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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.

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Fig. 3: Florence, Archivi Alinari.

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