of the body – bare skin was mostly cut from the white layer, while garments were produced from the darker layers above[49]. An impressive example of this technique can be observed in a cameo from the Medici collection of the Museo Archeologico Nazionale in Naples (Fig. 7)[50]. The two young men on the left, who are identified as hunters due to the presence of the dog and spear, appear entirely in white, as do the tree and the pillar. The pair of women on the right, however, were sculpted from the dark brown upper layers. Various parts of their clothing are created from different layers of agate, with the result that the elderly woman at the far right appears to wear a light brown robe beneath a dark brown mantle.

A similar handling of the different agate layers can be observed in other motifs, as well. In renderings of warriors, shields were typically created from a contrasting layer (either light or dark brown). Engravers thus sought to emphasise the shield both optically and in an attempt to indicate its material within the image itself[51]. In some cases, vague colour associations even made content-based references to the depicted subject possible. Thus, in cameos depicting Heracles and Omphale, the lion's pelt worn atop the former's head is typically depicted in light brown, the natural colour of the element being represented[52].

48 As a contrasting example, see a sardonyx in Paris that depicts the same person, in which the twins do not appear in brown on a white background but are rather worked into the brown layer of stone: see Megow 1987, 296 f. no. D21 Pl. 12, 6; Vollenweider – Avisseau-Broustet 2003, 89 f. no. 95 Pl. 70. For discussion concerning the portrait of Livilla, see Boschung 1993, 63 f. Figs. 45 f.

49 See Megow 1987, 298 f. no. D29 Pl. 12, 1; Giuliano 1989, 156 f. no. 31; 278 f. no. 240; Vollenweider – Avisseau-Broustet 2003, 78–80 no. 84 col. Pl. 11.

50 Naples, Museo Archeologico Nazionale, inv. 25834/2. See Pannuti 1994, 220 f. no. 187. The meaning of the scene is contested, but it can probably be placed in the genre of Greek mythology. See most recently Toso 2007, 101 Pl. XII Fig. 41 (interpreted as Hippolyte and Phaedra). Similar effects can be found in Scarisbrick et al. 2017, 21 no. 16. 33 no. 27.

51 See Giuliano 1989, 286 f. no. 259; Pannuti 1994, 227 f. no. 192; Boardman – Aschengreen-Piacenti 2008, 39 no. 13. This interpretation is also supported by the fact that the approach/technique was employed in glass cameos (e. g., Pannuti 1983, 109 no. 162) and intagli (Henig – McGregor 2004, 79 no. 7.28), although these materials would have permitted other colour combinations.

52 St. Petersburg, Hermitage, inv. ГР-12719; see Walters 1926, 335 no. 3563; Pannuti 1983, 99 no. 146; D'Ambrosio – de Carolis 1997, 48 no. 113 Pl. X.

Fig. 8: Cameo with head of Julio-Claudian woman (possibly Livilla), 1st century A.D.; Florence, Museo Archeologico, inv. 14553.

In rare cases the appearance of a cameo was modified so that the optical effect was elevated not just by the material and the engraving, but also through the addition of secondary elements. This is demonstrated by an example that depicts a female member of the Julio-Claudian house (Fig. 8)[53], in which the figure stands out in milky white against the dark background. Her *stephane* is reworked as a crown[54] and appears on a layer of light brown, as do the teardrop-shaped earrings and the mantle worn over her right shoulder. These additions are probably modern in origin, although the necklace from which the pendant hangs must have been inserted in antiquity. A limited breach in the surface for a post-antique addition is highly unlikely, given the near-perfect condition of the piece. In any case, these additions remain exceptional in the inventory of Roman cameos[55].

The possibilities available to skilled craftsmen (without the use of such additions) are demonstrated by the vessels produced in precious stone. One artisan working in the 1st century A.D. achieved a unique form of representation with a small vessel held in the Kunsthistorisches Museum in Vienna (Fig. 9). The surface of a six-tiered agate is cut so that the stone's numerous 'eyes' remain raised. Their surfaces bear figural depictions, including a double portrait of Venus and Mars, Eros and a *ketos*. Particularly in the examples that use different coloured layers of the agate to form the motif, this gives the impression of natural cameo inlays[56]. This perception is strengthened by the fact that the appearance of double or triple portraits (*capita iugata*) on cameos would have been known to ancient observers since Hellenistic times[57].

53 See Megow 1987, 290 no. D9 Pl. 18, 8; Tondo – Vanni 1990, 41. 84 no. 107 (with a less convincing post-antique dating); Zwierlein-Diehl 2007b, 38 Pl. 4, 2; Gennaioli 2010, 113 no. 26.

54 See Megow 1987, 290 f.

55 The only example currently known to the author is a portrait of Alexander Severus from the collection of Catherine the Great: see Neverov – Kagan 2000, 104 no. 85/35. The diadem on the Strozzi-Blacas cameo is a modern addition: see Megow 1987, 166 no. A18.

56 See Bühler 1975, col. Pl. II; Zwierlein-Diehl 2008, 208 f. no. 24.

57 See the example given by Zwierlein-Diehl 2007, Figs. 219. 221. 624.

Fig. 9: Cameo vessel with various cameo-like medallions, 1st century A.D.; Vienna, Kunsthistorisches Museum, inv. IX 22.

Fig. 10: Cameo vessel with mythological (?) scene, 30 B.C. – A.D. 25 (with mounting dating to the 5th or 6th centuries A.D.); Saint Maurice, Trésor de l'Abbaye de Saint-Maurice.

The special structure of the agate was also used in another way (and far too consistently to have been pure chance) to produce an onyx jug held in the Abbey of Saint-Maurice d'Agaune (Fig. 10)[58]. This vessel was created during the Early Imperial period (between c. 30/20 B.C. and the first quarter of the 1st century A.D), and the interpretation of the five figures that adorn it is controversial, due in part to the uniqueness of the composition. There is only agreement on the general interpretation

58 See Zwierlein-Diehl 1999, 26 Fig. 31 with further bibliography; 2007, 174–177. 441 f. Fig. 644a. b. On the later cloisonné setting, see Adams 2008, 405–427. This link provides a 360-degree view of the jug: <https://www.youtube.com/watch?v=yjIUjqmyBIE&feature=youtu.be> (07.05.2020).

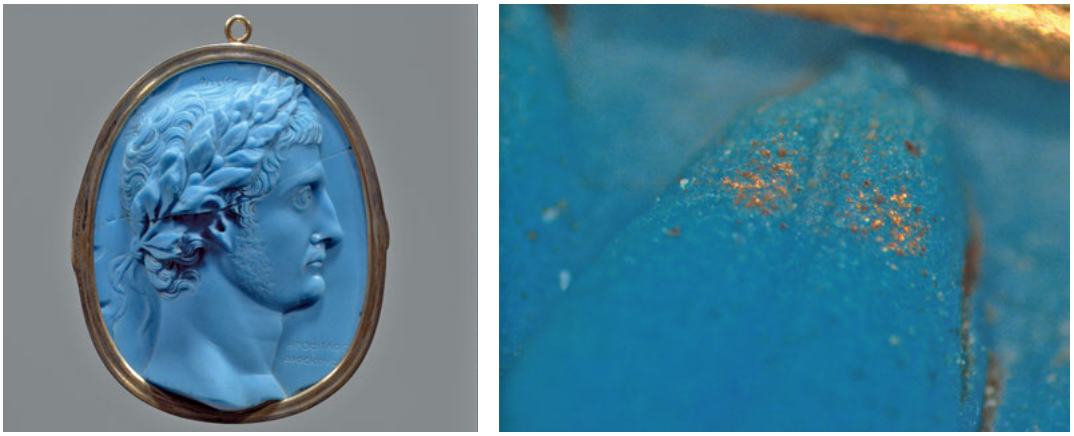

Fig. 11a–b: Glass cameo with head of Drusus in modern gold mount, 1st century A.D.; Vienna, Kunsthistorisches Museum, inv. IX 22; a: overall view; b: detail of the gilded surface.

of this as a scene of mourning located near a grave[59]. Here however, we will look only at how the properties of the agate have been employed to create this image. The figures have been arranged so that their faces and the bare parts of the body are generally formed from the white bands of the agate. At the same time, these bands also establish the floor, upon which the scene is set. The iconographic particularities and figurative composition are thus also based upon the properties of the agate itself. This example spurs us to contemplate how, regardless of any additional overworking, the natural material prefigured the final appearance of the piece and in some cases even possessed its own independent iconography.

Finally, gilding can be mentioned as a form of visual enhancement, as it is often observed as a regular feature on glass cameos. There is evidence of gilding in numerous places on the Hierophilos cameo in Vienna, for example[60] (Fig. 11a–b). Glass cameos like this one could be produced in series by taking moulds from an original worked in stone[61]. Here we also find multiple material transformations. First, a cameo in precious stone was translated into a form made from a less valuable material. But then, as a kind of countermeasure, the core of this new object was increased in value by covering it in gold[62]. Gilded cameos have not yet been systematically examined in scholarship, and thus there is in general a lack of material for research on these objects. One could, for example, determine whether there are also examples of partial gilding that aimed to create a contrasting colour effect, in addition to the full gilding of less valuable materials like glass. Such a conclusion could be reached if the remains of gold were found on banded agate. Here it would not make sense to assume that the piece was completely gilded, as this would hide the effect generated by the stone's natural layers. The fact that most cameos were finely engraved and show evidence of surface polishing also seems to contradict the idea that they were made with a view towards gilding from the beginning of the production process[63]. Rather, we can assume that partial gilding, which fundamentally enhanced the piece's visual impact, was likely in most cases. This hypothesis would have to be proven in a systematic way, however, with the help of modern imaging processes and methods of analysis.

59 See the tabulated overview in Zwierlein-Diehl 2007, 175.

60 See Zwierlein-Diehl 2008, 134–141 no. 9. This was a regular occurrence. Traces of gold were found on 27 cameos in the Kunsthistorisches Museum. See Zwierlein-Diehl 2008, 24. 140 Fig. 92 for an example of nearly intact gilding. A compilation of the material has not been made, however, and the most significant task would be recording gold traces on cameos from ancient contexts.

61 On production, see Zwierlein-Diehl 2007, 326–329. 504 f. Figs. 984–990. In a rare case, there is evidence that glass cameos were made from a mould that was taken from a cameo now preserved in the Kunsthistorisches Museum in Vienna; copies are held in Florence and Klagenfurt: see Zwierlein-Diehl 2008, 182–185 no. 18 Figs. 138. 140 f. 328–330.

62 On the value of gold, see Lapatin 2015, 19–34. On the process (and semantics) of gilding, see Anguissola, this volume.

63 See Zwierlein-Diehl 2008, 24.

Fig. 12: Cameo with *capita opposita* in ancient medallion, 3rd century A.D.; Vienna, Kunsthistorisches Museum, inv. IX 1976.

The materiality of these cameos, which appears so natural in perception and is so heavily emphasised in the sources, cannot be seen as the sole result of nature. In ancient cameo engraving, it was far more common to intentionally manipulate and exploit the optical appearance of the material by means of artificial processes, so that the aesthetic qualities and meaning of a piece could not always be separated. This relationship only gained cultural significance through the act of perception. In antiquity cameos were typically encountered in rings (Fig. 4), or, from the 2nd and 3rd century B.C. on, in earrings or pendants (Fig. 12)[64]. The setting gave the jewel a frame, within which its materiality and crafted image were displayed. The finished objects were thus no longer limited to their native and unchanging materiality, but rather attained a new dimension, gaining sensual material properties through the modification of their natural disposition. This disposition was 'tamed' and intentionally modified in order to produce images using the material's properties. It was no longer the materiality of the gemstones that appeared in its pictorial form; rather, pictoriality emerged through the production of form, and contrast created imagery on the basis of the artificial alteration of nature. Human intervention does not usually mask natural properties, but rather enhances them in an effort to focus perception. These two perspectives (creating image-like qualities, or 'Bildlichkeit', by modifying nature and emphasizing natural qualities of materials) can finally be observed against the background of real situations, in which the perception of precious stones outlined here can be demonstrated time and again.

Summary: Enhancement of Form and Significance

The first aim of the paper was to examine the physical dimension of materiality and its perception, which has been transformed by literary sources. The second step was to contrast this with artificial modifications made through craft and the optical effects achieved. We cannot reach any final, unified conclusion simply by merging these two perspectives (natural physical characteristics and artificial modifications, along with the latter's results) via our own perception of the object: the material resists such a simplistic approach. The following outlines some starting points for further discussion.

64 Rings: Pirzio Biroli Stefanelli 1992, 129 f. Figs. 108 f.; Platz-Horster 2012, Pl. 1; pendants: Deppert-Lippitz 1985, 12 f. no. 11 Pl. 6, 1; Zwierlein-Diehl 2007, Pl. 146 Fig. 652; necklace: Platz-Horster 2012, 85 no. 62 Pl. 14; brooch: Marshall 1911, 339 f. no. 2867 Pl. LXVI; Deppert-Lippitz 1985, 16 no. 26 Pl. 11; Pirzio Biroli Stefanelli 1992, 201 Fig. 244. Gold settings are the most common. In one instance, a female portrait was set into a recess in the plaster near a *loculus* in the Catacomb of Priscilla: see Bisconti 2019.

First, any analysis of these visual effects in a historical setting proves methodologically complex. This is because any approach must not only take the anthropological prerequisites of this perception[65], but also the cultural dependency of the processes mentioned at the beginning of this paper into account. Two starting points are available to us: potential contexts in which the visual effects outlined here were actually engendered, and literary descriptions that provide evidence of the perception of material qualities. With regards to cameos and cameo vessels, the context of the effect can be determined relatively reliably.

Because they were so beautifully carved and engraved, glass or stone cameos were mostly used as the main element in jewellery[66]. They were typically set in rings and worn on the finger (Fig. 4). More rarely, they served as medallions (Fig. 12) or were set into diadems. From the late 2nd and 3rd century A.D. they also formed an integral part of earrings and necklaces. During perception, the objects remained constantly close to their wearer and were thus simultaneously bound up with his or her personal interactions. In contrast to seals, cameos remained connected to the person wearing them rather than simply being put aside after use[67]. This means that the context of perception did not only affect the cameo itself, but rather that the cameo represented one element in a person's ensemble of 'signifiers'[68]. The small format designs were worn to be viewed up close and were therefore particularly effective in contexts of close social interaction. When possible, they needed to be taken in hand in order to reveal the engraved image.

The need for tactile interaction can also be postulated for the cameo vessels. According to historical accounts, vessels made from fluorite were viewed as luxurious tableware for *convivia*, and the jug in St. Maurice (Fig. 10) also belonged functionally to this domain, which counted as one of the central social events of everyday Roman life[69].

If we now turn to the perception of the object itself, we must first state that what is perceived – that is, the material described – is clearly identifiable. With respect to the minerals agate and fluoride, which have been discussed here, the common reference point for the appearance must be clarified. In this context we have to take into account that this appearance is described by ancient authors and formed through the medium of text[70]. Only on this basis can we grasp the connection between the optical perception of materiality and an alteration of this perception in different contexts (assuming that a materiality is constant). Since no such description of finely carved precious stones has survived, the following discussion will make use of a source that discusses an engraved gemstone, examining the conflict between natural materiality and intentional design in a particularly vivid manner.

In the 3rd century A.D., Heliodorus of Emesa recounted the love story of the Thessalian nobleman Theagenes and the Ethiopian princess Chariklea in the ten books of his *Aithiopika*[71]. In the fifth book Heliodorus describes a ring set with an Ethiopian amethyst in great detail, including the bucolic scene engraved upon it:

'They [scil. amethysts] are like rosebuds just breaking into flower and bushing pink for the first time in the sunlight, but from the heart of an Ethiopian amethyst blazes a pure radiance, fresh as springtime [...]. Every amethyst from India or Ethiopia is as I have described, but the stone that

65 See Yantis 2001; Nänni 2009. Starting with the Pre-Socratics on, the eyes were given priority over the other senses: see Grassi 1962, 48.

66 Platz-Horster 2012, 29–32.

67 See Platt 2006; Lang 2012, 98–106; Grüner 2014. Seals made with cameos are extremely rare (see Boussac 1988, 326 f. Fig. 40).

68 See Schenke 2003.

69 If ointments were an important part of the *convivium*, as postulated by Elke Stein-Hölkeskamp (2005, 18 f.), then it may be assumed that stone vessels, which were used as *balsamaria* to store precious oils, were often employed there.

70 This cannot however be said of all precious stones in antiquity. On the attempt to match ancient terminology with modern designations, see Thoresen 2017, 175–179 with a tabulated overview. See Thoresen 2017, 198 f. for the explanation of the problem of inconsistent terminology between modern gemmology and mineralogy.

71 Morgan 1982, 221–265; 1996, 417–456; Winkler 1982, 93–158.

Kalasiris was now presenting to Nausikles was far superior to all others, for it had been incised and deeply carved to present living creatures. The scene depicted was as follows: a young boy was shepherding his sheep, standing on the vantage point of a low rock, using a transverse flute to direct his flock as it grazed, while the sheep seemed to pasture obediently and contentedly in time to the pipe's melody. One might have said that their backs hung heavy with golden fleeces; this was no beauty of art's devising, for art had merely highlighted on their backs the natural blush of the amethyst. Also depicted were lambs, gambling in innocent joy, a whole troop of them scampering up the rock, while others cavorted and frolicked in ring around their shepherd, so that the rock where he sat seemed like a kind of bucolic theatre; others again, revelling in the sunshine of the amethyst's brilliance, jumped and skipped, scarcely touching the surface of the rock. The oldest and boldest of them presented the illusion of wanting to leap out through the setting of the stone but of being prevented from doing so by the jeweller's art, which had set the collet of the ring like a fence of gold to enclose both them and the rock. The rock was a real rock, no illusion, for the artist had left one corner of the stone unworked, using reality to produce the effect he wanted: he could see no point in using the subtlety of this art to represent a stone on a stone! Such was the ring'[72].

In this description the artificial character of the ring is pushed increasingly into the background. It is the material properties of the amethyst in particular that allow the pelt of the sheep to appear a luminous gold. On the one hand, the setting permits the stone to be worn, and on the other it is understood as an element of the design, since it functions as a golden enclosure for the herd[73]. Through this interplay, the relationship between motif and material becomes so intense that, by the end of the description, the line between art and reality fades.

The process that Heliodorus describes can also be used for understanding the finely worked jewels examined here. Natural characteristics and technical modifications were not seen as conflicting ideas, but rather as mutually enhancing. They did not compete with one another, but rather aimed to achieve an optical effect or impact that only competed with – and was ultimately surpassed by – the literary reshaping of the experience. Thus, the passage by Heliodorus offers ideas that we can glean much from.

The natural beauty of the cameos emphasised in the sources was, as the examples above have demonstrated, usually modified. In contrast to the view of van de Velde cited in the introduction, here the natural characteristics of the material were emphasised despite the practices of modification evidenced and already well-known in antiquity. It is therefore evident that cameos are hybrid objects in which art and nature flow together through human intervention. This alone produces unique optical effects. If we are trying to gain an enhanced perspective on carved and engraved stones in antiquity, as well as their contribution to overarching questions concerning aesthetic, function and semantics, there is little value in setting these two aspects against one another. These stones also contradict the notion that all art is an imitation of nature, an idea widely attested in the literature[74]. Cameos were not created from abstract ideas, and imagined forms were not simply imposed upon the material (as proposed, for example, in the design theory of the Stoics)[75]. Precious stones offered gem cutters numerous concrete starting points from which to work, so that pictorial ideas could arise under the power of that materiality[76]. The resulting forms were the outcome of transforming natural material to create meaning or significance. The material was not just the substance from which a pictorial design was made, but rather a feature of the motif itself. In response to the question posed by Pliny referenced in the title of this paper, one might say 'art, because

72 Heliodor. 5, 14, 2–4. See also Menze 2017, 266 f. I would like to thank Markus Deufert und Andreas Hainichen (Leipzig) for their discussion of this passage in the context of a shared seminar.

73 For a parallel, see Anth. Gr. 9, 747; Zwierlein-Diehl 2007, 2.

74 Sen. Ep. 65, 3.

75 See Grassi 1962, 152–157.

76 This goes much further than the considerations offered by Platt (2018, 231), who argues that the connection between nature and art in sculptural works and painting could inspire reflection upon nature.

this is also nature'. Even if form is only revealed by engraving, this form was still based directly upon the natural materiality and the possibilities that stemmed from it[77]. The artistic representation shifted the focus of the perception to the meaning or significance of forms. Yet the colour, form and brilliance of the precious stone could prefigure the following pictorial-symbolic process, meaning that the natural material dimension of the object retained its agency even when engraved, and was therefore not limited to being the passive product of the craftsman's intervention[78].

Finally, in the case of cameo vessels we must take into account the visual effects that would have made an impact during use at the *convivium*. Statius, for example, emphasises how vessels made of rock crystal and fluorite increase the charm of wine[79]. Translucent rock crystal and fluorite cannot be directly compared in terms of their visual effects, though the passage proves without doubt that attention was paid to them. It also demonstrates that the objects were valued for more than their practical use or their figurative/pictorial qualities[80]. In the case of the *murrina vasa* it was precisely the combination of their varied natural colouring with the crimson-coloured wine that produced perceivable effects when the vessel was actively used. The inviting character of such vessels was not solely a consequence of their practical use (and thus cannot be thought of as purely functional), but rather was simultaneously inspired by the viewer's experience of the vessels' optical effects. An enhanced form of the same dynamic can be postulated for cameos. Their small-format representations were designed for close-up viewing and therefore worked primarily in contexts of close social interaction. If necessary, they could be held to fully 'open up' the image. The optical impact of cameos and cameo vessels therefore possesses a dual character. They provide access to the object, but only reveal themselves fully in active use.

Alongside the concrete powers credited to precious stones (which have not been discussed here), one of their fundamental properties is their constant oscillation between material and image[81]. We can read them simultaneously as a sensual manifestation of our experience of the world's natural beauty, as well as a pictorial view of that same world. The process of crafting the precious stone grants it a natural effect that remains present in every context in which it is perceived. In this way, the artistic (and thus artificial) techniques employed to enhance the material's natural effects therefore always leads us to the origin of its materiality and its sensual appearance[82].

Dr. Jörn Lang
Universität Leipzig
Historisches Seminar, Klassische Archäologie
Ritterstr. 14
04109 Leipzig – Germany
joern.lang@uni-leipzig.de

77 Such an approach would most likely find its equivalent in the Neoplatonic model of refinement: see Plot. 5, 8, 1; Halfwassen 2007, 43–58. But see also Cassirer's ([1942] 1994, 43) remarks on the dimensions of materiality and meaning.

78 They retain parts of their expression in the sense of Cassirer, even when their representation has been transferred to a linguistic, and therefore different, level of perception through classification of the image: see Cassirer [1929] 2002, 134–137.

79 Stat. Silv. 3, 56–59: '[...] he bears first cups to the great leader, weighty murrhine and crystal, with a hand more fair. New grace enhances the wine' (*hic pocula magno prima duci murrasque graves crystallaque portat candidiore manu; crescit nova gratia Baccho*). I thank Anna Anguissola pointing this passage out to me.

80 Here we must consider whether such descriptions should be understood as references to the expression of objects and thus to an element that precedes meaning, following Cassirer ([1929] 2002, 134 f.).

81 Sensual expression (such as colour effects) and significance (such as pictorial representations) cannot be clearly separated. To explore these levels further, see Cassirer [1929] 2002, 124.

82 For a comprehensive discussion, see Cassirer [1929] 2002, 119, who differentiates the experience of expression (a lower form) from what he calls thing-perception (Dingwahrnehmung) (a higher form). The constant mention of the natural properties of precious stones in the sources demonstrates that such fundamental experiences always had to be taken into account for such stones, even when they had been formed by human intervention.

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Benjamin Engels

Roman Basket Urns as Elements in a Transmaterial Design System

Abstract: The paradigm of material hierarchies is increasingly losing importance in the research on transmaterial references in artefact design. Instead, the independent aesthetic agenda of the respective objects is usually emphasised. This paper examines what constitutes this specific aesthetic, how it is produced and how it can be further differentiated by using the example of a group of stone urns whose surface design refers to the texture of wickerwork. In the analysis, the notion of linear dependencies is replaced by the concept of a design system consisting of genre-immanent and intermedial references. This approach allows clear differentiation of phenomena within this group, which has so far been regarded as homogeneous. The results are significant for interpretation of the urns within the context of ancient funerary culture, but they also provide general information on the mechanisms of ancient artefact design.

The aim of this paper is to investigate a group of urns from the Roman Imperial period, whose unifying feature is a surface textured in the manner of wickerwork and which have not yet been comprehensively examined in any existing study. The intention is to use a clearly defined group of artefacts to demonstrate the potential of a perspective on transmaterial design that discards the idea of clear directionalities between an authentic material prototype and a replica (and, with this, an 'origin' in a temporal sense), and embraces the notion of a design network featuring complex interdependencies[1]. This desideratum results directly from the observation that previous studies of this material lack an engagement with current theoretical considerations of the reciprocal relationship between (cultural) texts ('inter-/trans-textuality'[2]), images ('inter-/transpictoriality'[3]) and media in general ('inter-/transmediality'[4]). All these essentially structuralist concepts share an understanding of cultural expressions as parts of complex systems of (all) other cultural expressions. With the associated recognition of an independent aesthetic agenda of the respective products[5], the narrow interpretative focus on a hierarchical sequence of recognisable references (for example, in the sense of imitation) is likewise called into question[6].

More recently, this concept has also been applied to materiality[7]. This new approach owes its appeal to the fact that formal and above all material transfers were long considered aesthetically inappropriate in the tradition of 19th century art theory and according to the principle of 'truth to material'[8]. Especially in archaeology, the term 'skeuomorph' was established to describe such linear material transfers. Henry Colley March and Alfred C. Haddon first introduced this term as a neologism. For them it represented a mode of the ornamental, which, in their explicitly evolutionist

1 See Wolf 2016, 105, for a similar conceptualisation of 'transmateriality' as a 'neutral term that allows us to explore the artistic translation of materials into one another'.

2 For a summary with reference to antiquity, see Fullerton 1997, 437–440; Dorka Moreno 2019, 27–42.

3 von Rosen 2011.

4 See Rajewsky 2002; Wirth 2013.

5 von Rosen 2011, 208: 'Qualität als originelle Differenz zu einem Vorbild oder einer Norm'. Also Strässle (2014, 15) postulates a distinct aesthetic value that is 'weder dem imitierten noch dem imitierenden Material zuschreibbar'.

6 See Fullerton (1997, 440), who pleads for an 'intertextual approach' that centres 'the interpretation on the relationships themselves while avoiding the a priori judgements inherent to concepts like influence and imitation'.

7 Strässle 2014, 12–16; Wabersich 2014; Wolf 2016; 2019, 93 f.

8 See the contribution by Haug – Hielscher, this volume. However, Gottfried Semper, for example, also emphasises the aesthetically pleasing aspects of creative imitation: 'Aber nochmals bewundern wir den hellenischen Geist, – mit welchem Takte er den stofflichen Bedingungen des Töpferthones gerecht zu sein verstand, indem er die herkömmlichen Typen in den wahren Töpferstil übersetzte' (Semper 1863, 113).

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views, referred to an origin in terms of the technically conditioned surface textures of a prototype[9] made of another, usually organic, material[10]. A shift in meaning was then brought about by Michael Vickers and David Gill, who published extensively on skeuomorphism in Greek (and, less frequently, Roman) pottery. They followed the clear agenda of a formal precedence of metal and glass vessels over clay vessels and combined this with a resolutely economic interpretation based on the idea that the imitation should be considered less valuable yet more affordable than the original[11]. Only recently have a growing number of studies focussed on the aesthetic effects of transmaterial references, particularly in ancient pottery[12].

'Basket urns' differ in several ways from the phenomena observed in pottery. For one, they refer to a (supposedly) inferior material rather than a higher quality one. Economically oriented hypotheses based on material hierarchies are therefore not at issue here, or if so, only in the sense of 'upgrading'. Second, the fact that possible 'real' prototypes are made of organic material also means that we are even less informed about their appearance and formal variance than, for example, in the case of the metal vessels that are discussed as prototypes for ceramic vessels. Third, unlike with metal, glass and ceramic vessels, the change of material is accompanied by a significant change in function[13]. Fortunately, the phenomenon as a whole is also much more limited and therefore suitable for detailed differentiation. That such an approach is necessary is demonstrated by the fact that although the urns can be clearly distinguished chronologically, regionally and in terms of their design, in literature, they are unanimously described as a coherent phenomenon with a uniform meaning. Moreover, the very terminology used to describe the phenomenon reveals the prevailing idea of a clear link between a model and its replica[14], which should be thoroughly reconsidered.

In methodological terms, attempts have already been made to generally categorise different modes of intermaterial design. Thomas Strässle, for example, proposed the modes of 'Materialinteraktion', 'Materialtransfer' and 'Materialinterferenz'[15]. These categories are certainly helpful for a large-scale structuring of various phenomena within the material culture of a particular cultural context[16]. However, they are not suitable for a more granular subdivision of individual phenomena such as the present one, as the urns would all fall into Strässle's category of 'Materialtransfer'. It is precisely this more nuanced analysis, however, that is a necessary foundation for identification of a synchronous differentiation or a historical development of the material. Therefore, an initially inductively oriented phenomenological description of the objects seems more promising. The analysis will then explore the artistic means by which the urns are visually approximated to a prototype

9 Henceforth, the term 'prototype' is used deliberately without specifying its status as a concept or material thing.
10 Colley March 1890, 172–178; Haddon 1895, 75–117; cf. Donohue 2005, 81 n. 182. However, the concept of baskets as prototypes for ceramics can be found earlier, e. g., in Semper 1863, 33–37; cf. Zimmermann 1998, 4; Donohue 2005, 76 f.
11 Representative for many other publications: see Vickers 1985; 1999; Gill – Vickers 1990. For a critical evaluation, see Zimmermann 1998, 2; Wabersich 2014, 209–211; Grüner 2017, 29 f.
12 Zimmermann 1998; Wabersich 2014; Blitz 2015; Grüner 2017 and Flecker, this volume.
13 Unless we assume that urns made of wickerwork existed. See below for a more detailed discussion of this problem.
14 Alexander 1938, 52 ('made to look like a wicker basket'; 'replicas'); Toynbee 1971, 255 ('appear to counterfeit wicker baskets'); Buora 1982, 189 ('Anche nei minimi dettagli e chiara la volonta di riprodurre degli autentici recipienti in vimini.'); Bertacchi 1982, 220 ('decorata in modo da simulare un paniere di vimini'); Monacchi 1996, 971 ('fedele imitazione degli esemplari reali anche nei dettagli'); Feugère 2001, 24 ('reproduit tres fidelement'); Cullin-Mingaud 2010, 92 ('reproduisent très rigoureusement des cistes en vannerie'); Abbondanza 2019, 94 ('riproducono con esattezza gli intrecci dei giunchi di vimini').
15 Strässle 2014, 13–16. Strässle draws directly on Rajewsky's (2002, 15–19) concepts of 'Medienkombination' (media combination), 'Medienwechsel' (media exchange) and 'intermediale Bezüge' (intermedia references). In a similar deductive approach, Zimmermann (1998, 9) used terms from the field of rhetoric (*interpretatio*, *imitatio*, *aemulatio*) to describe the relationship between metal and clay vessels. This approach is not convincing, because apart from the anachronism that Zimmermann does not deal with 'Roman' material culture, she mainly describes the transfer of forms existing simultaneously, rather than a retrospective adaption. Furthermore, different modes of formal transfer are likely to apply to ceramics and sculpture in general: see, e. g., Rolley 2001.
16 Cf. Flecker, this volume.

Fig. 1: Basket urn, marble, 24.0 × 30.0 × 23.3 cm; Naples, Museo Archeologico Nazionale, s. n. (here: no. 4).

and, at the same time, identify the structural aspects by which this proximity is, in turn, mitigated or irritated. This enables further characterisation of the prototypes to which the respective object refers in its design, and analysis of how they relate to one another in a complex design system. On this basis, we can finally ask which chronological, functional or semantic aspects are associated with the different design modes.

Form

The known cases of urns with a wickerwork surface form two apparently independent clusters[17]: a small one from Rome and a much larger one consisting of several workshops in the upper Adriatic/southeast Alpine region, with a major concentration in Aquileia (hereafter referred to as the 'Aquileian cluster', for the sake of simplicity)[18]. The list provided in the appendix contains all 24 known specimens, as well as 19 'pseudo-urns'[19]. Since we are primarily interested in the visual phenomenon here, and the two groups cannot be fundamentally distinguished solely on the basis of their surface design[20], they are analysed together rather than separately. Most of the pieces have a cylindrical shape and only three of them are rectangular (nos. 4, 5 and 43; Fig. 1).

Apart from these general differences in form and origin, the basic structure of most of the pieces shows remarkable similarities, both in terms of the general composition and the weaving technique depicted. The horizontal division of the basket body is achieved by means of single, double or multiple layers of braided bands (nos. 28, 29 and 30; Figs. 2 and 3), which always form a base and a top 'moulding'. A horizontal profile running around the centre further divides the walls of almost all the cylindrical pieces, with the exception of urn no. 1. This profile is once more either designed as a braided band (e. g., nos. 2 and 10; Fig. 4), or as a wide cuff, and is framed by braided bands that are undecorated (nos. 7 and 28; Fig. 2) or decorated with an ornamental pattern (nos. 6, 9, 23,

17 Sinn 1987, 15.

18 The urns from Rome are made from marble, those of the Aquileian cluster mostly from limestone.

19 The massive 'pseudo-urns' served either as grave markers (*cippi*) (Buora 1982, 192 f.; Verzár Bass 1998, 168) or were part of the sculptural decoration of monumental tombs: see Miglbauer 1994.

20 Compare nos. 28 and 29, for instance.

Fig. 2: Basket urn, limestone, H 56.0 cm, D 45.0 cm; Aquileia, Museo Archeologico, inv. 854 (here: no. 28).

Fig. 3: Basket urn, limestone, H 45.0 cm, D 30.0 cm; Aquileia, Museo Archeologico, s. n. (here: no. 30).

29, 31, 32[?] and 40). The actual wickerwork is always organised in vertical registers, filled with horizontal ribs[21]. These ribs, which indicate the individual willow rods, are either flush with one another or slightly offset so that each rib ends just between the two adjacent ones (e. g., no. 30; Fig. 3)[22]. In all cases, therefore, an extraordinarily dense weave is represented, which has no gaps and does not reveal the vertical stakes. Another common motif that can be found in urn no. 4 and in all the pieces from the Aquileian cluster, is the pattern of horizontal and diagonally crossing flat bands which further structure the body of the urns and which apparently represent lacings to stabilise the wickerwork[23].

Apart from these connecting elements, which enable a systematic comparison of the objects in the first place, there are clear differences on various levels, and these can also be described in terms of different degrees of proximity to or divergence from basket prototypes. This applies, on the one hand, to the motivic coherence of the objects as 'baskets' and, on the other hand, to their respective surface texturing and their relationship to the material depicted, i. e., willow or rushes. In the examples from Rome, every visible part of the surface – both the body and the lid – is textured as wickerwork. The knobs of the lids, in particular, are designed in varying detail and thus give the impression of antiquarian exactitude. For example, urn no. 2 displays a tassel made of textile or leather and no. 4 a kind of clasp made of bone that is known from the archaeological record[24]. In

21 There are, however, two exceptions: according to the Canina drawing (Fig. 9), the wickerwork of no. 3 seems to have been represented by diagonal grooves instead of vertical registers. And in no. 10 the horizontal willow rods fill the spaces between the cross bracings without further subdivision.

22 Since Buora (1982) illustrates the urns from Aquileia exclusively in schematic drawings, this distinction cannot be made for all pieces.

23 The material of these lacings is undetermined. Cullin-Mingaud (2010, 59) suggests that it is leather, Bertacchi (1982, 221) that it is willow bark.

24 Feugère 2001; Gostenčnik 2004.

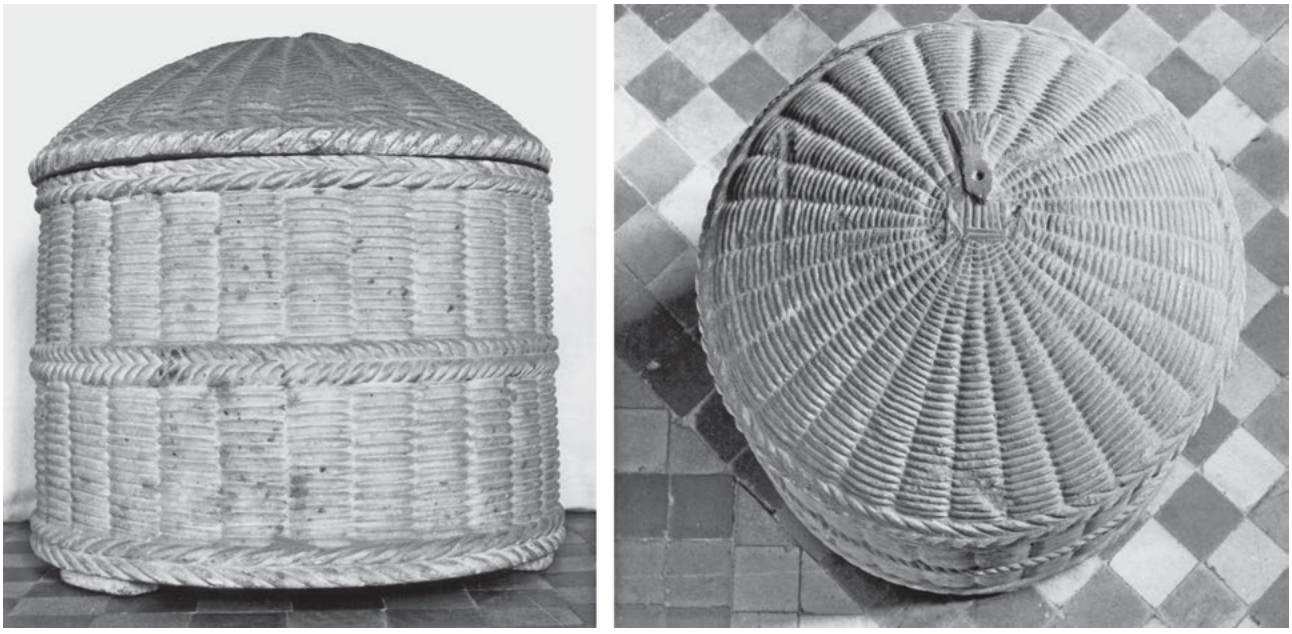

Fig. 4: Basket urn, marble, H 22.5 cm, D 32.0 cm; Rome, Musei Vaticani, Galleria Lapidaria, inv. 9237 (here: no. 2).

urn no. 1 (Fig. 5), the centre of the upper side is covered by a circular, flat, unornamented disc with a drilled hole in the middle, which most likely represents a bone disc that was used to hold the radial stakes of the lid in place[25]. What is particularly noticeable about this lid is that the sculptor has deliberately incorporated many small weaving faults[26]. The wickerwork is not parallel in places, and individual ribs converge instead of running straight up against the next vertical segment. It is also striking that the upper 'moulding' changes its direction at two points, although it would not need to do so from a weaving (and even more so from a sculptural) perspective. Altogether, in these examples, the intention to create an (almost) unbroken pictorial reference to wicker baskets is already apparent at the motivic level[27]. Furthermore, individual elements of the representation find almost exact correspondences in the components of actual wicker baskets known from the archaeological record.

For the Aquileian cluster, this principle of coherence is in no case proven with certainty, although it cannot be ruled out entirely for the fragmented pieces. The most obvious visually disturbing factors here are the design of the lids and the ubiquitous use of *tabulae* with or without inscriptions. Significantly, the only specimen in the Aquileian cluster whose lid is textured as wickerwork shows a *tabula* on its body (no. 22; Fig. 6). In other cases, the walls are coherently designed as a basket surface, but the lids deviate, for example, either by not being decorated at all (no. 6) – and thus conforming to the standard for urns in Aquileia – or by carrying crouching dogs or lions, thus blatantly contradicting the consistent overall impression of a basket (no. 8). A particularly deviant and unusual case is urn no. 30, with its lid that terminates in a pinecone, a design known from funerary altars and the roofs of monumental tombs (Fig. 3)[28]. Finally, there are three loosely related individual cases. The wickerwork surface of no. 39 additionally features the representation of a *transitus* in relief, thus counteracting a consistent reading as a representation of a basket (Fig. 7). In nos. 40 and 41 (Fig. 8), the wickerwork texturing of the surface has been dispensed with completely, so that at first glance there seems to be no reference to baskets at all. The

25 See Gostenčnik 2000a, 59; 1997 for examples made of bone without reference to no. 1, which provides important evidence for Gostenčnik's interpretation of these bone discs.

26 See Zanker 2020, 267.

27 Only no. 1 subtly deviates from this rule (see below).

28 For the connection with tomb architecture, see Bertacchi 1982, 222; Buora 1982, 194.

Fig. 5: Basket urn, marble, H 24.6 cm, D 31.6 cm; New York, Metropolitan Museum of Art, inv. 37.129 a, b (here: no. 1).

Fig. 6: Basket urn, limestone, H 41.0 cm, D 44.0 cm; Aquileia, Museo Archeologico, s. n. (here: no. 22).

Fig. 7: Basket urn, limestone, H 25.0 cm, D 30.0 cm; Aquileia, Museo Archeologico, inv. 1576 (here: no. 39).

Fig. 8: Basket urn, limestone. H 67.0 cm, D 56.0 cm; Aquileia, Museo Archeologico, inv. 317 (here: no. 41).

appearance of urn no. 41, in particular, with its banquet scene in relief, is so far removed from real wicker baskets that Valnea Scrinari has suggested that it represents an outdoor banquet, with a wooden construction for a tent in the background[29]. In fact, a direct comparison with the other pieces shows that the horizontal and diagonal 'beams' are indeed lacings, as described above[30]. Thus, while there are certainly elements here that create a link between the urn and baskets, these quite literally recede into the background.

As well as these motivic features (some of which are clearly distinguishable), the stylistic implementation can also be compared[31]. Of particular interest here is whether and to what extent the surfaces are textured in a way that refers specifically to the materials represented. Differentiations in this respect can be compared particularly well based on representations of the horizontal weave structure and the lacing. Urn no. 1 in particular (along with nos. 4, 5 and, to a lesser extent, 23) is characterised by an uneven and therefore lively arrangement of the horizontal ribs in rather flat relief, which differ clearly in diameter and plastic volume from the stakes braided into profiles. The intention seems to have been to make a distinction in the representation of the wickerwork between the thicker stakes, which give stability to the basket construction and the more delicate willow rods wound around them. This differentiation in the representation of the material is particularly evident in the lacings of no. 4, which are organically placed around the edge of the lid and overlap on the basket wall in a technically plausible manner[32].

This overall naturalistic mode of design can be clearly distinguished from cases in which the differentiation of willow rods is not applied. For example, the horizontal ribs of urn no. 3 all look the same, and their plastic volume does not differ from the rods in the braided profiles. This also applies to almost all urns in the Aquileian cluster and can, in turn, be paralleled there with the rendering of the lacings, which usually appear as sharp-edged, stiff-looking bands on top of the wickerwork that do not overlap or otherwise refer to one another (e. g., no. 22; Fig. 6). Of course, this stylistic mode also evokes the impression of an exact reproduction of a wicker basket, except it is not achieved via a naturalistic differentiation of material qualities, but rather by a realisation of the characteristic rhythmic surface pattern resulting from the technique of basket weaving[33].

Chronology

An evident question is whether these formal differences are chronologically sequenced. However, dating these pieces is rather difficult, since in most cases there are no datable contexts, and stylistic references are rare due to a lack of links to better-documented material. There are, however, some clues that provide a loose chronological framework.

In the case of Rome, the production of these urns seems to be limited to the Early Imperial period[34]. There are two concrete indications of this: first, the presumed context of urn no. 3 (Fig. 9), which is usually associated with the Tomb of Eurysaces and could therefore date to the Late Repub-

29 Scrinari 1972, 106 f.

30 Maionica 1910, 48; Buora 1982, 191 f.

31 The closely related criterion of 'quality' (which could be brought into play for the Aquileian cluster in particular) is deliberately excluded here, as the focus is more on the visual appearance of the objects and less on their production conditions.

32 A polychrome rendering, which could further enhance the lifelike effect, has not been documented in any of the cases, but has been observed in other urns from Rome (Sinn 1987, 12). A basket representation from the Domus Tiberiana which belongs to a sculpture has a differentiated painting and gilding (Abbondanza 2019, 93).

33 See Bertacchi 1982, 220: 'I supporti verticali dell'intrecciatura sono larghi e piatti, ma non si vedono se non fnella loro sequenza perché sono completamente ricoperti dal fitto intreccio orizzontale del vimine sottile; questo e reso con estrema attenzione in modo da rappresentare in maniera realistica l'in-treccio, con lo sfalsamento delle linee, mentre il vimine in sé e trattato a risalto spigolato, in maniera innaturale.'

34 See Sinn 1987, 62, without concrete arguments.

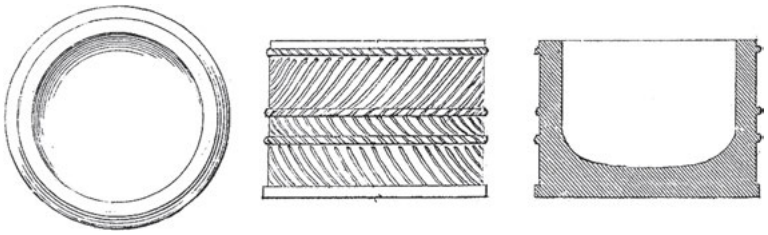

Fig. 9: Drawing of Basket urn by Luigi Canina; Rome, from Porta Maggiore, today lost (here: no. 3).

lic or Early Augustan period[35]. However, it must be pointed out that the urn itself was found in a secondary context near the grave and that the attribution is based on a complex chain of evidence, which will be further discussed below[36]. Second, urn no. 1 is often dated to the Augustan period, probably because of its high-quality workmanship and naturalistic style[37]. This dating is also supported by the design of the leaf *cymatium* running around the foot profile, which has not yet been considered in the discussion[38]. The same dating can be assumed for nos. 4 and 5, which are basket chests, as they are connected stylistically to no. 1, which can be recognised in the characteristically curved ribs of the wickerwork that are bent alternately upwards and downwards[39].

In the case of Aquileia, the phenomenon seems to be mainly limited to the 1st century A.D.[40]. Here again, there is little concrete evidence for dating. The name of the deceased mentioned on urn no. 30, for example, points prosopographically to the 1st century A.D.[41]. The inscription on no. 23 can possibly be dated to the beginning of the 2nd century A.D. on the basis of the letter forms[42], and no. 41 is dated by Scrinari to the end of the 1st century B.C., based on a stylistic analysis of the relief decoration[43]. Both Maurzio Buora and Luisa Bertacchi assume that there is a succession of urns and 'pseudo-urns' – albeit each with a different group at the beginning. While Bertacchi argues for the primacy of 'pseudo-urns', citing the development of purely commemorative grave altars into forms with integrated ossuaries as an analogy[44], Buora contends that the 'pseudo-urns' imitate stone urns (which, in turn, imitate wickerwork urns)[45]. This argument in particular reveals very clearly the concept of a directed and chronologically progressive imitation process, which almost inevitably leads to such sequences. Ultimately, both models prove to be intuitive, as there are no

35 For a discussion of the tomb's date, see Petersen 2003, 240 n. 46; Jones 2018, 64 n. 5.

36 These concerns are shared by Ciancio Rossetto (1973, 30).

37 Waywell 1986, 106 ('dating perhaps to the early Imperial period'); Sinn 1987, 62 (Early Imperial); Picón 2007, 488 no. 422 (Augustan, c. 10 B.C. – A.D. 10); Zanker 2020, 267 (Early Imperial, c. 10 B.C. – A.D. 10).
Occasionally, the date is more general: see D'Ambra 1989, 399 n. 5 ('It may date to the first or second century A.D.').

38 Comparable leaf forms with a delicate plant texture can be found in the Basilica Aemilia (Lipps 2011, 79 Fig. 55), for example, or on Early Imperial *putealia* (Golda 1997, 87 cat. no. 24 Pl. 65, 1), and on Augustan urns with more reliable stylistic dating criteria (Sinn 1987, 94 f. no. 15 Pl. 7). The 'vegetabilisation' of the *cyma*'s leaves (which is only hinted at here) is a characteristic of Flavian architectural ornament (see Wegner 1957, 52–54; Ganzert 1983, 196; Pfanner 1983, 24), but it differs in the absence of light/dark contrasts caused by the holes drilled in such Flavian ornamentation.

39 Zanker (2020, 267) recently suggested that no. 1 and no. 2 also come from the same workshop. Given the stylistic differences described above, this does not seem very plausible.

40 Scrinari 1972, 105–107 nos. 315–317; Buora 1982, 193; Ortalli 2005, 262; more carefully, Miglbauer 1994, 157 (1st–2nd centuries A.D.).

41 Bertacchi 1982, 225.

42 Maionica 1895, 31 f. no. 20; Buora 1982, 193. 197. According to Buora, this is one of the latest basket urns from Aquileia.

43 Scrinari 1972, 106 f.; Buora (1982, 196) suggests a later date, during the first half of the 1st century A.D., based on the shape of the amphora depicted in the relief. However, considering the vague depiction, his identification with the type Dressel 6B, on which the date is based, is not imperative. The amphora could also belong to the type Dressel 6A or even Lamboglia 2, which would again indicate a date from the Late Republican period: see Bezeczky 2013, 114 f. 120.

44 Bertacchi 1982, 223.

45 Buora 1982, 193: 'Sembra evidente che le pseudourne nascano per imitazione delle urne a cista [...]'.

formal indications in the material from Aquileia that suggest a non-concurrence of urns and 'pseudo-urns' in any way.

However, it is remarkable that the other examples from Pannonia and Noricum are all dated to a later period, namely during the 2nd and 3rd century A.D.[46]. The obvious stylistic (and, for no. 10, also motivic) differences in these cases could therefore also have a chronological explanation. Furthermore, these dates suggest that the wide 'cuffs' placed around the body of the vessel, which are found in all these pieces but also in some from Aquileia, might be a late phenomenon[47]. For other formal aspects, however, the scarce chronological data does not provide any sequencing. On the contrary, both in Aquileia and perhaps also in Rome, in the Late Republic or Early Imperial period, rather different manifestations of the phenomenon appear to exist simultaneously, and heavily reduced adaptations of the basket motif (as in nos. 40, 41 and, if the dating is correct, 3) are thus found among the earliest pieces.

Use

As opposed to some claims in literature[48], this type of urn was not that common, at least in Rome[49]. In the Aquileian cluster, this statement seems to be true for the decorated urns, and yet most of the urns were still undecorated[50]. While there can be no doubt that the pieces from Aquileia were used as urns or *cippi*, as demonstrated by the inscriptions or the combination with characteristic urn lids (nos. 23–30), this is not necessarily the case for the pieces from Rome. Although they are consistently referred to as such in the literature[51], and their shape, size and affordance render this probable, there are nevertheless no formal links to other urns that would allow for an immediate visual identification. This 'retarding moment' is thus obviously a deliberate feature of the design of the pieces.

Interpretive Approaches

There are two major lines of interpretation in the literature for these pieces: on the one hand, a wide array of socio-historical approaches that focus on the identity and sometimes even biography of the individuals buried in these urns and, on the other hand, eschatological considerations that are mainly concerned with a symbolic or metaphoric reading. The socio-historical interpretations all start with a concrete identification of the baskets as either *cistae myticae*, wool baskets or bread baskets. Identification as a *cista mystica* is generally based on convincing iconographical comparisons with *cistae mysticae* in other media[52]. The urn is then connected with the cult of Bacchus and/or Ceres – either generally[53] or via a specific connection with the deceased as a *mystes*[54].

46 No. 9: first half of the 2nd century A.D. (Piccottini 1996, 79); no. 7: 2nd century A.D.; no. 6: Middle Imperial period (both Miglbauer 1994, 157); no. 10: 3rd century A.D. (Miglbauer 1994, 157) or second half of the 2nd – 3rd centuries A.D. (Kremer 2001, 145).

47 This observation increases the doubts concerning the affiliation of no. 3 with the Tomb of the Eurysaces.

48 Cormack 1996, 202 Fig. 153 ('often associated with female burials'); Petersen 2003, 234 ('common type'); Met Collection Online 2020, ('popular').

49 Picón 2007, 488 ('unusual type'). Cf., for instance, the small number of these pieces in Sinn 1987.

50 For example, all decorated urns from Aquileia published by Scrinari (1972) are basket urns.

51 The only exception is Amelung (1903, 218 f.), who considered no. 2 to be a votive.

52 Krauskopf 2005; Abbondanza 2019, 97 f. Altmann (1905, 238 f.) and Sinn (1987, 63) reject this identification because the urns lack the snakes that are almost obligatory for representations of *cistae mysticae* in images.

53 Platner et al. 1834, 37; Buora 1982, 194; Gostenčnik 2000a, 72 f.

54 Amelung 1903, 218 f.; Alexander 1938, 52; Ortalli 2005, 262.

In the literature on no. 1 in particular, the interpretation of the urn as a wool basket, relating to the female sphere and the qualities of the deceased as a virtuous, diligent Roman matron, is widely accepted[55]. While the pieces from Rome lack inscriptions that could provide information about the identity of the deceased, the evidence from Aquileia clearly brings into question the exclusive validity of this interpretation: among the four urns with inscribed names, two were intended for male burials (nos. 28 and 40; Fig. 2) and one for a five-year-old boy (no. 30; Fig. 7)[56].

The last two lines of interpretation share the idea of a biographical reference to the deceased person. This approach has been applied specifically to urn no. 3. In 1838, during the exploration of the nearby Late Republican Tomb of Eurysaces (a freedman who had made his fortune as a bakery entrepreneur), a fragmented block with the following inscription was found: 'Atistia was my wife; she lived as the best woman, the remains of whose body, which survive, are in this bread basket'[57]. Because of the thematic connection provided by the term 'bread basket' (*panarium*), the inscription was assigned to the tomb, although no clear architectural context could be confirmed[58]. The discovery of urn no. 3 in the vicinity (but not in the same archaeological context) then completed the puzzle, as it was identified as the urn of Atistia, the breadbasket mentioned in the inscription[59]. Apart from the fact that this individual explanation does not allow for consideration of the urns' design as a cultural phenomenon presupposing a supra-individual meaning, this interpretation has two major shortcomings. First, the idea that an inscription on the façade of the tomb includes the demonstrative pronoun *hoc* to refer to an urn not visible from the outside is not very plausible[60]. Furthermore, bread baskets depicted in reliefs and paintings usually have open bowl-like shapes and are rather roughly woven[61]. Even from the Canina drawing (Fig. 9), we can be certain that these criteria do not apply to no. 3 at all. Altogether, we must conclude that there is really no substantial evidence linking the urn to this particular tomb[62].

The eschatological interpretations follow two different paths. The first takes up the above-mentioned interpretation of no. 3 and suggests that *all* the extant pieces represent breadbaskets and symbolise food supply (and thus, well-being) for the afterlife[63]. The second focuses on the semantics of the material represented and reads it as a metaphor for durability[64]. In fact, by visually denying ephemerality in favour of embodying stability and longevity, the design of the basket urns is compatible with claims of eternity that also appear in funeral epitaphs, for example[65].

What both approaches have in common is that they regard the urns as imitations or replicas of real baskets. They are thus implicitly linked to an antiquarian perspective in which the basket urns are, above all, a source for ancient basketry, a trade whose products are otherwise scarcely

55 Verzár Bass 1985, 204; D'Ambra 1989, 399; Kleiner 1992, 107; Cormack 1996, 202; Picón 2007, 488; Met Collection Online 2020; Zanker 2020, 267.

56 See Gostenčnik 2000a, 72.

57 CIL I² 1206: *fuit Atistia uxor mihei / femina opituma veixsit / quoius corporis reliquae / quod superant sunt in / hoc panario*; translation by Jones 2018, 64.

58 See Petersen 2003, 231–235. For a complete discussion of the reconstruction arguments of the monument, see also Jones 2018, 64.

59 See Sinn 1987, 63; Kleiner 1992, 107; Petersen 2003, 234 and (more skeptically) 250 f.; Broekaert 2008, 205. Ciancio Rossetto (1973, 30 n. 90), however, did not make this connection explicitly.

60 More likely, though not entirely convincing, is the suggestion of a more complex, perhaps even comical allusion to the profession of Eurysaces or even the building as such: see Petersen 2003, 251.

61 Conveniently, the south frieze of the Tomb of Eurysaces features some typical examples: Petersen 2003, 233 Fig. 5. A similar bread basket can also be seen on the famous wall painting from the Casa delle Panettiere (VII 3,30) in Pompeii (Naples, Museo Archeologico Nazionale, inv. 9071; Fröhlich 1991, 236–241) and a (presumed) wicker bread basket matching this shape was found in Aquileia: see Gaitzsch 1986, 85 no. 18.

62 There are plenty of other graves in the area to which the urn may have belonged: see, e. g., Coates-Stephens 2004, 18–21.

63 Toynbee 1971, 255; Bertacchi 1982, 220; Verzár Bass 1985, 204.

64 Buora 1982, 194. For Middle Geometric pottery 'baskets', see Brann 1962, 14 f.; Haug 2018, 105 f.

65 Lattimore 1942, 165–168.

preserved in the archaeological record[66]. This approach is sometimes extended by the idea that the stone urns reproduce functional predecessors made of real wickerwork[67], which corresponds to the common conception of the skeuomorph as an 'object that displays its own genealogy'[68]. But can this undoubtedly intuitive connection between real baskets and basket urns be taken for granted? On the one hand, the constructive details of the basket urns from the city of Rome (which have been reproduced in detail) speak to the legitimacy of this approach. On the other hand, the formal homogeneity of most other examples shows that the objects are not likely to be direct replicas of individual baskets, but rather part of a centuries-long design tradition with a formal and iconographic 'Eigenlogik', which deserves further investigation.

Synchronous and Diachronic Approaches to a Transmaterial Design System

A detail of urn no. 1, thus far only briefly mentioned, can be instructive in this context: above the plaited foot profile runs a simple leaf *cymatium*, which is chiselled in conspicuously low relief on a plain ribbon (Fig. 5). There are two ways to read this detail, which is unique among all other examples. The most obvious is to take the object's evident naturalistic ambition seriously and to understand the *cymatium* as a component of a basket prototype, for example, in the form of a separately manufactured and attached bronze sheet. In this case, the urn would be a mimetic representation of a basket. A relief on an altar from Capri supports this reading, as it shows a *cista mystica* with the same type of *cymatium* (Fig. 10)[69]. However, the examples from Aquileia indicate that basket urns can be combined with design elements found also on other urns. Indeed, there are many Roman marble urns with similar *cymatia*[70]. The *cymatium* therefore establishes a visual connection to the genre of urns by adapting a characteristic design feature. It could then be understood as a 'fiction signal' that exposes the basket-like nature of the urn to the viewer, revealing it as a mimetic illusion[71].

Whether or not wicker baskets with such profiles actually existed is not, in principle, decisive for this effect. In any case, the design of this wicker basket – be it a real one or merely an allusion – would have encompassed a transmedial reference to the design principles of urns and other richly decorated, round marble objects such as *putealia*[72]. To put it briefly, no. 1 is an urn designed to naturalistically resemble a basket, which in turn has design features characteristic of urns. It is obvious that this semiotic interplay could easily continue in an infinite loop[73], and it is fair to assume that this oscillation was deliberately intended in the design of the urn. It should therefore be clear that in this case trying to establish a linear relationship between prototype and imitation is not worthwhile. Rather, we can only seek to determine the position of the object in a design network, without

66 Monacchi 1996, 971; Gostenčnik 2000a; Krauskopf 2005, 274; Broekaert 2008, 205; Cullin-Mingaud 2010, 92. On this notion in general, see Donohue 2005, 81: 'Such skeuomorphs can be used to reconstruct ephemeral artefacts that cannot be recovered archaeologically. Understood in this way, the skeuomorph functions to extend the archaeological record.'

67 Brusin 1929, 57; Buora 1982, 189. 194; Gostenčnik 2000a, 73; Liverani et al. 2010, 222.

68 Donohue 2005, 82.

69 Dräger 1994, 188 f. cat. no. 9 Pls. 76, 2. 77, 2.

70 They occur both in round (Sinn 1987, cat. nos. 13. 25. 51. 124. 554. 631) and rectangular examples (Sinn 1987, cat. no. 8. 9. 26. 31. 52. 303. 610).

71 The pleasure of unmasking an almost perfect illusion has its fixed place in ancient literary reflection on lifelike representations. The texts thereby explicitly refer to 'fiction signals' such as statue bases or inscriptions: see Wessels 2014.

72 Urns: Sinn 1987, 94 f. no. 15 Pl. 7; *putealia*: Golda 1997, 87 cat. no. 24 Pl. 65, 1.

73 The complexity also increases further. For example, braided profiles can be found on urns whose surface is not textured as wickerwork: Sinn 1987, 92 no. 6 Pl. 4 e. 114 no. 93 Pls. 26 c. d.

Fig. 10: Representation of a *cista mystica* on an Early Imperial altar; Capri, Museo Diefenbach, s. n.

striving to trace its genesis in every detail. While the elaborate, complex design of no. 1 makes it is an isolated case, the other urns from Rome (except for no. 3) can be explained in similar terms. In their design, they are also evidently intended to create the impression of being lifelike replicas of wicker baskets, but they do not address or provoke this relationship in such a targeted way. Overall, this phenomenon is heterogeneous in formal details and confined to the Early Imperial period; it can thus be understood historically as a snapshot, without any discernible chronological depth.

The situation in the Aquileian cluster is quite different. Although it can also be observed here that the first basket urns were produced at an early date (perhaps even in the Late Republic), it continued steadily until at least the end of the 1st century A.D. and had an even longer tradition in the Eastern Alps (perhaps extending into the 3rd century A.D.). In addition to the much more distinct and consistent use of 'fiction signals' that establish a link to other types of urns within the design system, the diachronic formal unity of the group is particularly striking, especially with regard to the structure of the body surface and the composition of its tectonic elements. First of all, if the question of real basket prototypes is raised again (which the literature on these pieces explicitly presumes)[74], we would have to conclude that these baskets also remained formally unchanged over the centuries. Although this is not excluded in principle, it would do little to change the fact that the urns clearly form a typological series in and of themselves, i. e., they refer to other urns as much as they refer to baskets. It is striking that this series does not have an observable naturalistic starting point from which the coherent appearance of the urn as a representation of a basket is gradually abstracted, but rather starts off in full development, with idiosyncratic adaptions (e. g., nos. 41 and 42). Furthermore, a clear connection exists between this group (including no. 2), and the above-mentioned representations of *cistae mysticae* in images. In particular, the horizontal division by means of braided profiles and the arrangement of the wickerwork in vertical registers is a consistent feature that appears on a grave relief in Aquileia[75], for example, but also in numerous examples from Rome[76]. All these points document the non-arbitrariness of the design and are, above all, evidence of a strong iconographic tradition that spans a long period of time and several media, and functions independently of – or even includes – 'real' wickerwork baskets.

74 Bertacchi 1982, 220; Buora 1982, 189; Monacchi 1996, 971.

75 Scrinari 1972, 106 no. 318; Ortalli 2005, 263 f. Fig. 13. Note, however, that the ribs of the wickerwork are diagonal instead of horizontal in this case.

76 Such as in a relief on a rock base in the Villa Albani (Linfert 1998, Pl. 96, 2) and later in Dionysian sarcophagi (Matz 1968, cat. nos. 36. 52), but also in statues, for example on the base of the Farnese bull (Cullin-Mingaud 2010, 63 Fig. 36; La Rocca 1998, 265) or on a comparable new find from the Domus Tiberiana (Abbondanza 2011; 2019).

Summary

From the late 1st century onwards, in Rome and Aquileia, stone urns that referred to wickerwork baskets in their surface design were manufactured. The concrete implementation of this reference can be distinguished in different modes that are defined by degrees of proximity to and divergence from basket prototypes, as well as the design principles of urns in general. While most of the urns from Rome engage in a naturalistic representation that replicates the texturing of the basket prototype in vivid detail, they mostly lack links with other urns. However, most of the urns from the Aquileian cluster have been adapted visually to the basket prototypes, mainly by representing the baskets' technologically induced rhythmic surface structure and integrating rather urn-specific features such as *tabulae* or undecorated lids. There is no doubt that all of these objects are wholly or partly designed to resemble 'real' wicker baskets, which is why they can indeed to some extent be instructive for the study of these (lost) objects. However, it would certainly be a mistake to expect a linear connection in the sense of an individual basket 'original' and a marble or limestone 'copy'. It can be shown on different levels (for example, in the subtle play with design elements in no. 1, or the independent typological seriality with links to the iconography of *cistae mysticae* in the Aquileian cluster) that the basket urns are clearly part of a design system that includes genre-immanent traditions as well as transmedial connections with basket representations, for example in reliefs or statues.

From an historical perspective, this phenomenon is more than a meaningless fad[77]. It is striking that basket urns were among the very first richly decorated urns in both Rome and Aquileia. They can thus be seen as part of a negotiation process that explored possible design modes for this genre. In Rome, this process also led to various other idiosyncratic solutions[78], paralleled in Aquileia by attempts to combine figural relief decoration with more or less abstracted wickerwork surfaces (nos. 39–41; Figs. 8 and 9). For a short period, probably limited to the last decades of the 1st century B.C., the basket urn design was therefore *one* possible way of visually individualising the burial ritual[79]. The subsequent disappearance of the basket urn in Rome concurs with the general decrease in extraordinary urn designs. Thereafter, variations operated more within the limits of the genre's design principles, thus averting blatant visual separation. A similar process occurred in Aquileia with the disappearance of abstract cases, such as nos. 40 and no. 41. Here, however, the basket urn design prevailed as the *only* mode available for accentuation through decoration.

Benjamin Engels
Albert-Ludwigs-Universität Freiburg
Institut für Archäologische Wissenschaften
Abt. Klassische Archäologie
Fahnenbergplatz
D-79098 Freiburg – Germany
benjamin.engels@archaeologie.uni-freiburg.de

77 As implied by Sinn 1987, 63 and, for pottery, Zimmermann 1998, 143.
78 See Sinn 1987, 22.
79 It should be noted that this explanation in no way excludes a semantic or metaphorical meaning.

Appendix: List of Basket Urns

Roman Cluster

Cylindrical *cistae:*
1. New York, Metropolitan Museum of Art, inv. 37.129 a, b[80] (Fig. 5)
Bibliography: Met Collection Online 2020; Zanker 2020, 267 cat. no. 128; Dodero 2019, 453 f. no. 177 Fig. 137; Picón 2007, 364. 488 no. 422; La Rocca 1998, 265 f. Fig. 57;Cormack 1996; D'Ambra 1989, 399; Sinn 1987, 36 note 253; Mertens 1987, 131 no. 100; Waywell 1986, 106 no. 85 Fig. 31 Pl. 68; Vermeule – Von Bothmer 1959, 150; Alexander 1938, 52 Fig. 3.
2. Rome, Musei Vaticani, Galleria Lapidaria, inv. 9237[81] (Fig. 4)
Bibliography: Liverani et al. 2010, 217 Fig. 180; 222; Sinn 1987, 174 no. 341 Pl. 55 c. e; Verzár Bass 1985, 204; Toynbee 1971, 255; Altmann 1905, 238 f. 253 Fig. 198; Amelung 1903, 218 f. no. 74b Pl. 26; Platner et al. 1834, 37 no. 188.
3. Rome, from Porta Maggiore, today lost (Fig. 9)
Bibliography: Broekaert 2008, 205; Petersen 2003, 234. 250 f.; Kleiner 1992, 107; D'Ambra 1989, 399 note 41; Sinn 1987, 63. 274 no. 342; Ciancio Rossetto 1973, 30 note 19 (with 31 Fig. 28); Altmann 1905, 239; Canina 1839, 47 Pl. 4, 11.

Basket chests:
4. Naples, Museo Archeologico Nazionale (Fig. 1)
Bibliography: Cullin-Mingaud 2010, 92; Gostenčnik 2004; Feugère 2001; Gostenčnik 2000, 27; Sinn 1987, 174 f. no. 343 Pl. 55 d.
5. Naples, Museo Archeologico Nazionale
Bibliography: Sinn 1987, 175 no. 344 Pl. 55 f.

Aquileian Cluster[82]

Cylindrical *cistae* without *tabulae,* plain lid:
6. Thalheim bei Wels (A), s. n.; 'pseudo-urn'
Bibliography: Miglbauer 1994.
7. Graz (A), Schloss Eggenberg, inv. 54; from Ptuj/Poetovio, s. n.; 'pseudo-urn'
Bibliography: Miglbauer 1994, 153. 157; Modrijan – Weber 1979/1981, 97 no. 54.

Cylindrical *cista* without *tabula*, sculpted lid (dog):
8. Udine, Museo Civico, s. n.; 'pseudo-urn'
Bibliography: Buora 1982, 202 no. 24 Fig. 12.

Cylindrical *cistae* without *tabulae*, no lid:
9. Feldkirchen (A), Amthofmuseum, s. n.[83]; 'pseudo-urn'
Bibliography: Gostenčnik 2000a, 63 f. Figs. 6. 2; 69 no. 2; 72 f.; Piccottini 1996, 77–80 Fig. 31.
10. Rotthof (D), Siebenschläferkirche, spolia; 'pseudo-urn'
Bibliography: Kremer 2001, 145 no. 124; Miglbauer 1994, 153.

Cylindrical *cistae*, fragments without *tabulae*:
11. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 200 no. 11 Fig. 21.
12. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 200 no. 12 Fig. 22.
13. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 200 no. 13 Fig. 23.
14. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 200 no. 15 Fig. 25.

80 Allegedly found in an Apulian grave context, Dodero 2019, 453 f.
81 From Split? Verzár Bass 1985, 204.
82 Buora's catalogue also contains a few single lids that were part of basket urns, Buora 1982, cat. nos. 6–8. These specimens are not listed here, as they (except for some plaited profiles) do not show surface textures resembling wickerwork.
83 From a spoliation context in St. Paul im Lavanttal (A).

15. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 200 no. 16.
16. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 201 no. 17.
17. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 201 no. 18.
18. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 201 no. 19.
19. Aquileia, Museo Archeologico, s. n.; 'pseudo-urn'
Bibliography: Buora 1982, 204 no. 29 Fig. 27.
20. Aquileia, private collection; 'pseudo-urn'
Bibliography: Buora 1982, 205 no. 32 Fig. 16.
21. Invillino, spolia; 'pseudo-urn'
Bibliography: Buora 1982, 206 no. 33 Fig. 18.

Cylindrical *cista* with *tabula*, basket lid:
22. Aquileia, Museo Archeologico, s. n. (Fig. 6)
Bibliography: Buora 1982, 198 no. 4 Fig. 5; <http://lupa.at/14468> (30.09.2020).
Cylindrical *cistae* with *tabulae*, plain lid:

23. Aquileia, Museo Archeologico, inv. 429
Bibliography: Buora 1982, 197 no. 3 Fig. 4; Maionica 1895, 31 f. no. 20; <http://lupa.at/14461> (30.09.2020).
24. Aquileia, Museo Archeologico, s. n.; 'pseudo-urn'
Bibliography: Buora 1982, 201 no. 21 Fig. 6; <http://lupa.at/14469> (30.09.2020).
25. Aquileia, Museo Archeologico, inv. 583; 'pseudo-urn'
Bibliography: Buora 1982, 203 no. 26 Fig. 14.
26. Aquileia, Museo Archeologico, s. n.; 'pseudo-urn'
Bibliography: Buora 1982, 204 no. 30 Fig. 29.
27. Ljubljana/Emona (SVN), s. n.; 'pseudo-urn'
Bibliography: Plesničar-Gec 1977.

Cylindrical *cistae* with *tabulae*, sculpted lid (dog or lion):
28. Aquileia, Museo Archeologico, inv. 854 (Fig. 2)
Bibliography: Giovannini 2010, 201; Buora 1982, 198 no. 5 Fig. 7; Scrinari 1972, 105 no. 315; Bologna 1964/1965, 210 f. no. 312 Pl. 76, 153; <http://lupa.at/14079> (30.09.2020).
29. Aquileia, Museo Archeologico, inv. 484
Bibliography: Buora 1982, 201 f. no. 22 Fig. 10; Scrinari 1972, 105 no. 316; Brusin 1929, 148 no. 80 Fig. 94; Maionica 1910, 8. 68 no. 141; <http://lupa.at/14472> (30.09.2020).

Cylindrical *cista* with *tabula*, pinecone lid:
30. Aquileia, Museo Archeologico, s. n. (Fig. 3)
Bibliography: Bertacchi 1982; <http://lupa.at/14462> (30.09.2020).

Cylindrical *cista* with *tabula*, no lid:
31. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 199 no. 9 Fig. 19.
32. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 199 no. 10 Fig. 20.
33. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 200 no. 14 Fig. 24.
34. Tapogliano, Villa Pace, s. n.; 'pseudo-urn'
Bibliography: Buora 1982, 202 no. 23 Fig. 11.
35. Aquileia, Museo Archeologico, s. n.; 'pseudo-urn'
Bibliography: Buora 1982, 202 f. no. 25 Fig. 13; Brusin 1929 58 Fig. 32.
36. Aquileia, Museo Archeologico, s. n.; 'pseudo-urn'
Bibliography: Buora 1982, 204 no. 28 Fig. 26.
37. Aquileia, Museo Archeologico, s. n.; 'pseudo-urn'
Bibliography: Buora 1982, 204 f. no. 31 Fig. 17.
38. Tavagnacco, Villa di Antonio di Prampero, s. n.; 'pseudo-urn'Bibliography: Buora 1999.

Cylindrical *cista* with relief decoration
38. Aquileia, Museo Archeologico, inv. 1576; 'pseudorurna' (Fig. 7)
Bibliography: Verzár Bass 2010, 173; Ortalli 2005, 263; Buora 1982, 203 f. no. 27 Fig. 15; 39. Beschi 1980, 374 Fig. 341; Scrinari 1972, 106 no. 317; Bologna 1964/1965, 210 no. 311 Pl. 76, 152; Brusin 1929, 58 Fig. 31; <http://lupa.at/14004> (30.09.2020).

Cylindrical *cista*, no basket texture, lacings only:
40. Aquileia, Museo Archeologico, inv. 1581
Bibliography: Buora 1982, 196 f. no. 2 Fig. 3; <http://lupa.at/14463> (30.09.2020).

Cylindrical *cista*, no basket texture, lacings only, with relief decoration
41. Aquileia, Museo Archeologico, inv. 317 (Fig. 8)
Bibliography: Verzár Bass 2010, 174 f.; Ortalli 2005, 264 f. Fig. 14; Buora 1982, 195 f. no. 1 Fig. 1; Beschi 1980, 374 Figs. 342–345; Scrinari 1972, 106 f. no. 322; Brusin 1964, 161 f. Fig. 94; Brusin 1929, 130 f. no. 52 Fig. 83; Maionica 1910, 48 f. no. 101 <http://lupa.at/13938> (30.09.2020).

Round lid with basket texture:
42. Aquileia, Museo Archeologico, s. n.
Bibliography: Buora 1982, 201 no. 20 Fig. 30.

Basket chest, lid fragment:
43. Teurnia, today lost
Bibliography: Gostenčnik 2000; Gostenčnik 2000a, 69–72 no. 1; Glaser 1997, 31 no. 11 Pl. 8, 11.

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Manuel Flecker

An Age of Intermateriality: Skeuomorphism and Intermateriality Between the Late Republic and Early Empire

Abstract: Intermaterial relations between individual genres of material culture are a constant phenomenon in antiquity. There are, however, specific periods of time with particularly strong interdependencies. This applies in particular to the Late Republic and Early Empire (2nd century B.C. – 1st century A.D.). The aim of this paper is to focus on this period from a diachronic perspective by taking into account different genres of ancient 'art', such as pottery, glass or marble objects. The analysis of all these genres shows especially that the mere imitation of formal characteristics played a lesser role than the creative appropriation and emulation of these characteristics. In order to tackle the phenomenon of intermaterial relations, the concept of skeuomorphism is abandoned in favour of the art-theoretical concept of 'intermateriality', which is introduced and further developed here.

Scholarship has always recognised the great variety of intermaterial relations between individual genres of ancient 'art'. However, this variety has rarely been subjected to systematic and comprehensive analysis; rather, the dependencies have often only been described, and in just a few cases have they been discussed in more detail[1]. Particularly important on this topic is the work of Michael Vickers, who in various contributions has attempted to develop a theory of intermaterial references[2]. With the term skeuomorphism, he takes up a concept that was first introduced at the end of the 19th century[3]. In line with the term's initial use, Vickers' work focuses primarily on the interdependencies between ceramic and metal vessels. He sees the method of skeuomorphism as a scientific tool for filling in the gaps in the archaeological inventory and obtaining clues as to the appearance of the large quantity of 'luxury tableware' of gold, silver and bronze that is almost completely lost to us today[4]. He makes use of a strict material hierarchy, at the top of which are gold, silver and precious stones, and postulates that the imitation of their characteristics in simpler materials was the result of a kind of trickle-down effect. His stimulating yet highly simplistic approach, which lumps together many different skeuomorphic phenomena and often specifically disregards the diachronic perspective, has primarily attracted criticism and found few adherents[5]. As a purely imitative art, ceramics in particular lose all innovative potential according to Vickers' approach. However, various studies have recently shown that skeuomorphism is not a one-way street[6].

As Jan-Pieter Löbbing recently noted, the term skeuomorphism is in itself problematic and hardly appropriate for the subject it describes[7]. The term, which is formed from the words μορφή (form) and σκεῦος (vessel, utensils of all kinds), on the one hand doesn't refer to the principle of approximation, and on the other only emphasises formal aspects. Also, due to the use of σκεῦος, skeuomorphism is a very narrowly defined term that fails to adequately cover comparable phe-

1 On this in connection with glass, see Löbbing 2015; 2016.
2 See esp. Vickers 1985; 1994; 1999.
3 Vickers 1999, 4–6. Today, the term is mainly used in the field of software development. See, for example, Curtis 2015, 9–13. On the concept of skeuomorphism, see also Wolf 2019, 93 f. and Engels, this volume.
4 Vickers 1999, 26.
5 See Zimmermann-Elseify 1998, 2 n. 11 (with further literature); Donohue 2005, 80–82; Löbbing 2016, 19 f. and esp. Wabersich 2014.
6 See esp. the works of Zimmermann-Elseify (1998) and Löbbing (2016).
7 Löbbing 2016, 20.

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nomena in completely different genres such as wall painting. Finally, the term is strongly linked to Vickers' theory, and thus describes a method rather than a phenomenon.

If we wish to conceptually grasp the interplay and interactions between different materials, and render them describable in terms of their diversity, then another word might be more appropriate. Over the last ten years, the term 'intermateriality' has been introduced increasingly into scholarship and seems to be a useful alternative (Fig. 1)[8]. Even though intermaterial phenomena have always been a focus of research in both archaeology and art history, 'this has not yet been done under the term "intermateriality", nor have efforts been made to theoretically reflect such a concept and to conceive it as a model', says Thomas Strässle in the introduction to the conference volume *Das Zusammenspiel der Materialien in den Künsten. Theorien – Praktiken – Perspektiven*[9]. Strässle then attempts to outline a theory of intermateriality that divides the interaction of materials into three different modes: material interaction, material transfer and material interference[10].

Strässle understands **material interaction** to mean that different materials enter into a dialogue, but remain distinguishable from one another in their different materialities. This mode is particularly important with regard to 20th century art, with collages and overpainting providing just two examples. However, it already appeared in antiquity, although mostly under different conditions. We need only think here of the combination of different materials (metal, glass, gemstones, etc.) in sculpture, for example. Strässle's second category is **material transfer**. By this he means the transfer of one material into the phenomenality or functionality of another. We could also consider this category as the mode of illusion[11]. However, the combination of different materials and materialities can lead not only to an illusionary effect, but also to new aesthetics 'that can neither be attributed to the imitated nor to the imitating material, but which can only be viewed from the perspective of intermateriality'[12]. Illusion accordingly goes hand in hand with a new material identity.

The third and final category invoked by Strässle is **material interference**. This mode encompasses all those forms of intermateriality in which the corresponding materials – for antiquity, it would be better to talk of 'materialities' – overlap and partially dissolve, thus mutating into something new with a completely different aesthetic. The distinctiveness of the materials involved is lost as a consequence. Before applying it to the material culture of antiquity it is necessary to refine the term 'material interference'. Here it is once again a good idea to stay within the terminology of physics and to introduce instead **constructive interference** and **destructive interference**. Constructive interference in this context means the creation of something new through positive reinforcement, and destructive interference through extinction[13].

The scientific works that have closely examined the phenomena of intermateriality in antiquity ultimately come to a common conclusion: the relationships between different materials and materialities are characterised by a multi-layered mesh of interactions. Boundaries, in particular, are often fluid, and resist overly strict categorisation. This complex network needs to be examined separately for each object[14]. Nevertheless, the modes of intermateriality introduced by Strässle may enable the phenomenon of intermateriality in antiquity to be re-examined.

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8 Engels, this volume, uses the term 'transmateriality'. The exact relationship between the terms and their different connotations still needs to be assessed.

9 Strässle 2014, 13: 'Doch geschah dies bis heute weder unter dem Terminus "Intermaterialität", noch wurden Anstrengungen unternommen, ein solches Konzept theoretisch zu reflektieren und modellhaft zu konzipieren'.

10 On the following, see Strässle 2014, 14 f.

11 See Chernyshova 2016.

12 Strässle 2014, 15: '(Ästhetiken,) die weder dem imitierten noch dem imitierenden Material zuschreibbar sind, sondern unter der Perspektive der Intermaterialität überhaupt erst in den Blick genommen werden können'.

13 Here Andreas Grüner's third category, 'Phänomene, die einer bewussten Imitation vollkommen widersprechen', can also be included into: see Grüner 2017, 5 f.

14 Zimmermann-Elseify 1998, 140; Löbbing 2016, 36.

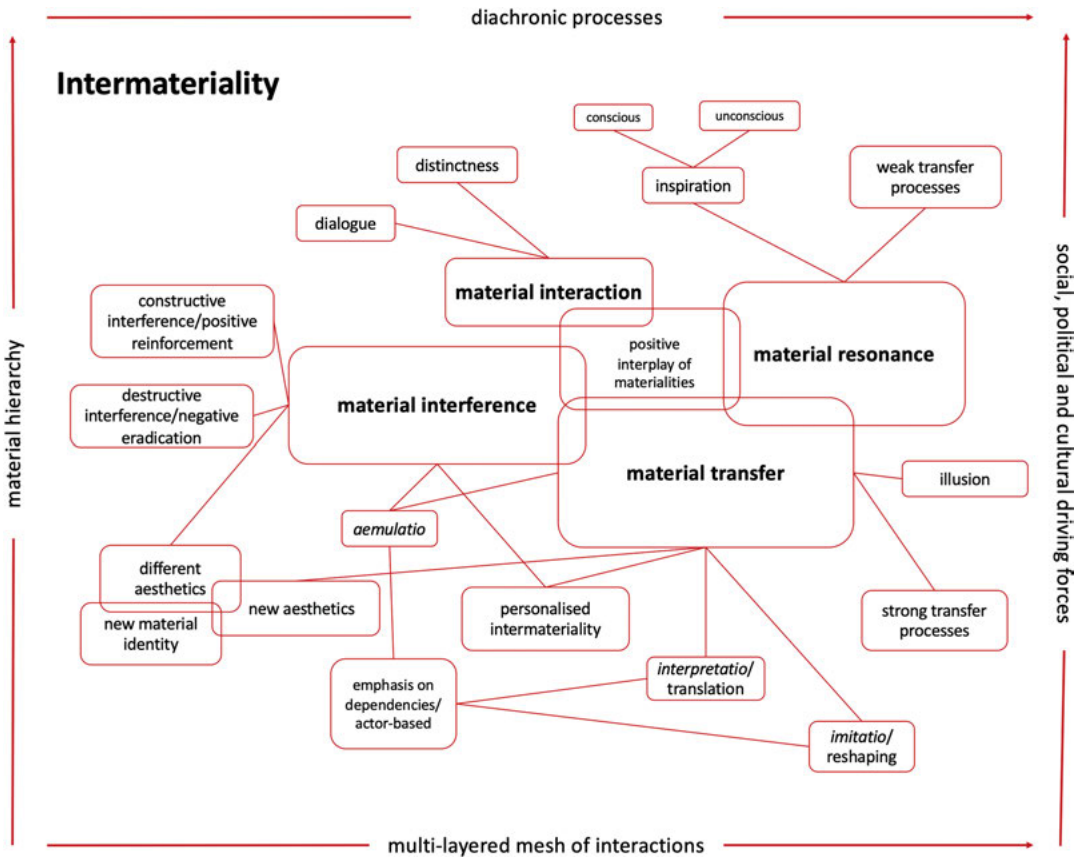

Fig. 1: Aspects of Intermateriality.

At the end of his investigation into the relationship between glass, metal and ceramic vessels, Löbbing states that 'a distinction needs to be made between direct imitation of a vessel in a new material and mere inspiration by existing vessels of a different type of material. Inspiration – conscious or unconscious – can be detected more often than direct imitation'[15]. However, it is precisely this inspiration that is missing from Strässle's theory; an inspiration that can often only be determined through detailed analysis, and which was tied to a slow typological development that was certainly not perceived (by individuals in antiquity) as illusion or imitation. Although this form of inspiration is also a certain kind of material transfer, it does not fit into this strong category. I would therefore also like to introduce the term **material resonance**, in order to be better able to record these types of 'weak' reciprocal transfer processes. However, it must also be emphasised here that the boundaries of material transfer are often blurred[16].

Nina Zimmermann-Elseify takes a different methodological approach to dealing with intermaterial phenomena in her work on the relationship between ceramics and metalware during the Late Classical and Hellenistic periods. She bases her investigation on ancient rather than contemporary categories, and, following Raimund Wünsche, refers to three concepts from ancient rhetoric: *interpretatio*, *imitatio* and *aemulatio*. These terms were used in antiquity to characterise the works of Roman writers in relation to their Greek models, and were also applied by Wünsche to the visual

15 Löbbing 2016, 36: '(Es muss) zwischen der direkten Nachahmung eines Gefäßes in einem neuen Material und der bloßen Inspiration durch schon bestehende Gefäße aus einer anderen Materialgattung getrennt werden. Häufiger als eine direkte Nachahmung lässt sich eine – bewusste oder unbewusste – Inspiration feststellen'.

16 Material resonance and transfer thus correspond to Grüner's (2017, 5 f.) first category: 'Phänomene, die eindeutig auf der Imitation von Metallobjekten beruhen', and which as mimetic elements 'sich mal mehr oder weniger leicht nachweisen lassen'.

arts[17]. *Interpretatio* means a translation, i. e., an exact copy or reproduction of a model. *Imitatio*, on the other hand, is a freer form; it subjects the model to criticism and adapts it to its own needs. It thus represents a conscious reshaping. Finally, *aemulatio* is more independent[18]. Using different influences and models, it aims to create something new. *Aemulatio* thus corresponds to the mode of 'material interference', although it has a somewhat different connotation. *Interpretatio* and *imitatio,* on the other hand, represent different forms of material transfer. Similar to Strässle's modes, the ancient rhetorical categories also do not deal with the concept of inspiration or 'weak' influences, as summarised above with the term 'material resonance'. However, if we look at the results of Zimmermann-Elseify's work, it becomes clear that the terms employed play virtually no role and contribute little to the understanding of the ancient findings. She encounters *interpretationes*, i. e., very strong dependencies, are only rarely. More common are *imitationes*, in which the overall concepts of metalware are adopted with only minor changes. *Aemulatio* is by far the most helpful term, but mainly because it best describes the extremely complex relationships involved[19].

The concepts of ancient rhetoric and the theory of intermateriality overlap to a large extent, but are far from being congruent. One strength of Strässle's model is that his modes place less emphasis on dependencies, and instead address the positive interplay of materialities. Ancient terminology, on the other hand, focuses on the producers themselves, and is thus based more on the actors and their goals.

Historical Introduction

Intermaterial and intermedial phenomena were demonstrably prevalent during the period of transition between the Late Republic and the Early Empire. This period was not only characterised by accelerated change and upheaval, but also by consolidation. Rome's expansion across the Mediterranean world, and especially into the east, was of particular importance for the material culture of the time. This process drove the increasing interest in Greek culture among the Roman ruling classes. Together, these developments led to manifold exchange processes between Rome and the former empires of the Diadochi. In addition to architecture and sculpture, exotic decorative objects (which can be associated with the 'private' living space of the Roman aristocracy and to the institution of the *convivium*, in particular) were the subject of cultural exchange. The deepest caesura in the period between the 2nd century B.C. and the 1st century A.D. was undoubtedly the Augustan era. After the traumatic events of the civil wars and the associated political and social turmoil, art and handicrafts flourished against the background of the Pax Augusta. Innovations initiated during the Late Hellenistic period were reinvigorated across a number of material genres following the ascension of Augustus, and were then developed further on a large scale. From the Augustan period onwards, we can also speak of a 'consumer revolution' in a certain sense, because elaborate objects were produced in great quantities and were distributed relatively widely throughout society[20].

As Andreas Reckwitz recognised in his seminal book *Society of Singularities*, contemporary societies place more and more emphasis on the singular and the unique, and this is certainly the case with respect to material culture, for example. Even if it is not possible to transfer Reckwitz's concept directly to antiquity, in my opinion there was, to a certain extent, also a 'singularisation' of

17 Wünsche 1972, 62–68; see also Trillmich 1973, 248; Gazda 2002, 7; Perry 2005.

18 An anecdote transmitted by Pliny, however, demonstrates that *aemulatio* could also show a very different kind of 'spirit of rivalry' (Perry 2005, 191) – almost identical to *interpretatio*: Plin. HN 34, 47; Hallett 2005, 432–434.

19 As Trillmich (1973, 248) noted, the three categories may not be sufficient: 'um die vielschichtigen Phänomene römischer Kunstübung zutreffend zu erfassen' (to articulately encompass the multifaceted phenomena of Roman artistic practice). However, he stresses their usefulness for the theoretical understanding of Roman art.

20 Wallace-Hadrill 2008, 315–440. For criticism of the use of this term in reference to the Late Republic, see Maschek 2018, 221.

object culture in the last years of the Republic[21]. Roman aristocrats wanted original and rare things. New genres emerged, and existing genres were characterised by innovation and originality. A new formal language was combined with a different aesthetic. Almost out of nowhere, a culture of images emerged across virtually all genres of 'art'[22]. The focus was on distinctiveness, but also on difference (*dissimilitudo*) and variety (*varietas*), and this defined the material culture of the period[23]. The desire for the singularisation of goods also resulted in an unprecedented degree of intermateriality, which was not limited to certain areas – such as tableware, for example – but appeared across genres to an equal extent. So far, no comprehensive analysis exists for this widely branching network of intermediality, so the following section focuses only upon individual case studies.

Marble *Decor*

One of the leading forms of the Late Hellenistic and Early Imperial periods are the products of workshops (mainly Greek, but increasingly also Italic) that produced statues and other marble objects. The repertoire of these workshops was wide, ranging from three-dimensional sculptures to relief works. These lavishly decorated products were especially tailored to the Roman art market, using an eclectic formal language[24]. Although this production began during the 2nd century B.C., a sudden and rapid increase can be observed from the Caesarean or Early Augustan period onwards; this went hand in hand with the development of the marble quarries of Luni around the middle of the 1st century B.C.[25]. Particularly typical of this genre, which has long been described as 'neo-Attic art', are elaborately embellished ornamental vessels, candelabras, puteals, wall reliefs, bases, altars and tables[26]. It is interesting to look at this group from the point of view of intermateriality. But at the same time, we should also recognise the eclectic nature of these objects, a feature that characterises the group as a whole. Intermateriality is therefore only one aspect of this eclecticism, which is due also to the fact that some of these luxurious marble objects were created almost *ex nihilo* and were therefore not firmly embedded in a formal or decorative tradition.

At this point let us turn our attention specifically to the marble candelabras and kraters – marble objects on which a great deal has been published over a long period of time[27]. The kraters are an independent group of objects, created in the late 2nd century B.C. but which incorporated elements from earlier periods. Early research strongly associated their shape with ceramic and especially toreutic models, and saw the early kraters as copies or transformations of metal models from Late Classical Athens (Fig. 2)[28]. However, Dagmar Grassinger's research has shown that although the marble kraters are oriented towards shapes of metalware and partially incorporate them, these elements are integrated into a new whole. A similar conclusion has been reached with respect to marble candelabra. In his important work on 'neo-Attic' reliefs, Friedrich Hauser saw the marble implements as a direct transposition of toreutic patterns[29]. However, marble candelabras also cannot be traced directly back to metal archetypes. Like the kraters, they only incorporate 'materially-conditioned characteristics' of toreutic models into their design, fusing them into something new[30]. However, these references to toreutics gradually disappear in newly-conceived candelabra

21 Reckwitz 2017. On the singularisation of goods in late modernism, see esp. Reckwitz 2017, 119–132.
22 On the transformation of the world of images, see Flecker 2016; Flecker, forthcoming.
23 On the terms *dissimilitudo* and *varietas*, as used by Varro, see Reinhardt 2019, 124 f.
24 Cain – Dräger 1994; Ridgway 2002, 226–240.
25 Cain 1985, 5 f.
26 See Hielscher, this volume.
27 Cain 1985; Grassinger 1991.
28 See Grassinger 1991, 44.
29 Hauser 1889, 121–130.
30 Cain 1985, 9: 'Materialbedingte Eigenheiten'.

Fig. 2: Volute-krater of Sosibios, middle of the 1st century B.C.; Paris, Musée du Louvre, inv. MR 987.

types, as they clearly went too much against traditional marble production techniques[31]. At this point it should be noted that this phenomenon – namely, the disappearance of intermaterial elements in favour of a formal language that corresponded with the technical requirements of production, making the work easier – is common and will be encountered again below. The diachronic perspective thus plays a central role in the evaluation of intermaterial phenomena[32].

Naturally, upon initial contact with these objects, the contemporary viewer might also have thought of the toreutic models known to them, but the illusionary aspect is absent here[33]. Objects such as the marble kraters and candelabras therefore fall into the category of material interference, in which something new arises from different influences. The boundaries between intermateriality and intermediality are open here[34]. The fact that this could be achieved in such a convincing way must also owe much to the sculptors responsible for the archetypes of these objects[35]. Due to their training and self-understanding, ancient 'artists' were often not restricted to one material. For example, the Athenian Evander, who worked during the 1st century B.C., is described by literary sources as a *plastes* (sculptor) and *caelator* (artistic metalworker)[36]. Artists like Evander thus represent a form of '*personalised intermateriality*', which produced a specific formal language. A term

31 See esp. Cain 1985, 9. 40. 71. 87. Cain uses the term 'materialgerechte Bildhauerarbeit' (material-appropriate sculptural work). Due to the controversial nature of the term 'Materialgerechtigkeit' in art history, I have refrained from using it here.

32 The situation is different with respect to kraters, where an increasing 'toreuticisation' can be observed, especially in the post-Augustan period: see Grassinger 1991, 51.

33 The design of the surface alone contradicts this. To the best of my knowledge, the polychromy of the marble decoration has rarely been investigated. On the colourful design of the so-called Piraeus reliefs, see Reinhardt 2019, 70 n. 463. 73 n. 497.

34 On these two terms, see Wolf 2019, 93.

35 According to Varro, the artist Arkesilaos sold a plaster model of a krater to the *eques* Octavius for the purpose of reproduction: see Plin. HN 35, 155 f.

36 Cain – Draeger 1994, 815. 822; Flecker – Haug 2017, 276.

such as *aemulatio*, which refers not only to emulation but also to competition between the arts, is therefore no longer appropriate in this context.

Arretine Sigillata and the Phenomenon of Intermateriality

With the end of painted Greek ceramic production around 300 B.C., existing forms of decoration were altered and new forms appeared within the Hellenistic world. In particular, a closer connection to metalware can be observed in this period[37]. The similarities with metal vessels varies between weak forms of material resonance and a distinct material transfer depending on the genre and region. An example of strong material transfer is the so-called Megarian bowl, which was produced in Athens during the second half of the 3rd century B.C. and also a little later in Italy[38].

The relationship between the fine ceramic tableware of the Late Republic, the so-called Campana ware, and contemporary metalware has not yet been the subject of detailed analysis. However, material resonance can be observed in the integration of individual elements of metalware into the ceramic forms[39]. In the discussion surrounding skeuomorphism, the black slip applied to these vessels has been interpreted as a possible imitation of blackened silver[40]. Unfortunately, it is not clear from the literary sources whether a black patina or shiny surface was preferred on silver tableware, let alone whether this aesthetic preference was subject to change. Henning Wabersich has recently spoken out in favour of the shiny variant, with good reason[41]. Should this prove correct, the black slip, which was part of a long tradition, could not have been an imitation of silver tableware, but rather a contrasting aesthetic unthinkable without its silver counterpart. Black-glaze ware adopts a material aesthetic that is potentially inherent in silver's materiality. This is particularly evident, for example, in the Late Classical pottery from Puglia and the so-called Campana A of the 2nd and 1st centuries B.C. produced around the Gulf of Naples. In these cases a metallic, partially iridescent gloss effect was added to the black slip, which cannot be mere coincidence. However, these products should not be understood as examples of simple material transfer, but rather as vessels characterised by their own aesthetics, which contrasted with the bright sheen of silver tableware.

Returning to the formal aspects of Campana ware, Jean-Paul Morel has postulated that ceramica a vernice nera from Arezzo, a variant of so-called Campana B, bears a closer relationship to metal tableware[42] due to the sharp edges on the body of these vessels. The proximity to toreutics in Arretine ware thus precedes the strong 'toreuticisation' of Augustan times. This simulation of metalware is again connected with the beginning of the production of fine, red-slipped tableware in Arezzo around 30 B.C. The Arretine workshops actively absorbed various pre-existing Hellenistic influences, but now merged them into something completely new. These influences included the adoption and perfecting of the red, shiny glaze developed in eastern workshops, the lavish figurative decoration derived from moulds and the use of appliqué decoration and workshop stamps. Thus, Arezzo developed into the nucleus of Imperial sigillata production, with its products radiating out into all parts of the Mediterranean. Researchers have always noted the close relationship between Augustan fine ceramics and contemporary silverware[43], and indeed, pronounced

37 Zimmermann-Elseify 1998.
38 Rotroff 1982; Puppo 1995.
39 Morel 2009, 128.
40 Vickers 1999, 7.
41 Wabersich 2014, 217. There is also the representation of silverware in the Tomb of Vestorius Priscus in Pompeii. There the lustre of the vessels is clearly emphasised, with the darker parts representing only shadows. Even the figurative decoration on the silverware does not stand out from the vessel's body.
42 Morel 2009, 129.
43 Ettlinger 1967; Roth-Rubi 1997.

similarities between silver and Arretine ware can be observed on multiple levels, including formal and typological aspects, the range of pictorial themes and the style of the figurative reliefs[44]. If we take a close look at all the criteria mentioned above, it also becomes clear that the Augustan tableware from Arezzo was never simply an imitation of its more valuable counterpart, but always exceeded it in terms of creative transformation. However, it is precisely this creative appropriation that also obscures the close relationship between ceramics and silverware at the beginning of Arretine production.

It is obvious that the range of forms produced in both plain and relief-decorated sigillata is closely related to that of silver tableware. During the transition between Late Republic and the Augustan period, the soft curves and transitions of Hellenistic Campana ware increasingly lost importance; instead, sharp-edged profiles defined the forms of terra sigillata vessels. What had previously emerged in Arezzo for unknown reasons now became increasingly evident. The toreuticisation of sigillata shapes is especially clear in the different drinking vessels, which also cannot be categorised as mere copies. Rather, only individual form elements, such as the abovementioned sharp-edged profiles are adopted from the prestigious silverware. Moreover, the competition with toreutics seems to have increasingly promoted the potters' creativity as regards vessel forms (*aemulatio*). This manifests itself, for example, in a more complex profile (which is not known from the *argentum potorium*) and in the size and capacity of Arretine goblets, which are often several times larger than their silver counterparts[45]. In some cases, then, it is even possible to speak of a 'hypertoreuticisation'.

Although the workshops producing relief ware in Arezzo naturally had their own range of themes, in some respects the similarity with the decorative repertoire of silverware from the Early Imperial period is striking. This applies above all to the frequency of mythological images[46]. The similarity is particularly evident in the pictorial themes, which draw on the same templates and are almost identical in both media[47]. The obvious similarities (and the minor differences, which can only be found in details) have led to questions concerning the actual degree of correlation in these specific cases. In 1930, Knud Friis Johansen still considered it possible that plaster casts had been made of the scenes[48]. Frank Hildebrandt has recently ruled this out, referring to earlier models that were used by both silversmiths and potters[49]. The fact that the products from Arezzo do not rely upon reworked moulds of silver cups is especially evident in the comparative size of the scenes. In all known examples, the figures on the sigillata cups are considerably larger than their silver counterparts. Moreover, no traces of reworking or adaptation of clay can be seen; rather, the sigillata cups display no stylistic breaks whatsoever[50]. In my opinion, this means the postulation that simple potters transformed models of precious metal vessels into clay must be excluded.

However, the question then remains as to how the incredible similarities between clay and silver, and in particular the exceptionally high quality of Arretine relief pottery, came about. The correspondence with silverware is not only evident in the formal details, but also in the high quality and style of the figures, which can be described as 'silver style'. It is characterised by fine lines, a wealth of detail and a nuanced depth of relief. Moreover, the figurative punches are never stamped clumsily into the mould, but always with great precision, and thus the figures often emerge from the background (Fig. 3a–b).

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44 Vickers identifies a similarity between red slip and gold tableware, as well: Vickers 1999, 13–19. However, this connection seems doubtful: see Grüner 2017, 29 f.

45 Flecker 2015, 111.

46 For the spectrum of figurative topics relating to the silverware of the Early Imperial period, see Wölfel 1996, 127–142.

47 Most recently Hildebrandt 2017.

48 Johansen 1930, 274 f. In fact, plaster casts of toreutic vessels also existed; see, for example, Fuchs 1999, 74 f. and Grawehr 2010, esp. 115–124, for the plaster krater of Arkesilaos. On this topic, see also Reinhardt 2019, 28–50.

49 Hildebrandt 2017, 43.

50 What a reworked cast may have looked like is perhaps shown by a mould from the third phase of Perennius's workshop that depicts the Myth of Phaeton: see Porten Palange 2009, 100–102; Simon 2010.

Fig. 3a–b: 'Heracles meditante', mould from the workshop of M. Perennius Bargathes, Late Augustan/Tiberian period; Tübingen, Sammlung des Instituts für Klassische Archäologie, inv. 2559 (Dr.-W. 204); a: original mould; b: modern plaster cast made out of this mould.

In my opinion, the high quality of Early Augustan products from Arezzo and their close similarity to toreutics (which cannot be found in any other ceramic genre), is once again a consequence of 'personalised intermateriality'. Some artists with expertise in both clay and toreutics must have been included in the manufacture of Arretine ware, at least when production began. In fact, it seems most likely to me that experienced 'toreuticians' created the early high-quality products from Arezzo. They not only contributed their craftsmanship, but also their in-depth knowledge of Late Republican art, which served as the basis for the elaborate spectrum of topics produced on wares from Arezzo[51].

Due to the involvement of toreuticians and the formal proximity to silverware, Arretine sigillata probably best fits into the 'material transfer' category. But the boundaries with 'material interference' are fluid. This is due primarily to the ubiquitous reddish-brown shiny glaze, which nullifies any illusionary effect and gives the entire product a completely new aesthetic.

If we compare the above observations on luxury marble objects with the development of Arretine ware, clear parallels emerge. Both products arise through the transfer of one material's characteristics into another, and in both cases the actors responsible for this transfer are likely to be artists or artisans with a combination of different skills. Within both groups of media, however, the intermaterial characteristics soon fade into the background in favour of a material-bound and simplified formal language. For Arretine ware, this is particularly noticeable from phase 2, in the Middle Augustan period, onwards[52], when the production volume increased and the enormous variety of detail in the individual motifs ceased[53]. The 'potter' was now noticeable, especially in the ornamentation[54]. At the same time, Arretine workshops were developing strategies to differentiate

51 See Flecker 2021 for more detail on this.

52 Porten Palange 2009, 24; Flecker 2021.

53 Discussed by Reinhardt (2018), with respect to marble *decor* and the terms *variatio* and *varietas*. See also Reinhardt 2019, 122–125.

54 Porten Palange 2009, 24.

their goods from toreutics (glaze, vessel size, hypertoreuticisation), which could be understood as a kind of *aemulatio*.

Quite similar strategies can be seen across other types of products. One example is provided by the clay lamps manufactured during the transition between the Late Republican and Augustan periods[55]. Adoption of metalware forms can also be found in connection with lamp types from the 1st century B.C., especially the Dressel 2 and 3 forms. However, the exact degree of correlation cannot always be clearly determined due to the lack of comparanda, especially in bronze. These forms are also covered with a red glaze from around the middle of the 1st century B.C. Another significant change in the typology of lamps is found during the Augustan period, when the Loeschcke 1A type and its predecessors become strongly oriented towards bronze lamps with respect to individual forms[56]. The combination and alteration of elements and (especially) the addition of a picture field distinguishes these lamps not only from the bronze lamps of this period, but also turns them into something new.

Tableware and Marble

At this point, it would be interesting to investigate the further development of forms in the field of intermateriality at the other large terra sigillata production sites that became established from the Augustan period onwards, especially in Italy and southern France. However, this is not possible in the space available here[57]. Instead, a particularly exceptional example of material transfer will be discussed: the marbled sigillata, a special product from La Graufesenque (Fig. 4a)[58]. The surface finish of this product was formed by the combination of red and yellow clay slurries which, after firing, created the effect of marble (Fig. 4b). For the ancient viewer, the allusion to *marmor Numidicum* (giallo antico), which had been quarried in large quantities near the town of Simitthus since at least the Augustan period, must have been immediately clear[59]. This marble texture is found on a wide range of vessel forms produced between A.D. 30 and the late 1st century A.D. that do not differ from their red slip counterparts. In this instance, therefore, only the surface quality was transferred. Although the production of marble vessels in Simitthus has been documented during the 3rd century A.D., similar objects from the Early Imperial period are unknown[60]. It is astonishing that this type of marble imitation was not reproduced more widely in ceramic, despite the relatively broad distribution of South Gaulish ware and the extreme popularity of coloured marble from the Early Imperial period onwards[61].

One reason for this may be that larger quantities of comparable products were being manufactured in glass at this time. From the start of the Augustan period, an enormous variety of monochrome and polychrome glass types were produced, including mosaic glass, whose roots also lay in Hellenism. Among these glass types there are also specimens that obviously refer to widely distributed marbles, such as *marmor Numidicum* and red or green porphyry[62]. However, a basic characteristic of Early Imperial glass production is the aforementioned variety of colours

55 Wallace-Hadrill 2008, 379–391. On the typology of lamps, see Leibundgut 1977, 189–203; Bailey 1980; Pavolini 1981.
56 The spout area and the multi-ridged transition to the discus are particularly noteworthy here.
57 On this, see the unpublished dissertation of Henning Wabersich, *Die Evolution einer Feinware. Römische Tafelkeramik. Ihre Vorbilder und frühesten Formen bis hin zur Massenproduktion von Terra Sigillata*. See also Wabersich 2014, 120 f. on the Dragendorff 29 and 37 shapes.
58 For a summary on this, see Brulet et al. 2010, 86–88.
59 See Wabersich 2014, 217 n. 88.
60 Mackensen 2005, 101–109.
61 There are, however, local productions without a wide range of distribution. See, for example, Cahn 2012 and Liesen 2018, 363 f. n. 9 Fig. 3 for the marbled ware from Cologne, Nijmegen and Xanten.
62 See, for example, the summary in Cisneros Cunchillos et al. 2013, 279 Fig. 1.

Fig. 4a–b: Plate of marbled Sigillata from La Graufesenque stamped by Castus, 40–70 A.D; New York, Metropolitan Museum of Art, inv. 17.194.852.; a: total view; b: detail of the 'marble surface' engobe.

and patterns. As in wall painting, precise assignment to a certain material is therefore often difficult. The so-called 'ribbed bowls' (Isings 3), whose colouring is often reminiscent of marble and semi-precious stones, represent one example. The ribbed-bowl shape, which developed over the course of the 1st century B.C. in the eastern Mediterranean, represents in itself a form of material transfer. Its overall design, with a semicircular body, accentuated rim and the aforementioned ribbing, is based on metalware models. The ribs, which were created first in a mould and later pulled out of the body of the vessel with pliers, imitate the ribbing of metal vessels, which had also been repeatedly imitated on ceramic vessels since the 5th century B.C.[63]. However, once the ribs were no longer made with the help of a mould (from the Imperial period onwards), the bowls were hardly reminiscent of toreutic models, making them exceptional and independent glass products. Axel von Saldern associates the ribbed bowls in the Corning Museum of Glass[64] and similar glass objects with semi-precious stones, such as agates (Fig. 5)[65]. Miguel Cisneros Cunchillos, Esperanza Ortiz Palomar and Juan Ángel Paz Peralta, on the other hand, emphasise the visual connection with fossiliferous limestone[66]. Not least through their distinctive colourfulness, however, the examples cited above show that the boundaries between imitation, inspiration and creation are often blurred and that the assignment of such an object to one of these categories is ultimately unhelpful. In most cases, the glassmakers of the Early Imperial period were apparently interested in neither the simple imitation of a more expensive material nor standardised mass production, but rather in variation and variety.

63 Löbbing 2016, 32–35.
64 Goldstein 1979, 188 f. cat. nos. 501. 502.
65 von Saldern 2004, 168 f.
66 Cisneros Cunchillos et al. 2013, 285–287.

Fig. 5: Ribbed bowl (Isings 3), Early Imperial period; New York, Corning Museum of Glass, inv. 55.1.78.

Multi-Layered Cameo Glass, Multi-Layered Intermateriality

As discussed above, glass is an excellent material for the analysis of intermaterial phenomena because of its manifold physical properties and colour possibilities[67]. In addition, starting in the Augustan period at the latest, glass developed from a relatively rare luxury product into a widespread component of tableware, increasingly competing with pottery and metal vessels. The exponential increase in glass production was spurred in part by technical innovations, such as glass-blowing, and the ability to create decoloured glass[68].

Cameo glass, with its rich figurative decoration, represents a particularly spectacular type of glass product (Fig. 6)[69]. Although the precise chronology is somewhat difficult to refine, the large-scale manufacture of these objects probably began during the Augustan period and concluded at some point during the 1st century A.D. When looking at products made of cameo glass, such as the famous Portland Vase, it immediately becomes clear that there is a strong connection to glyptic art[70]. It is possible that attempts to reproduce in glass luxury products made of precious stone, such as the famous Tazza Farnese, were already taking place in the Hellenistic period[71]. However, technical innovations and greater consumer demand led to more extensive production and distribution of cameo glass during the Augustan period. The main places of production are likely to have been in Italy, and production began at latest during the Augustan period[72].

Despite similarities between carved stone and cameo glass, a comparison of relief vessels made from both materials makes the differences between them clear. If, for example, we compare the Portland Vase with other vessels decorated in relief, such as an agate *aryballos* in the Kunsthistorisches Museum in Vienna (Lang, Fig. 13) or an amphora made of sardonyx in the Hermitage Museum in St. Petersburg, differences in form, decoration, colour and complexity become apparent[73]. Although the artificial character of glass vessels immediately made it clear that they were

67 On the formal aspects of 'skeuomorphism' in glass, see Löbbing 2015; 2016.

68 Oettel 2006, 251 f. Decoloured glass in particular is repeatedly seen as an imitation of rock crystal: see Wabersich 2014, 119; Löbbing 2016, 27.

69 Whitehouse 1997, 41–65; von Saldern 2004, 202–218; Roberts et al. 2010; Weiß 2012; van Aerde 2019, 136–156; Flecker, forthcoming.

70 See Lang, this volume.

71 On the (possible) origin of the genre in Alexandria, see Schmidt 2007. However, it is already clear that the multi-layered glass fragment from Bonn discussed by Schmidt, which was cut from a blank and not produced with a mould, cannot simply be an imitation of a cut stone, which it surpasses aesthetically.

72 Weiß 2012, 645 f.

73 Bühler 1973; Zwierlein-Diehl 2008, 208–215. 348–350 cat. no. 24 (Vienna); Wabersich 2014, 219 Pl. 7, 2 (St. Petersburg).

Fig. 6: Fragments of Cameo Glass, Augustan period; New York, Corning Museum of Glass, inv. 62.1.24.

not produced from stone, glass offered artisans completely new possibilities, beginning with the form and shape, since these characteristics were not determined by the qualities of the stone available[74]. The range of shapes of cameo glass is thus also relatively broad, extending from pots, jugs and drinking vessels to flat reliefs, some of which are quite large. The moulding technique probably used to produce cameo glass[75] also offered manufacturers the possibility of making figurative decorations not only more quickly and cost-effectively, but also at a consistently high level of quality, which often surpassed examples of cut or engraved relief decoration[76]. Eventually glass manufacturers decided to change the colour aesthetics while retaining the strong light-dark contrasts. Most of the preserved vessels and fragments made of cameo glass are blue and white. Depending on the angle and strength of the light, the blue of the vessel body could alternate between dark opaque and radiant tones. This clearly distinguishes the products from the vessels made of precious stone, or even from the spectacular agate cameos, which, although also dyed[77], were produced mostly in brown hues. Only a handful of glass vessels that combine white relief decoration with a dark red body have been preserved; these, by virtue of their colouring, come closer to the appearance of the dyed agates[78].

Of the different types of cameo glass, there is a specific group that was produced from several layers of glass[79]. Although they incorporated a concept employed in multi-layered agates, they were not intended to simply imitate the specific material properties of these gemstones. Rather, glassworkers used the potential of their material to creatively transform the idea of layering. The preserved fragments show that up to five layers of different colours could be applied to a dark blue background, with the palette including colours such as green, yellow and red. These varied colours were complimented by new ornamental designs, as well[80].

74 See Lang, this volume, for a passage in which Pliny emphasises the small size of the *vasa murrhina*: Plin. HN 37, 21 f.
75 Some scholars still favour the idea that the decoration was incised from the overlying layers: see, critically, Weiß 2012, 647–649.
76 See, for example, the vessel in the Kunsthistorisches Museum in Vienna in Zwierlein-Diehl 2008, 208–215 cat. no. 24. On the moulding technique, see Lierke 1999, 71; Schmidt 2007, 16.
77 Schmidt 2019, 86–96.
78 See, for example, a small sardonyx amphora in the Hermitage Museum in St. Petersburg: Bühler 1973, 65 cat. no. 73. However, there is no colour specification. On the purple cameo glass, see van Aerde 2019, 148–150.
79 Whitehouse 1997, 52 cat. no. 49; Roberts et al. 2010, 50 cat. no. 10; 77–79 cat. no. 75–81; van Aerde 2019, 150–153. On an early example, see Schmidt 2007.
80 See, for example, a fragment in the Thorvaldsen Museum in Copenhagen, which shows the mane of a feline (?) with a scale pattern in blue and white: van Aerde 2019, 152 f. Fig. 104.

The example of cameo glass once again illustrates the oscillation between material transfer and material interference in a newly established category of objects. Initially, the desire was to imitate a luxurious product – perhaps the *vasa murrhina* mentioned by Pliny the Elder[81] – but through creative appropriation and transformation, the enormous variability of glass was used to create products that were only slightly reminiscent of their models. The natural properties of the gemstones, which stone cutters skilfully used to create hybrid objects with 'unique visual effects'[82], apparently played no role for glass artists and were not imitated. As we have seen above, the technical capabilities of glass production made it possible to achieve a greater similarity to the natural appearance of gemstones. However, as far as we know, these capabilities were not used.

Playing with the Model? The Glazed Ceramics of the Late Republic and Early Imperial Period

Over the course of the 1st century B.C., an aesthetically remarkable class of products was developed in the Roman east: this is lead glazed relief pottery, which was produced in places such as Tarsos and Smyrna, and mainly comprised drinking vessels associated with the *convivium*. By the Early Imperial period, these objects were produced also in various locations throughout Italy and Gaul[83]. The most common form by far was the ring-handled skyphos. Anne Hochuli-Gysel has analysed the relationship of lead glazed *skyphoi* with their toreutic and ceramic models in detail[84]. Close connections to silverware are clearly observable in the design of the *skyphoi*. This is particularly evident in the form of the rim and the ring handles with thumb plates. It is noteworthy that the relationship with toreutics, in particular, weakened over the course of the production period, as we have seen in other object classes[85]. A special feature of many of the lead glazed ceramics was their two-tone

Fig. 7: Lead-glazed one-handled Cup (*modiolus*), early Imperial period; Saint Louis Art Museum, inv. 386:1923.

81 Plin. HN 37, 7. See Bühler 1973, 18–21; Cisneros Cunchillos et al. 2013, 275 f. See also Lang, this volume, who suggests that it is fluorspar.
82 See the contribution by Lang, this volume.
83 Hochuli-Gysel 1977; Cipriano 2016, 73–75. Glazed ceramics were even produced in the main camp at Haltern, which was occupied only for short a period of time (Rudnick 2001).
84 Hochuli-Gysel 1977, 22–32.
85 Hochuli-Gysel 1977, 23.

effect, which contrasted a green colour with a yellow-brown glaze[86]. In particular, drinking vessels (such as *skyphoi*) made precise use of this effect, with the exterior of the vessels usually green and the inside a yellow-brown (Fig. 7)[87]. Michael Vickers concludes that this two-tone colouration was intended to imitate corrosion – the green colour mimicked the unpolished, tarnished or corroded outside of bronze vessels, the lighter colour the polished inside[88]. Hochuli-Gysel disagrees with this view, however, pointing out that elaborate bronze drinking vessels were undoubtedly regularly cleaned[89]. She also correctly notes that, unlike jugs, mugs and casseroles, very little bronze relief tableware has survived. In contrast, she sees the clear separation of the green and yellow glaze as a further reference to silver models: 'The green outer glaze [...] corresponds to the silver parts of the silver vessels, the yellow inner glaze to the gilding of the lining, which was intended to prevent the silver from being tarnished by the drink'[90].

As we know nothing for certain about the handling of metal tableware in antiquity and the resulting aesthetics, here we can only observe a skilful interplay between form, material and surface – interplay, however, that is only made possible by reference to metalware. The shapes of lead-glazed ceramics can often be associated with silver drinking vessels, while bronze was reserved above all for other vessels of the *convivium*. The green glaze, however, contradicts the connection with silver and more likely points to bronze. At the same time, the rich green, glossy effect of the glaze gives these vessels a special aesthetic, making them independent objects of tableware. This phenomenon can no longer be described by material transfer and illusion; rather, different materialities overlap here and lead to something new, which could be described as constructive material interference.

Summary

Through an analysis of both literary and archaeological sources, Andrew Wallace-Hadrill has examined the transition phase between the Late Republic and the Early Imperial period. Rather than utilising the (now negatively viewed) categories of 'Hellenisation' and 'Romanisation', he developed a three-stage model of cultural transformation that linked these two concepts. In the first phase, imports from the east, driven by an increasing demand and mediated by Roman *negotiatores*, reached Italy. It was only in the second stage, during final years of the Republic and the Augustan period, that imports declined and production in the Italian centres began. The third phase in Wallace-Hadrill's model was the export of the new Italian products to all parts of the Mediterranean, which in turn served as the foundations for the development of regional products during the 1st century A.D.[91].

As we have seen, an important trend during the first two phases was the emergence of either new classes of objects – such those produced in marble – or of object types that deliberately break with their material-inherent tradition. Even though we usually cannot trace the exact origin of

86 On the production, see Hochuli-Gysel 1977, 17–20. The colours could of course also be used in other ways. See, for example, the *kantharoi* in Di Gioia 2006, 41–43.

87 Often the rim of some cups is accentuated with yellow-brown on the outside. See, for example, Di Gioia 2006, 36–40 cat. nos. 2.1–2.6.

88 Vickers 1999, 20. See also Gabelmann 1974, 266.

89 Further to this, the Romans almost certainly knew that tarnished metal, or metal with verdigris on its surface, imparted an unpleasant flavour and could cause illness. See the contribution by Swift, this volume, for elaboration.

90 Hochuli-Gysel 1977, 23: 'Die grüne Außenglasur [...] entspricht den silbern belassenen Teilen der Silbergefäße, die gelbe Innenglasur der Vergoldung der Fütterung, die das Anlaufen des Silbers durch das Getränk verhindern sollte.'

91 Wallace-Hadrill 2008, esp. 315–440.

these products prior to their mass manufacture[92], intermateriality was a central feature of their genesis. In most cases, this goes far beyond a weak material resonance. The different object classes experienced a pronounced ennoblement and became more unique, and this was achieved above all through intermaterial references. These references are so complex and fluid, however, that they can often only be defined to a limited extent with the terms introduced here: 'material resonance', 'material transfer' and 'material interference', as quite often the boundaries between the three terms are also fluid. It has become clear, however, that without the transfer of certain characteristics from other materialities, the development of material culture would have taken a completely different course. The transfer of material during this period rarely manifests itself as an exact copy of an object (*interpretatio*), but rather as a process of individual engagement and creative appropriation in which only certain characteristics are adopted and/or adapted to individual needs. Time and again, we observe that a form of personalised intermateriality served as the driving force behind the development of object types. Newly formed object groups often followed novel paths in confrontation and competition with their models, thus creating something genuinely new. The aspect of illusion was set aside in favour of creating something special. The diachronic perspective is central to the evaluation of intermaterial phenomena. Many of the intermaterial characteristics weaken over time and a less elaborate formal language prevails.

A similar process of adaptation can also be observed in the imagery. During the period in question, there was a new and profound interest in images, involving many types of objects that had previously not served as image carriers. The object classes discussed here are part of this development. In the desire to create new visual media, artisans suddenly referred to the world of images that had developed during the last decades of the Republic. This newly-created world of images was, however, subject to radical alteration throughout all objects classes from the 1st century A.D. onwards. The range of themes changed, the images often lost their narrative complexity and the variety of motifs was reduced. Indeed, many of the objects discussed here, which were initially characterised by their new images and special intermateriality, were not continued beyond the 1st century A.D.[93].

Manuel Flecker
Christian-Albrechts-Universität zu Kiel
Institut für Klassische Altertumskunde/Klassische Archäologie
Johanna-Mestorf-Str. 5
24118 Kiel – Germany
flecker@klassarch.uni-kiel.de

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92 Without the in-depth knowledge of the production facilities in Arezzo, for example, a large number of images from the first phase would not have survived, as most of the vessels that they decorated were not exported in large quantities.
93 Flecker, forthcoming.

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Author Biographies

Anna Anguissola teaches classical archaeology at the University of Pisa. Her principal research on Greco-Roman visual, material and literary culture has focused on urban development, the relationship between Greek and Roman art, the history and techniques of ancient sculpture, the Greek and Latin literary sources on the figural arts and the reception of classical art in later periods. She is the author of *Supports in Roman Marble Sculpture: Workshop Practice and Modes of Viewing* (Cambridge 2018), *Difficillima imitatio. Immagine e lessico delle copie tra Grecia e Roma* (Rome 2012) and *Intimità a Pompei: Riservatezza, condivisione e prestigio negli ambienti ad alcova di Pompei* (Berlin 2010). She coordinates the University of Pisa's field research in Pompeii's Regio II and in the northern and southwestern burial grounds of Hierapolis in Phrygia.

Simon Barker is a classical archaeologist with research interests in the visual and material remains of the ancient Mediterranean. He has published widely in the field of classical studies with articles covering ancient recycling practices, use of marble in the domestic decoration of Roman Campania and the Roman building industry. He studied classical archaeology, completing a PhD at Oxford University in 2012. Following his doctorate, he held a number of postdoctoral research fellowships in France, Italy and most recently in Germany as an Alexander von Humboldt Foundation Fellow at Ruprecht-Karls-Universität Heidelberg and Ludwig-Maximilians-Universität München, focusing on visual and material culture (in particular *spolia*) as an important aspect of the urban changes that marked Late Antiquity. He is currently a postdoctoral researcher for the ERC Consolidator Grant DECOR at the Christian-Albrechts-Universität zu Kiel.

Dennis Mario Beck is assistant professor in the Department for Classical Archaeology at the Rheinische Friedrich-Wilhelms-Universität in Bonn. His research focuses on quarries and marbles in antiquity, materiality and object studies, as well as Roman urbanism, residential architecture and decoration, Roman North Africa and religious studies. He studied classical archaeology, archaeology of the Roman provinces and religious studies at Ludwig-Maximilians-Universität München, Sapienza Università di Roma and the University of Cambridge. He completed his dissertation, financed by a doctoral scholarship from the Topoi Cluster of Excellence at the Freie Universität Berlin, on *Marmor Numidicum. Gewinnung, Verarbeitung und Distribution eines antiken Buntmarmors vom 2. Jh. v. Chr. bis ins 7. Jh. n. Chr.* (publication in preparation). He is currently working with several excavation and restoration projects in North Africa (Simitthus, Meninx) and Italy (Cerveteri), and is a member of the TransArea Network Africa (TANA), the Berliner Antike Kolleg, and the Bonn Center for Dependency and Slavery Studies (BCDSS).

Tobias Busen is an architect and building archaeologist working as a specialist for built heritage conservation in the architecture department of the German Archaeological Institute (DAI) in Berlin. His research is focused on Roman building construction processes and strategies of architectural design. After his architectural studies at the Technische Universität München (TUM) and the Università IUAV di Venezia, he worked as a freelance architect as well as a research and teaching associate for building history and building archaeology at the TUM, where he also completed his PhD on the Roman Imperial villa at Pausilypon, near Naples. Between 2019 and 2020 he worked as a postdoctoral researcher within the framework of the ERC Consolidator Grant DECOR, focusing on the building history of the Casa del Citarista in Pompeii.

Benjamin Engels is currently Assistant Professor in the Department for Classical Archaeology at the Albert-Ludwigs-Universität Freiburg. He studied classical archaeology and prehistory in Leipzig and at the Freie Universität Berlin, where he completed his PhD in 2015 under the title *Das Grottenheiligtum am Osthang von Pergamon. Eine Mikrostudie zur hellenistischen Kultpraxis* (Wiesbaden 2021). He coedited the conference proceedings *Natur und Kult in Anatolien* (Istanbul 2019), and the exhibition catalogue *Der Ton macht die Figur. Terrakotten aus der Berliner Antikensammlung* (Freiburg 2021). His research is focused on the archaeology of cult practices and the visuality of 'everyday' material culture.

Manuel Flecker studied classical archaeology, the archaeology of the Roman provinces and ancient history at the Ludwig-Maximilians-Universität München, Universität Augsburg and Università degli Studi di Napoli Federico II. After holding an assistant professorship at Eberhard Karls Universität Tübingen, he took up his current position as the curator of the Collection of Classical Antiquities at Christian-Albrechts-Universität zu Kiel. His research focuses particularly on ancient portraiture and Roman imagery between the end of the Roman Republic and Late Antiquity. He has been codirector of the Pompeii Forum Project of the Christian-Albrechts-Universität zu Kiel and the Johannes Gutenberg-Universität Mainz since 2015.

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Matthias Grawehr is currently interim Professor of Classical Archaeology at the Johannes Gutenberg-Universität, Mainz. His research is focused on the Near East during the Hellenistic and Roman periods, unfinished ancient architecture and Roman small finds such as lamps and bronze statuettes. He studied classical archaeology, art history and ancient Near Eastern archaeology at the Universität Basel. He has conducted excavations in the Near East and published two volumes on excavations at Petra in Jordan: *Die Lampen der Grabungen auf ez Zantur in Petra* (Mainz 2006); *Eine Bronzewerkstatt des 1. Jhs. n. Chr. von ez Zantur in Petra/Jordanien* (Mainz 2010). In 2019 he completed his habilitation on *Akzidentelle Unfertigkeiten und intentioneller Bossenstil in der Architektur des Hellenismus und der Kaiserzeit*. Matthias Grawehr has taught widely at the Universities of Basel and Zurich and recently coedited a volume on *Klassik – Kunst der Könige. Kings and Greek Art in the 4th Century BC*.

Annette Haug holds the Chair of Classical Archaeology at Christian-Albrechts-Universität zu Kiel. Her research interests concern visual culture studies on the one hand, and questions of urban lifestyles and urban design on the other. She studied classical archaeology, art history and prehistory at the Ruprecht-Karls-Universität Heidelberg and the Université Paris-Sorbonne (Paris IV), resulting in a bi-national PhD in 2003, published under the title *Die Stadt als Lebensraum. Eine kulturhistorische Analyse zum spätantiken Stadtleben in Norditalien* (Rahden/Westf. 2003). In 2009 she completed her habilitation, *Die Entdeckung des Körpers. Körper- und Rollenbilder im Athen des 8. und 7. Jh. v. Chr.* (Berlin 2012), at the Universität Leipzig. She is the principal investigator of the ERC Consolidator Grant DECOR, and recently published the monograph *Decor-Räume in pompejanischen Stadthäusern. Ausstattungsstrategien und Rezeptionsformen* (Berlin 2020).

Adrian Hielscher is a research assistant at the Institute for Classical Archaeology at the Ludwig-Maximilians-Universität München. In 2020 he received his PhD at the Christian-Albrechts-Universität zu Kiel with the thesis *Mobile Decor-Welten. Das Inventar der Insula del Menandro (I 10) von Pompeji*. He studied classical archaeology, prehistory and ancient history at the Universität Leipzig and the Ruhr-Universität Bochum. His research interests lie in the fields of Roman material culture and Pompeian domestic life, as well as theoretical concepts of object design and thing studies.

Jörn Lang is a research fellow in the Universität Leipzig department of Classical Archaeology and Museum of Antiquities. His main research interests concern ancient visual culture (especially glyptics) and the cultural history of archaeology, as well as the reception of ancient art. He studied classical archaeology, ancient history and cultural anthropology, as well as papyrology, epigraphy and numismatics (supplementary degree) at the Universität zu Köln, Rheinische Friedrich-Wilhelms-Universität Bonn and University of Turin. In 2009 he received his PhD at the Universität zu Köln. It was published under the title *Mit Wissen geschmückt? Zur bildlichen Rezeption griechischer Dichter und Denker in der römischen Lebenswelt* (Wiesbaden 2012) and awarded the prize of the Offermann-Hergarten-Foundation in 2013. In 2019/2020 he was a fellow at the International Center for Advanced Studies Morphomata, Universität zu Köln.

Dominik Maschek studied classical archaeology at the Universität Wien. After spending a year in Rome as a Fellow of the Austrian Academy of Sciences, he moved to teach classical archaeology at Technische Universität Darmstadt. In 2015, he took up a lectureship at the University of Birmingham, before joining the Faculty of Classics at the University of Oxford as Associate Professor of Roman Archaeology and Art. His interests cover Greek and Roman architecture and architectural decoration, Mediterranean urbanism and urban studies from the Early Archaic to the Late Roman period, Roman and Italic sanctuaries, archaeological method and theory, Greek and Roman art (especially portraiture and sculpture), ancient construction techniques and design, material culture and architecture in the Roman provinces and virtual reconstruction and cultural heritage.

Jessica Plant is a PhD candidate in the History of Art department at Cornell University, where she received two MArts degrees: one in Archaeology in 2016, and another in the History of Art in 2019. She studies the art and archaeology of the ancient Mediterranean with a focus on Roman and Late Antiquity. Her research interests include the cultural practices of ornament and craft production, and relational approaches to material culture. She was the Samuel H. Kress Fellow of Art and Architecture of Antiquity at the American School of Classical Studies at Athens (2020–21), where she also held the James Rignall Wheeler fellowship as a Regular Member (2019–20).

Arne Reinhardt is a research associate at the Institute for Classical Archaeology and Byzantine Archaeology at the Ruprecht-Karls-Universität Heidelberg. He achieved his PhD from Humboldt-Universität zu Berlin with the thesis *Reproduktion und Bild. Zur Wiederholung und Vervielfältigung von Reliefs in römischer Zeit* (Wiesbaden 2019). His main research interests lie in the fields of Greco-Roman visual culture, reception studies (both within and beyond antiquity) and a broad range of aspects regarding the production of images and their use in self-representation.

Ellen Swift is Professor of Roman Archaeology at the University of Kent. She studied at the Institute of Archaeology, University College London for her BA, MA and PhD. Her principal research interests are Roman and Late Antique artefacts and the Late to Post-Roman transition period in the west. She has also published on Roman decorative art. Her most recent monograph is *Artefacts and Society: design, behaviour and experience,* published by Oxford University Press (Oxford 2017). Grant-funded research undertaken by Ellen Swift as Principal Investigator includes the Leverhulme Trust Research Fellowship (2013), and the UK Arts and Humanities Research Council project 'Roman and Late Antique Artefacts from Egypt' (2017–2019).

Monika Wagner taught art history from 1987 to 2009 at the Universität Hamburg. Previous to her studies in art history at the Universität Hamburg and University of London and her assistant professorship at Eberhard Karls Universität Tübingen she was trained as an artist at the Kunsthochschule Kassel. Her previous fellowships include the Wissenschaftskolleg zu Berlin, the IFK Wien and the Getty Research Institute in Los Angeles. Her studies in modern and contemporary art focus particularly on the semantics of materials, modes of production and reception. Her publications on 18th–20th century art include *Das Material der Kunst. Eine andere Geschichte der Moderne* (Munich 2013) *and Marmor und Asphalt. Soziale Oberflächen im Berlin des 20. Jahrhunderts* (Berlin 2018).