

Materiality, Crafting, and Scale in
Renaissance Architecture

Alina Payne

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1. This article draws from a series of lectures given at the INHA and EPHE, Paris in June 2008 and will form a part of my upcoming book on the *Materiality of Architecture in the Renaissance*. I am grateful to Sabine Frommel who first gave me the opportunity to address this material by inviting me to Paris, and to Maria Loh and Patricia Rubin for inviting me to develop this argument further. I am also grateful to David Kim, Maria Loh, and the anonymous reviewers who offered very useful comments to an earlier draft.

2. Among the last publications to take a holistic view of Renaissance architecture was Julius Baum, *Baukunst und dekorative Plastik der früheren Renaissance in Italien* (J. Hoffman: Stuttgart, 1926).

3. For example, Michelozzo's accomplishments across many materials are listed in Giorgio Vasari, *Le vite de' piu eccellenti architetti, pittori, et scultori italiani da Cimabue insino a' nostri tempi* (G. Einaudi: Turin, 1986), p. 329: 'Per Cosimo fece ancora di marmo la capella di San Miniato, dove e il Crucifisso; e per Italia fece infinite cose di marmo, di bronzo e di legno'. According to Antonio Manetti, *The Life of Brunelleschi* (Pennsylvania State University: University Park, 1970), pp. 50–2, in addition to his work as goldsmith Brunelleschi had also made 'clocks, alarm bells with various and sundry types of springs by many diverse contrivances'. Finally, Francesco di Giorgio was active as painter, sculptor in bronze, wood and stone, designed marble pavements as well as medals and plaquettes.

4. August Schmarsow, *Barock und Rokoko, eine Auseinandersetzung über das Malerische in der Architektur* (S. Hirzel: Leipzig, 1897), for instance, emphasises Michelangelo's watershed role as almost single-handed agent of style change precisely because of his revolutionary work in the three principal artistic media. In his argument, it is the translation of features from one medium to the other that causes style change.

5. Francesco di Giorgio architetto, F.P. Fiore and M. Tafuri (eds) (Electa: Milan, 1993) and *Francesco di Giorgio e il Rinascimento a Siena 1450–1500*, Luciano Bellosi (ed.) (Electa: Milan, 1993). For a different approach characteristic of late-nineteenth-century interest in all aspects of the arts from the high to the low see Antonio Pantanelli, *Francesco di Giorgio Martini pittore, scultore e architetto senese del secolo XV e dell'arte*

On the whole twentieth-century Renaissance architectural scholarship has paid little attention to architecture's dialogue with the other arts, in particular with sculpture and the so-called minor arts.² The fact that architects were also painters, sculptors, decorators, and designers of festivals and entries, as well as makers of a multitude of objects from luxury items to machines, clocks, measuring and lifting instruments, in many different materials has also dropped out of attention. Indeed, broadly involved in the world of objects – large and small, painted or drawn, carved or poured – architects were highly conversant with a variety of artistic media that raise the question as to what these experiences contributed to the making of buildings. For example, in the fifteenth century in Tuscany, we find architects – Brunelleschi, Francesco di Giorgio, Michelozzo, Ghiberti, and others – not only starting out as sculptors, but also working in wood, painted wood, and bronze and sometimes designing for other crafts, such as stone intarsia or enamel ornaments for luxury cloth.³ Yet most often scholarship has looked away from hybrid careers and even the full careers of most of these architects have not been evaluated comprehensively or understood as such. In his *Lives of the Artists* Giorgio Vasari constructed the myth of Michelangelo as the titanic personality and unique performer in painting, sculpture, and architecture, all of which he transformed, and although Vasari delighted in acknowledging others active in multiple arenas he reserved the most emphatic accolades for Michelangelo alone. This pattern has been hard to escape and set against Michelangelo's mythic leadership role in all the arts, other artists remained in the shadows.⁴ For example, Francesco di Giorgio's sculpture and minor arts activity is still perceived as relatively disconnected from his architectural career or at least separate and not in dialogue with it. The two volumes on his oeuvre as architect and artist, respectively, illustrate this malaise.⁵ The same is true about scholarship on the careers of others, like Raphael, Jacopo Sansovino, Ammannati, Buontalenti, and so on.

This tendency towards a form of isolationism in architecture is nothing if not ironic given that the primary sources available make much of the exchanges between the arts. In his most potent and cherished origin-of-architecture story, Vitruvius himself assigned the invention of the Corinthian order to Callimachus, a well-known sculptor and bronze caster rather than architect. On his way to Corinth (famous for its clay pottery) Callimachus encountered the tomb-marker of a young girl in the shape of an acanthus plant growing around a wicker basket and enchanted by the combination of natural and man-made elements that chance had brought about he conceived a new capital; the order itself crystallised around it subsequently. This 'pictorial' moment of a crafted object imitating nature thus lay at the root of one of the canonical orders and signalled how tightly intertwined the three arts were

from the very beginnings of architecture.⁶ Nearly 1500 years later, in the first modern treatise on architecture, Leon Battista Alberti reduced the story to its essence and argued that a ‘high vase’ lay at the origin of the capital.⁷ Francesco di Giorgio likewise made much of the story and illustrated it, giving it the flavour of an artist’s (self) portrait, perhaps fascinated by the plurality of artistic languages he shared with the fictive inventor. Either way, in all these versions, a carved object preceded architecture.

To be sure, scholars have not always isolated artistic media in this way. In the nineteenth century the interaction between artistic fields was a major concern for architects, historians, museum curators, and artists. As the advent of the machine and of new materials precipitated a crisis of fabrication, and a global marketplace was heralded by the Great Exhibitions starting in 1851, objects and their production also came under the microscope of scholarship. The engine driving the interest in consumable objects drove a new interest in their scientific study as well. The archaeologist’s excavation, the anthropologist’s fieldwork, the ethnographer’s collections just as much as the new factories all produced masses of objects and contributed to the development of a *Sachkultur*, a culture of objects.⁸ As Theodor Mommsen, the doyen of German Romanists tartly observed in 1890 when commenting on the massive archaeological excavations then underway, ‘Grossindustrie’ (big industry), ‘Grossstadt’ (the big city) and ‘Grosswissenschaft’ (big scholarship) went hand in hand.⁹ The arts and the museums were on the receiving end of this exuberant phenomenon centred on objects, their materials and their cultural meanings, and it also left a significant imprint on art history.

This is of course a much larger topic, but it is worth mentioning in this context because it is also tightly connected with the direction Renaissance scholarship, and architectural scholarship in particular, took at the end of the nineteenth century. In his treatise *Der Stil* (1860–1863), Gottfried Semper had famously proposed an object-based theory of architecture. He argued that architecture (what he called the monumental arts) had found their origin in the *technische Künste* (technical arts) – i.e. in the crafts, first of all in textiles, and from there in pottery, wood, and metal work (in a hierarchy that went from the most ‘primitive’ to the more ‘complex’ crafts), each one leaving a trace in the ornament of the next and ultimately in the ornament of architecture as if in a compact, layered fossil – an analogy Semper actually makes when he draws on the new science of palaeontology.¹⁰ Art historians like Alois Riegl, Wilhelm von Bode, Julius von Schlosser, Aby Warburg, and a host of others whose names are no longer on our fingertips, also followed this turn to the object and studied not only major artists and monuments, but also carpets, wax figures, wooden calendars, tapestries, chapbooks, furniture, and lace-work.¹¹ In their tacit acknowledgement that these areas of artistic creativity were relevant to each other and to the monumental arts is a hint of questions that have largely been neglected since then and that are important to attend to now.¹²

What will concern me in this essay then, is how architecture fares in an expanded and hybrid field if we look at artistic process, at technique and the way the arts and the crafts bleed at the edges and allow discourses specific to one to migrate into another.¹³ How does the Renaissance and the subcategory architecture look if we approach them from a materials and craft-based perspective? For instance, does such a vantage point alter how we define the transition/relationship between the Middle Ages and the Renaissance (the status of the Trecento is still one of the vexed issues dogging periodisation efforts)?¹⁴ If instead of looking at antiquity and the

de’suoi tempi in Siena (Gatti: Siena, 1870) and Francesco di Giorgio Martini: pittore, scultore e architetto senese; *vita e documenti*, Gaetano Milanesi (ed.) (Pucci: Siena, 1880/1881; 1st publ. 1858).

6. Vitruvius, *De architectura. On Architecture* (Harvard University Press: Cambridge, MA, 1983), IV, 1, 8–10.

7. Leon Battista Alberti, in J. Rykwert, N. Leach, and R. Tavernor (trans.), *On the Art of Building in Ten Books* (MIT Press: Cambridge, MA, 1988), p. 201.

8. On this topic see Alina Payne, *Modern Architecture and the Rise of a Theory of Objects* (Yale University Press, forthcoming).

9. Suzanne Marchand, *Down from Olympus. Archaeology and Philhellenism in Germany, 1750–1970*. (Princeton University Press: Princeton, NJ, 1996), p. 75.

10. Semper quotes Adolphe Theodore Brongniart’s *Tableau des genres de végétaux fossiles* (L. Martinet: Paris, 1849) to make his point. Gottfried Semper, *Der Stil in den technischen und tektonischen Künsten oder Praktische Aesthetik* (Fr. Bruckmann Verlag: Munich, 1878; 1st edn, 1860–1863), Vol. 2, p. 3.

11. For example, see Alois Riegl, *Volkskunst, Hausfleiss und Hausindustrie* (Mäander: Mittenwald, 1978; 1st edn, Berlin, 1894) and Alois Riegl, ‘Spätantike Stickereien’, *Kunstgewerbeblatt*, NF II, 1891, pp. 127–31; Wilhelm von Bode, *Die italienischen Hausmöbel der Renaissance* (Hermann Seemann: Leipzig, 1902); Julius von Schlosser *Die Kunst- und Wunderkammern der Spätrenaissance: ein Beitrag zur Geschichte des Sammelwesens in Monographien des Kunstgewerbes* (Klinkhardt & Biermann: Leipzig 1908); Julius von Schlosser, ‘Geschichte der Porträtbildnererei in Wachs: ein Versuch’, *Jahrbuch der Kunsthistorischen Sammlungen des Allerhöchsten Kaiserhauses*, vol. 29, 1910–1911, pp. 171–258; Aby Warburg, ‘Peasants at Work in Burgundian Tapestries (1907)’, in K. Forster (intro.), *The Renewal of Pagan Antiquity* (Getty Research Institute: Santa Monica, 1999); Alfredo Melani, *L’ornamento policromo nelle arti e nelle industrie artistiche* (U. Hoepli: Milan, 1886); G.M. Urbani de Gheltof, *Les arts industriels à Venise au moyen age et à la renaissance* (Usiglio & Diena: Venice, 1885) and Idem, *Degli arazzi in Venezia con note sui tessuti artistici veneziani* (F. Ongania: Venice, 1878).

12. In the wake of significant publications in the history of economics such as Richard Goldthwaite’s *The Building of Renaissance Florence* (1980) and *Wealth and the Demand for Art in Italy* (1995) material culture has emerged recently as a topic of concern for early modern historians, literary historians, and art historians as well. See for example, Lisa Jardine, *Worldly Goods* (Doubleday: New York, 1996); Ann Rosalind

Jones and Peter Stallybrass, *Renaissance Clothing and the Materials of Memory* (Cambridge University Press: Cambridge, 2000); and Evelyn Welch, *Shopping in the Renaissance* (Yale University Press: London, 2005).

13. For documentation on the use of materials that has begun to be assembled see the series *Materiali della cultura artistica* published by De Luca, Rome. For example, see Gabriele Borghini (ed.), *Marmi antichi* (De Luca: Rome, 2004).

14. The literature on materiality, craft, and making has been located traditionally as well as recently primarily in the medieval field. See for example Wolf-Dietrich Löhr and Stefan Weppelmann (eds), *Fantasie und Handwerk. Cennino Cennini und die Tradition der toskanischen Malerei von Giotto bis Lorenzo Monaco* (Hirmer: Berlin, 2008). Another location for the discourse has been medieval Islamic art. See for instance Avinoam Shalem, 'Objects as Carriers of Real or Contrived Memories in a Cross-Cultural Context', *Mitteilungen zur Spätantiken Archäologie und Byzantinische Kunstgeschichte*, Vol. 4, 2005, pp. 101–19. For a brilliant iconographical reading of the use of marble in architecture see Fabio Barry, 'Walking on Water: Cosmic Floors in Antiquity and the Middle Ages', *Art Bulletin*, Vol. 89, 2007, pp. 627–56.

15. Serge Gruzinski, *Les quatre parties du monde* (La Matricière: Paris, 2004). The term *métissage* is useful because it signals the hybridity that characterised early modern production of culture in the wake of the great discoveries, and extended the phenomenon already at work in the Mediterranean.

16. On the reciprocal relationship between modern architectural theory and architectural history writing see Alina Payne, 'Rudolf Wittkower and Architectural Principles in the Age of Modernism', *Journal of the Society of Architectural Historians*, Vol. 53, 1994, pp. 322–42.

17. Heinrich von Geymüller, *Die Architektur der Renaissance in der Toscana* (F. Bruckmann: Munich, 1885–1908) and Jacob Burckhardt, *Die Baukunst der Renaissance in Italien* (C.H. Beck: Munich, 2000; 1st edn, *Geschichte der Renaissance in Italien*, 1867).

18. On Semper and Burckhardt see Werner Kaegi, *Jacob Burckhardt. Eine Biographie* (Benno Schwabe: Basel/Stuttgart, 1956), Vol. 3, pp. 572–98 and 607. For *pavimenti* as calligraphy see Burckhardt, *Geschichte der Renaissance*, p. 257.

19. Burckhardt, *Geschichte der Renaissance*, p. 287: 'Im XV Jahrhundert war sowohl der edlere Prachtsinn als die Lust am höchsten Putz und Prunk gewaltig gestiegen. . . und eine flüchtige Uebersicht der wichtigeren Nachrichten . . . wird zeigen welch ein Feld dieser Kunst offen war'.

orders as diagnostic sites for Renaissance artistic behaviour, we look for different vectors along which change happened, how does this affect our divisions into Early, High, and Late Renaissance? And, if we looked at architecture in dialogue with a larger class of objects, might we also find a 'contaminated architecture' that is the outcome of a proliferation of materials and forms, many small and mobile, in a world of trade and travel, of globalisation and what Serge Gruzinski calls 'métissage'?¹⁵ Might this modify the 'strong' modernist discourse on the definition of architecture that still lingers and echoes in historical scholarship, a discourse that privileged industrial materials and mass-production and in so doing turned the spotlight away from making and crafting, and away from small scale and ornament as topics of relevance for architecture?¹⁶ What follow are preliminary observations that lay out themes from and anticipate a book in progress and that propose a way to step outside the traditional path and 'look awry' at Renaissance architecture.

Architecture and Objects

Both Jacob Burckhardt and Heinrich von Geymüller, Burckhardt's life-long friend and tireless correspondent, looked at architecture from a more inclusive point of view in their respective publications: *Geschichte der Renaissance in Italien* (1867) and the equally important *Architektur der Renaissance in der Toscana* (which von Geymüller took over from Carl Stegmann and completed between 1885 and 1908).¹⁷ Perhaps under the influence of Gottfried Semper, his colleague at the Eidgenössische Technische Hochschule in Zurich, Burckhardt drew a broad picture of architecture: he divided it into 'Architecture' and 'Decoration' and under the latter he included decorative sculpture in stone, iron, and wood; he looked at *pavimenti* which he associated with calligraphy; he covered painted façades (and *sgraffito*), stucco work, wall tombs, temporary decorative ensembles (for feasts and triumphal entries), goldsmithry, and pottery.¹⁸

But beyond his expansive view of the materials pertaining to architecture, Burckhardt also suggested a vehicle for the exchanges he envisaged and implied, though he did not go much beyond drafting a list of sources and proposing a category that has remained unique in the literature. After listing all those who started as goldsmiths (Brunelleschi, Ghiberti, maybe Lucca della Robbia, Masolino, Pollaiuolo, Verrocchio, Finiguerra, Domenico Ghirlandaio, Botticelli, and Andrea del Sarto) he observed that the field of activity was large and completely open to these masters since the taste for luxury in the fifteenth century had risen dramatically.¹⁹ Moreover, as there were almost no ancient examples of goldsmiths' work to be followed, he continued, these artists had had to shape their forms out of the 'allgemeiner neuer Styl' (the general or universal new style).²⁰ As he described it this *allgemeiner Styl* that embraced all the arts from monumental to minor also presupposed a fluidity that permitted forms to traverse media with some ease, and not just surface patterns like those illustrated in nineteenth-century manuals of ornament, but also three-dimensional compositions of more complex objects.

Like Burckhardt, von Geymüller also held a comprehensive view of the visual field for he was both a historian and an architect and was, therefore, even more in tune with the contemporary artistic sensibility. Thus he and Stegmann (who wrote the early sections of their magnum opus *Die Architektur der Toscana*) included well-known sculptors such as Donatello, Lucca della Robbia, Benedetto and Giuliano da Maiano, Mino da Fiesole, Jacopo della Quercia,

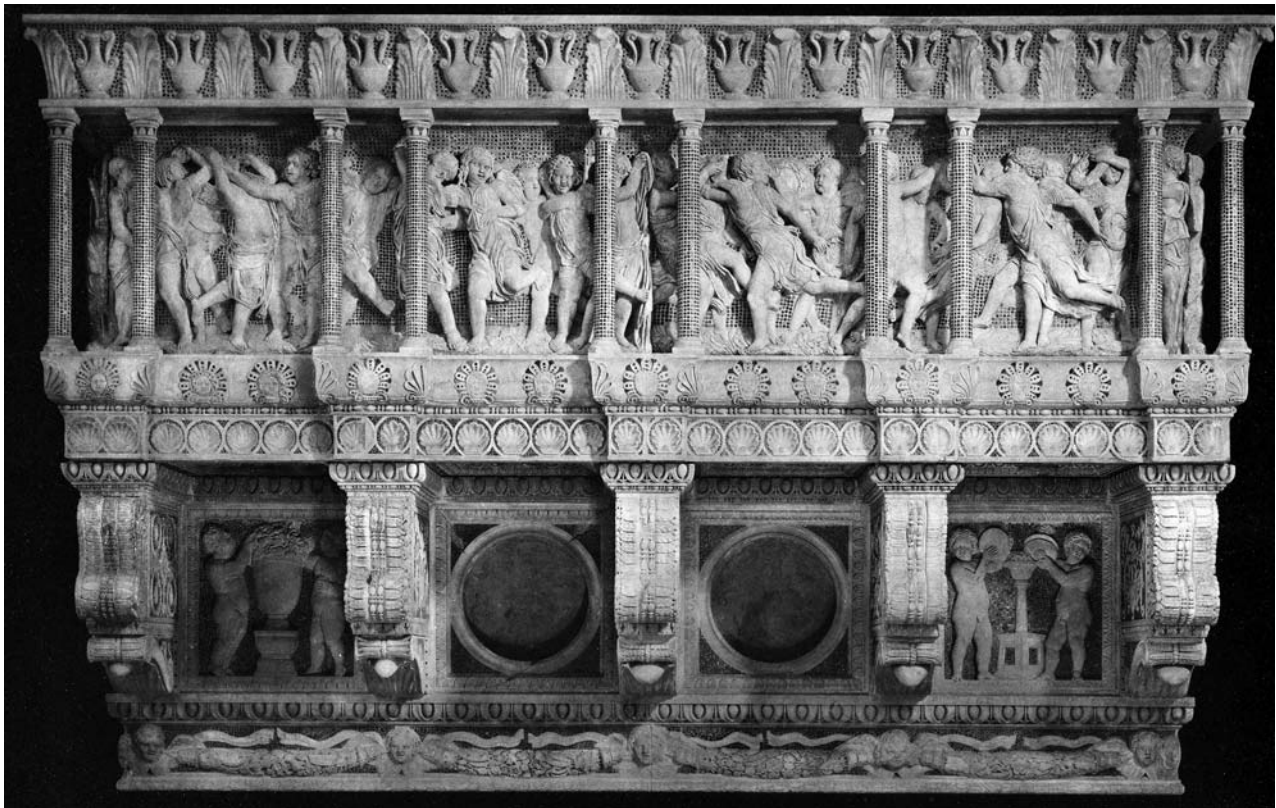


Fig. 1. Donatello, Cantoria, Museo dell'Opera del Duomo, Florence, from Heinrich von Geymüller and Carl von Stegmann, *Die Architektur der Renaissance in Toscana* (1885–1908).

Verrocchio, Andrea Sansovino, and Andrea Bregno in their volumes on architecture and argued that the tight bond between the two arts in the fifteenth century justified expanding the list of 'pure' architects²¹ (Fig. 1). Indeed, Geymüller pointed in particular to the frames Donatello created for his sculptural scenes as well as to his collaboration with Michelozzo. This was an important contribution since he was among the first modern historians to note Donatello's precedence in devising architectural motifs that Michelozzo would later use in his buildings. This reciprocal relationship between architecture and sculpture was reinforced subsequently by Wilhelm von Bode who developed these ideas further in his essay 'Donatello als Architekt und Dekorator' (1901).²² Both probably drew on Vasari, but more immediately on art historians like Hans Semper, Gottfried Semper's son who saw *Der Stil* through the presses for its second edition in 1878, and who, perhaps not coincidentally given his father's known position on this subject, paid significant attention to artists like Donatello whose work lies at the intersection between the arts.²³ In another passage from *Die Architektur der Toscana*, Geymüller turned to Benedetto da Maiano's ciborium in the Duomo in Siena and described it as a *tempietto* and as a jewel of the decorative art that provided the model for a dome and showed the consummate architect.²⁴ Moving smoothly across scales and materials, he also described the *torchères* on the Palazzo Strozzi (designed by his brother Giuliano da Maiano and executed by Caparra) as eight-sided *tempietti* with small columns at the corners like those in the chancel of Sta. Croce that were 'ganz

20. Burckhardt, *Geschichte der Renaissance*, p. 287: 'Antike Goldsachen waren so gut wie gar nicht vorhanden, so dass die Meister der Frührenaissance aus ihrem allgemeinen neuen Styl auch den der Goldarbeit entwickeln mussten'.

21. On Donatello, Geymüller, *Architektur der Toscana*, Vol. 2, p. 1 notes: 'Die Architekturbehandlung, wie sie sich auf den Reliefs des ehemaligen Hochaltars des Santo zu Padua verfindet, verrät, in welch'freier Weise, man möchte sagen seiner Zeit weit vorausseilend, er architektonische Formen und Probleme behandelt, wie er hier schon gänzlich losgelöst von mittelalterlicher Tradition, geradezu in den altklassischen Formen schwebte. . . ' and uses this observation to explain why he includes him with a separate volume in his work on architecture.

22. Wilhelm von Bode, 'Donatello als Architekt und Dekorator', *Jahrbuch der preussischen Kunstsammlungen*, Vol. 22, 1901, pp. 3–28.

23. Hans Semper, *Hervorragende Bildhauer-Architekten der Renaissance. Mino da Fiesole, Andrea Sansovino, Benedetto da Rovezano* (George Gilberts: Dresden, 1880). The book focuses mostly on wall tombs, sarcophagi, and baptismal fonts. Hans Semper, *Donatello. Seine Zeit und Schule* (W. Braumüller: Vienna, 1875). On



Fig. 2. Benedetto da Maiano and Caparra, *torchères*, Palazzo Strozzi, Florence, from Heinrich von Geymüller and Carl von Stegmann, *Die Architektur der Renaissance in Toscana* (1885–1908).

Donatello Vasari, *Le Vite*, pp. 311 and 325 states: 'E dando opera all'arte del disegno, fu non pure scultore rarissimo e statuario maraviglioso, ma pratico negli stucchi, valente nella prospettiva, e nell'architettura molto stimato'. It is also significant that he notes that at Donatello's death the practitioners of all the three major arts, in addition to those of goldsmithery, attended (and hence mourned): 'Dolse infinitamente la morte sua a' cittadini, agli artefici et a chi lo conobbe vivo; laonde per onorarlo più nella morte che e' non avevano fatto nella vita, gli fecero essequie onoratissime nella predetta chiesa, accompagnandolo tutti i pittori, gli architetti, gli scultori, gli orefici e quasi tutto il popolo di quella città.' In addition, the intersections between Brunelleschi and Donatello that Vasari insists upon in his narratives of their lives signals the contamination between these two disciplines, i.e. sculpture and architecture.

24. Geymüller, *Architektur der Toscana*, vol. 4, p. 2: 'Juwel der dekorativen Kunst... Der Tempietto ist das Modell für einen Kuppelbau und



Fig. 3. Benedetto da Maiano, *pergamo*, Sta Croce, Florence, from Heinrich von Geymüller and Carl von Stegmann, *Die Architektur der Renaissance in Toscana* (1885–1908).

architektonisch gedacht' (conceived entirely architectonically)²⁵ (Fig. 2). It is therefore not surprising that Geymüller's image of Benedetto's *pergamo* (pulpit) in Sta Croce should monumentalise it to such a degree that its true scale – whether of 'architectural' proportions or more object-like – was virtually erased from view (Fig. 3). In keeping with the late-nineteenth-century focus on *Kunstindustrie* and its relation to architecture (after all Riegl had published his *Spätromische Kunstindustrie* in 1901) Geymüller turned to the craft aspect of architecture in the final volume of his opus in which he focused on materials.²⁶ And it is here that echoes of Burckhardt's 'allgemeiner neuer Styl' resonated most clearly. He noted the collaborative work and contribution to architecture of workers in marble, wood, metal, leather, stucco, of the gilders, painters, as well as that of carpet and fabric weavers suggesting a form of artistic virtuosity and a bravura performance of manual dexterity that traversed materials and trades.²⁷

Geymüller's insights suggest ways in which architecture entered into a dialogue with smaller objects and raise the question of how relevant techniques, craftsmanship, and materials may have been to architectural design at this stage. The term 'making' is critical here because therein lies one of the predicaments that architects have faced and often noted, whether aware explicitly or more intuitively. Architecture's relationship with its production is vexed: the architect conceives something that is far too large to be executed by himself. As Alberti carefully notes in *De re aedificatoria* (II, 1), the building is conceived in the mind and then gradually materialises step by step by way of drawings, then models, and finally the building materials themselves.²⁸ The final stage, the building process, is one from which the architect is essentially excluded: nothing of the actual building is crafted by his own hand (however large his models, or the profiles for the stone details



Fig. 4. Bartolomeo Ammannati and Giorgio Vasari with Bernardino Poccetti, detail of *sgraffito* façade, Palazzo Montalvo, Florence. (photo: Alina Payne.)

he cuts at full scale).²⁹ Nearly a century later Vasari makes this distancing between ‘object’ and ‘maker’ unequivocally clear:

[Architecture’s] designs are composed only of lines, which so far as the architect is concerned, are nothing else than the beginning and the end of his art, for all the rest, which is carried out with the aid of models of wood formed from the said lines, is merely the work of carvers and masons.³⁰

Yet this was not an uncontested condition. At the limits of this statement in which Vasari makes drawing the architect’s only real work, there is a tradition in Florence that sees the *sgraffito* technique for finishing facades as a way to signal both making and drawing (Fig. 4). The incised surface of the *sgraffito* proposes an alternative to the more traditional sculpted façade – the apparently carved, solid core, stone block with orders, sculptures, and niches or heavily rusticated surfaces – and in so doing both displays drawing and re-inserts it back into the materiality of the building. Executed with a sharp instrument that carved out one layer of stucco following intricate designs and revealed the black ground beneath, the technique recalls that of a pencil’s scratching on paper. Yet, the process is one of taking away, of carving and creating relief, albeit very slight, such that the *sgraffito* is worked into the surface rather than applied to it like a fresco. Although Vasari attributes this craft to the painter, as he does all such incising techniques like *damaschina*, *niello*, *intarsia*, and *mosaic*, Sebastiano Serlio places *sgraffito* work squarely in the tool box of the architect in his Book IV on the orders (1537).³¹ As an alternative statement about building displayed prominently on its facade, *sgraffito* is a piece of eloquence that makes the drawing (that alone belongs to the architect’s ‘manual’ work) a concrete, physical entity and presence, literally embedded in the hard outer surface of the building.³²

But, aside from this rather unique practice, there is a domain where the overwhelming scale of the architectural project does not alienate the architect’s hand and that lies half-way between objects and architecture: that

zeigt den feinen Architekten’. Vasari ascribes to him the façade of the Palazzo Strozzi in Florence; the engineering feat of erecting the pulpit in Sta. Croce by hollowing out the pier; the brothers Da Maiano were also involved in an early plan for the church of Sta. Maria in Carceri in Prato (which commission subsequently went to Giuliano da Sangallo). For an evaluation of the general neglect of Benedetto’s work (though strictly focused on his sculpture) see Doris Carl, *Benedetto da Maiano. A Florentine Sculptor at the Threshold of the High Renaissance* (Brepols: Turnhout, 2006).

25. Geymüller, *Architektur der Toscana*, vol. 4, p. 9: ‘Erstere sind als achteckige Tempietti mit vorgestellten Säulchen an den Ecken, wie in der Kanzel von S. Croce, ganz architektonisch gedacht und von Caparra nach dem Modelle B. da Majanos ausgeführt. Dekorativen wirken der Konsolenfuss und die strahlenartige Bekrönung verzüglich’.

26. Alois Riegl, *Spätromische Kunstindustrie* (Wissenschaftliche Buchgesellschaft: Darmstadt, 1964; 1st edn, Vienna, 1901).

27. Geymüller, *Architektur der Toscana*, vol. 10, p. 7: ‘Die Geschicklichkeit der Steinmetzen und Marmorarbeiter, der Holz-, Metall-, und Lederarbeiter, der Stuckateure, Vergolder und Maler, der Teppich, und Stoffweber u.a. unterstützte nicht nur den Architekten in ungewöhnlicher Weise, sondern macht sie oft zu hochgeschätzten Mitarbeitern selbst’.

28. Alberti, *On the Art of Building*, pp. 11–12.

29. On the practice of full scale models of details in the work of Brunelleschi for example, as well as models more generally see Henry A. Millon,

'Models in Renaissance Architecture', in Henry A. Millon and Vittorio Lampugnani (eds), *The Renaissance from Brunelleschi to Michelangelo* (Bompiani: Milan, 1994), p. 19. Much later Scamozzi's images of *sacome* or *quartabuoni* in his treatise also suggest such a need to explore moulding assemblages at full scale. Vincenzo Scamozzi, *L'Idée de l'Architecture Universale* (By the author: Venice, 1615), pp. 152 and 155.

30. *Vasari on Technique*, Baldwin Brown (ed.) (J.M. Dent and Co.: London, 1907), pp. 206–7.

31. Sebastiano Serlio, *Tutte l'opere d'architettura* (Giacomo de' Franceschi: Venice, 1619), Book IV, f.191v.: 'dico che l'Architetto non solamente dee prender cura degli ornamenti zirca le pietre, & circa I marmi, ma dell'opera del pennello ancora, per ornare I muri: e convien che egli ne sia l'ordinatore, come padrone di tutti coloro, che nella fabrica si adoperano'. For Vasari's description of *sgraffito* in the introduction to painting: Vasari, *Le Vite*, p. 72: 'un'altra sorte di pittura che e disegno e pittura insieme [...] per ornamenti di facciate di case e palazzi, che piu brevemente si conducano con questa spezie e reggono all'acque sicuramente, perche tutti i lineamenti, invece di essere disegnati con carbone... sono trateggiati con un ferro dalla man del pittore'.

32. 'Florentine *sgraffito* facades in the Renaissance', lecture delivered in June 2008 and November 2008 at INHA, Paris and UCL, London respectively.

33. Alois Riegl, *Die Entstehung der Barockkunst in Rom* (Mäander: Munich, 1977; 1st ed Vienna, 1907).

34. Most of the work on such objects has been done in the medieval field. For example see Achim Timmermann, 'Architectural Vision in Albrecht Scharfenberg's *Jüngerer Tituel* – A Vision of Architecture?', in Georgia Clarke and Paul Crossley (eds), *Architecture and Language* (Cambridge University Press: Cambridge, UK, 2000), pp. 58–71.

35. Geymüller, *Architektur der Toscana*, vol. 5, p. 3: 'Bereits 1884 in Burckhardts Cicerone, hatte ich gelegentlich des Pal. Gondi und seiner Kirche in Prato hervorgehoben, dass die Detailbildung Giulianos eher eines Goldschmieds als eines Architekten würdig sei'.

is the domain of what in German is called *Kleinarchitektur* (small architecture). To this belong ciboria, chancels, altars, tombs, tabernacles, free-standing chapels, *cantorias*, pulpits, baptismal fonts, sarcophagi, fountains, and so on. Indeed, Alois Riegl collected fountains under this heading in his *Die Entstehung der Barockkunst in Rom* (1907) and noted their 'kunstgewerbliche' (applied arts) *factura* (Fig. 5).³³ There are also other scales that belong to smaller architecture-related objects, though they remain primarily in the domain of representation: these are micro-architectures – representations of architecture on Papal and Episcopal crosiers, or in the form of reliquaries, caskets, *cassoni*, *torchères*, and candelabra, collector's cabinets (furniture), as well as representations of architecture on medals and other material worked in relief (cameos, gems, pottery, etc.) that both take architectural form and *pertain* to architecture.³⁴ The fact that Maso di Bartolomeo's reliquary for the Holy Girdle in Prato Cathedral shared the same fundamental composition and ornamental forms (the string of dancing putti) with the cathedral's stone pulpit by Donatello and Michelozzo and that the conceit worked for both (as it does for Donatello's *cantoria* in the Duomo) makes the point about transfers between scales and materials, from sculpture into architecture and back again most eloquently (Fig. 6). Finally, like *Kleinarchitektur* and micro-architecture, the architectural model also alerts to a relationship with other scales and materials, a relationship that is essential and that brings architecture into the domain of small objects – that domain where experimentation occurs with greater ease because they were executed faster and at (a relatively) negligible cost. This is the domain of mobile objects, and that of architectural compositions in furniture, metalwork, and other luxury goods to which many of the multi-skilled artists/architects turned for work.

Many of these *Kleinarchitekturen* and micro-architectures were executed by sculptors/architects: doorframes that recall tabernacles by Desiderio da Settignano; altars and miniature chapels too small to enter other than kneeling, by Michelozzo or Alberti; architectural *cantorie* and reliquaries by Donatello or Maso di Bartolomeo; bronze *tondi* embedded in marble or *contrafatto* in terracotta embedded in stucco by Desiderio or Maso in buildings by Michelozzo (such as the courtyard façades of the Palazzo Medici); the *pergamò* by Benedetto da Maiano and so on (Fig. 7). The reciprocal relationship between the ornamental *factura* of all these objects, large and small, and the architecture to which they are related is such that, when looking at a complex like the Sala Regia in the (Vatican) rather than focusing on its many individual components – like Antonio da Sangallo's *finestrone* or the later stuccoes and paintings that decorate the walls – it might be legitimate to think of it also as a precious casket turned outside in. Geymüller intuited some of these transfers across the arts when he analysed the details on Giuliano da Sangallo's Palazzo Gondi and his Madonna delle Carceri in Prato and saw them arising from his dexterity as a goldsmith.³⁵ The same may be said of Francesco di Giorgio's church of Sta. Maria del Calcinaio in Cortona, with its contrast between the monumental conception of the single space leading into the dome and the delicate yet crisp and finely chiselled mouldings and wall articulations in the interior.

And yet, *Kleinarchitektur*, micro-architecture, and models are not of the same family, and are quite different sites for a dialogue between architecture and the other arts. They do not function in the same way, though on the face of it they are all a miniaturisation of architecture. The model is a replica of the building, a smaller, reduced copy of the real thing in a material that bears no resemblance to that of the finished work (most often wood, though Michelangelo used clay



Fig. 5. Donatello and Michelozzo, Pulpit, Prato Cathedral, Prato, from Heinrich von Geymüller and Carl von Stegmann, *Die Architektur der Renaissance in Toscana* (1885–1908).



Fig. 6. Maso di Bartolomeo, Reliquary box for the Holy Girdle, Duomo, Prato, Scala/Art Resource, NY.

36. On Michelangelo's use of full-scale and small scale models for sculptures and architecture alike see William Wallace, *Michelangelo at San Lorenzo* (Cambridge University Press: New York, 1994), p. 88. On Brunelleschi's use of turnips see Henry A. Millon, 'Models in Renaissance Architecture', p. 21.

37. See note 20 above for Palladio and Scamozzi; for Benedetto da Maiano's full scale terracotta models for the *pergamo* in Santa Croce see Gary M. Radke, 'Benedetto da Maiano and the Use of Full Scale Preparatory Models in the Quattrocento', in S. Bule (ed.), *Verrocchio and Late Quattrocento Italian Sculpture* (Le Lettere: Florence, 1992), pp. 217–24.

38. On Michelangelo's wooden model see William Wallace, *Michelangelo at San Lorenzo*, p. 88.

39. Alberti, *On the Art of Building*, p. 34. For Cellini's views see his letter to Varchi of 28 January, 1546 (part of the latter's *paragone* inquiry): Benedetto Varchi – Vincenzo Borghini, in Paola Barocchi (ed.), *Pittura e scultura nel Cinquecento* (Sillabe: Livorno, 1998), pp. 82–3; and Benvenuto Cellini, in G.G. Ferrero (ed.), *Opere* (Unione Tipografico: Turin, 1971), pp. 980–3. Vasari, *Le Vite*, p. 111 counters this view with his own somewhat patronising description of the sculptor's work: 'E perchè alcuni scultori talvolta non hanno molta pratica nelle linee e ne'dintorni, onde non possono disegnare in carta, eglino in quell cambio con bella proporzione e misura facendo con terra o

and Brunelleschi apparently wax and even turnips – i.e. soft materials that could be moulded and carved).³⁶ In contrast, the *Kleinarchitektur* is usable as is; it is not a representation of another. It is at true scale even if that scale is smaller than true architecture. To be sure models could be at full scale too – mock-ups of details that were supplied to the stone cutters – and sculptors too used occasionally full-scale models, but the one-to-one relationship stopped at the materials.³⁷ Unlike models, the materials of *Kleinarchitektur* are not make-believe (wood or clay standing in for stone), they are the real materials of architecture – limestone, marble, granite, mosaic, etc. As such this genre offers an opportunity to work the material, to see how and what carving technique works best, to assemble it in real time and real space, at real scale (albeit an experimental one). Tactility, surface effects, texture, all can be assessed rather than speculated upon. For example, Michelangelo's full-scale wooden model of one of the Medici Chapel wall assemblages would have conveyed much, but not what a room entirely dressed in marble would look, feel, and sound like.³⁸ However, what *Kleinarchitektur* shares with models is the experimentation in three dimensions that architects always found essential. Alberti certainly presents the model as the superior medium to drawings (II, 1), and Cellini argues that it is due to his modelling capacity (particularly in soft, tactile materials like clay) that Michelangelo achieved supreme status in architecture.³⁹

Models, on the other hand, offered bridges to other materials and making techniques. The finesse of detail work that they allowed bore resemblance to that traditionally associated with work in bronze or gilt wood – bronze chasing, wood veneering – and gave objects made of such materials with which they communicated by way of scale and crafting an opportunity to 'migrate' into architecture. Architecture and furniture interacted as

Viollet-le-Duc very perceptively noted in his *Dictionnaire raisonné du mobilier français* (1873–1874) both at the level of making and of the dissemination of forms.⁴⁰ But what migrated were not only ideas and compositions, but also the refinement of the extensively elaborated detail such that the windows of the Palazzo Ducale in Urbino, for example, like the marble frame of a Desiderio da Settignano Madonna, recall the look of jewellery more than the look of imperial Roman building details, and the wooden model of the façade of Florence cathedral by Bernardo Buontalenti – whose exquisite layering of thin wooden veneers has much in common with the compressed layers of his façade of Sta Trinità in Florence – translates the refinement of the cabinetmaker's art to monumental scale (Fig. 8). Thus, the model constituted a vehicle for ideas available in other materials that could penetrate through trade and basic circulation of objects into a vocabulary of architecture. Tiles, furniture, or carved boxes that circulated with greater ease and that carried with them textures and colours (material qualities that drawings could not) ultimately disseminated forms and ideas, adding a layer of permeability to architecture that may otherwise not have been there. For example, like the trade in cloth and its ornament between Florence, Venice, and the East, the *baccini* (glazed ceramic plates and bowls) mortared into church walls at San Piero a Grado (Pisa) or Pomposa (near Ravenna) signal the ways in which form translated across materials (Fig. 9).⁴¹ This area of study has been more explored in Islamic scholarship, and particularly for the medieval period, but it is a much larger phenomenon that requires further research.⁴² Indeed, nineteenth-century architects sensed this relationship and it is clearly evident in teaching manuals such as Alfredo Melani's (1886) where his examples of ornament on faience, painted wood beams, cloth, and *niello* show striking similarities and an intuition of possible paths of transference from one medium to another regardless of scale (Fig. 10).⁴³

Alberti

Such blurring of boundaries is not without referents in the contemporary Renaissance treatise literature. Alberti certainly suggests continuity between large and small such that they appear indistinguishable. His famous statement on the house as a small city effectively extends the analogy and may be seen to offer one of the earliest definitions of *Kleinarchitektur*:

If (as the philosophers maintain) the city is like some large house, and the house is in turn like some small city, cannot the various parts of the house – atria, xysti, dining rooms, porticoes and so on – be considered miniature buildings? (I, 9)⁴⁴

The same thought recurs later when he turns to sepulchres:

some consist of chapels, some of pyramids. Some of columns, and others of different structures, such as cairns and so on. I feel that we must deal with each of them, individually; to begin with chapels. *I would make these chapels as if they were small temples.* (VIII, 3).⁴⁵

In fact, Alberti offers here a vertical theory of architecture that suggests how the same principles apply to increasingly small spaces and beyond, crossing the line to objects. Indeed, he may well be referring to his own Rucellai chapel at San Pancrazio that inhabits this liminal space between icon, model, object, architecture, and representation (Fig. 11).⁴⁶



Fig. 7. Maso di Bartolomeo, courtyard decoration, Palazzo Medici, Florence. (Photo by: Alina Payne.)



Fig. 8. Bernardo Buontalenti, Wooden model for the Façade of Santa Maria del Fiore, Museo dell'Opera del Duomo, Florence, Scala/Art Resource, NY.

cera uomini, animali et altre cose di rilievo, fanno il medesimo che fa colui il quale perfettamente disegna in carta o in su altri piani'. On the *paragone* between the figural arts and architecture see Alina Payne, 'Alberti and the Origins of the *paragone* between Architecture and the Figural Arts', in A. Calzona, E.P. Fiore, A. Tenenti, and C. Vasoli (eds), *Leon Battista Alberti teorico delle arti* (Leo S. Olschki: Florence, 2007), Vol. 1, pp. 347–68.

40. Viollet-le-Duc, *Dictionnaire raisonné du mobilier français* (Bibliothèque de l'image: Paris,



Fig. 9. Detail of *baccini*, San Piero in Grado, Pisa. (Photo by Alina Payne.)

2005; 1st edn 1873–4), p. 424: ‘On était venu en France, à cette époque [xv & xvième] à faire de l’architecture en petit lorsqu’on voulait une armoire, un dressoir’. Viollet-le-Duc understood furniture and architecture to involve similar principles.

41. G. Berti and A. Ghidoli, ‘Baccini’ in *Enciclopedia dell’arte medievale* (Istituto della Enciclopedia Italiana: Rome, 1991), pp. 843–51.

42. In his discussion of the influence of the Middle East on medieval Western architecture, Viollet-le-Duc, *Dictionnaire du mobilier français*, p. 420 commented on the role of mobile pieces: ‘one does not transport buildings, but one transports easily a piece of furniture’. See also Eva R. Hoffman, ‘Pathways of Portability: Islamic and Christian interchange from the tenth to the twelfth century’, *Art History*, Vol. 24, no. 1, 2001, pp. 17–50.

43. Alberti, *On the Art of Building*, p. (1, 9); Melani, *L’ornamento policromo*.

44. Alberti, *On the Art of Building*, p. 23.

45. Alberti, *On the Art of Building*, p. 249 (VIII, 3) [my emphasis].

46. For this reading see Alina Payne, ‘Architecture: Image, Icon or *Kunst der Zerstreung?*’, in A. Beyer et al. (eds), *Das Auge der Architektur* (C.H. Beck Verlag: Munich, 2010).

47. Goran Niksic, ‘Marko Andrijij in Korcula and Hvar’, *Prilozi povijesti umjetnosti u Dalmaciji* 37 (Split 1997/8), p. 224.

48. Predrag Marković, ‘L’Architecture Renaissance en Croatie’, in A. Erlande-Brandenburg and M. Jurković (eds), *La Renaissance en Croatie* (Réunion des Musées Nationaux and Galerie Klovičevi: Paris and Zagreb, 2004), pp. 88–92.

Most important, the smaller scale and crafting of the *Kleinarchitektur* provide a moment of direct, physical interaction with materials for the architect/sculptor, such that the ‘building’ becomes that actual work of art that it purports to be – crafted by hand, from precious materials like marble, by one or at most a small workshop of artists. And even if not actually crafted by the architect himself – at least in Alberti’s case – its uses of the same materials as the finished building and the same exquisite detailing, provides a dress-rehearsal, a sense of immediacy, a valuable close-up for how the materials might behave when installed in large panels on the façade of a building like Sta Maria Novella for example. Giorgio Dalmata’s work at the Cathedral of Sebenico (in Croatia) is a case in point. Invited to construct the baptistery first – a small chapel-like building that he hand crafted from floor to ceiling creating an innovative vaulting structure as well as ornamental vocabulary all tied into one – he was entrusted with the large building once the first, small-scale bravura piece of *Kleinarchitektur* convinced the town notables of his abilities (Fig. 12).⁴⁷ The fact that the whole building (the cathedral) was made uniquely of structural stone is not coincidental seeing that its starting point was a stone sculptural ensemble as *Kleinarchitektur*, a feature that Nicola da Firenze, who completed the cathedral (and who had also sculpted the remarkable chapel of St John of Trogir in Trogir cathedral), reinforced with his revolutionary design of a barrel vault executed entirely in stone.⁴⁸ Its section that follows the trefoil *alla veneziana* has suggested comparisons with an enormous reliquary in stone.⁴⁹ Like the Sala Regia-as-casket, to which could be added other small buildings-as-boxes like the Arena Chapel in Padua or Sta Maria dei Miracoli in Venice (by the sculptor-architect Pietro Lombardi), this comparison may be more insightful than it seems (Fig. 13).⁵⁰ The translation of a small-scale object into a large-scale building (from small box across intermediary scales that monumentalised the reliquary into *Kleinarchitektur* stone structures for altars and ciboria) may be also the result of the artist’s move from one medium to another.

Wielding tools is not an absolute prerequisite for understanding how materials might shape a design. Despite his distance from both building site and workshop Alberti is certainly very sensitive to materials and he may be

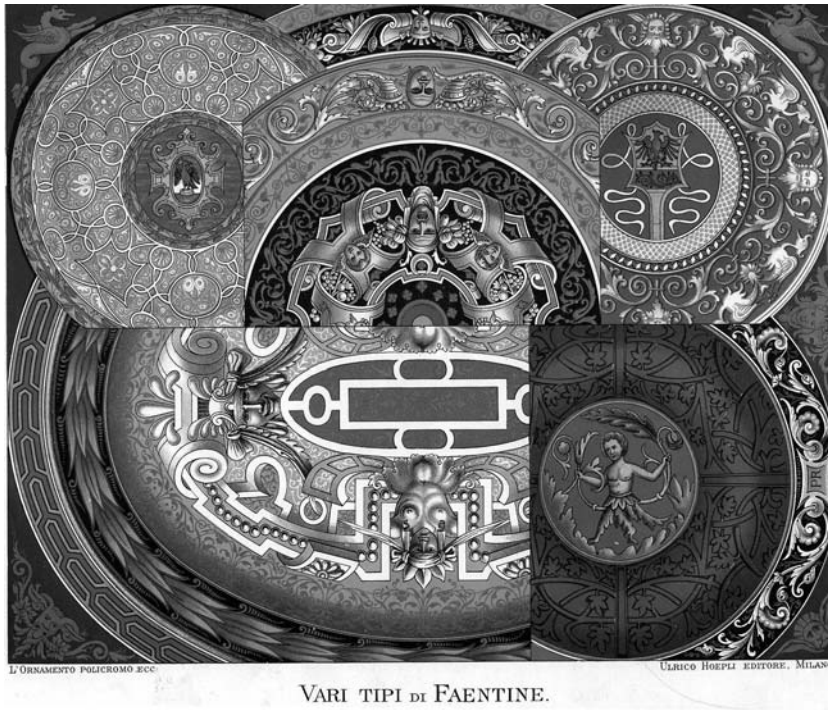


Fig. 10. Various faience ornaments, from Alfredo Melani, *L'ornamento policromo* (1886).

seen to voice the attitude of his contemporaries. Indeed he assigns to the materiality of a building a significant share in the pleasure that architecture arouses in the viewer. Distinguishing the enjoyment that arises from the work of the hand from that arising from the idea, he argues that:

the pleasure to be found in objects of great beauty and ornament is produced either by invention and the working of the intellect, or by the hand of the craftsman, or it is imbued naturally in the objects themselves. [...] the hand is responsible for laying, joining, cutting, trimming, polishing, and such like, which give the work grace [i.e. craft]; the properties derived from Nature are weight, lightness, density, purity, durability and the like, which bring the work admiration [i.e. materials]. (VI, 4)⁵¹

When it comes to faults he once again separates these domains the better to draw attention to their specific importance. (IX, 9)⁵²

However, Alberti's most articulate passages on materials are in his sections on revetments. For him revetments constitute the principal ornament of a building (though he famously extends this accolade to the column too) and he classifies them into two categories: applied and attached. To the former belong plaster, relief work, and fresco, to the latter panelling, intarsia, and mosaic.⁵³ Regardless of the manner of application, what attracts Alberti is the transformation or metamorphosis a material experiences at the hand of the craftsman: in his telling, stucco can become mirror or marble, indeed it can surpass them; the thinnest marble slabs are worked to remarkable polish and can even take into account optical adjustments; and when in mosaic work the tessellation is fine enough, 'the more diffuse [is] the splendour of its sparkle'.⁵⁴ Indeed, he attends with evident gusto to the effects of finishes, to the use of oils, gilt, bronze, mother of pearl, to aligning the veining in marble slabs, to the finesse of joints which, when undulating, tend to

49. For the reference to the reliquary appearance see Markovic, 'L'Architecture Renaissance en Croatie', p. 90.

50. Christoph Luitpold Frommel, *Die Architektur der Renaissance in Italien* (C.H. Beck: Munich, 2009), p. 121 has noted that the church displays the decorative skill and bias of Pietro Lombardo who was primarily a sculptor.

51. Alberti, *On the Art of Building*, p. 159.

52. Alberti, *On the Art of Building*, pp. 313–4.

53. Alberti, *On the Art of Building* (VI, 9; IX, 4). On Alberti's approach to revetments see Christine Smith, 'Leon Battista Alberti e l'ornamento: rivestimenti parietali e pavimentazioni', in A. Engel and J. Rykwert (eds), *Leon Battista Alberti* (Electa: Milan, 1994), pp. 196–215.

54. Alberti, *On the Art of Building*, pp. 176, 298–9, and 178.



Fig. 11. Leon Battista Alberti, Chapel of the Holy Sepulcher, San Pancrazio, Florence, Scala/Art Resource, NY.



Fig. 12. Giorgio Dalmata, Detail of vault, Baptistry, Šibenik Cathedral. (Photo by Alina Payne.)



Fig. 13. Pietro Lombardo, Façade, S. Maria dei Miracoli, Venice, Cameraphoto Arte/Art Resource, NY.

55. Alberti, *On the Art of Building*, p. 177.

56. Alberti, *On the Art of Building*, pp. 183–4.

57. Lucian, ‘The Hall’, in A.M. Harmon (trans.), *Lucian, Volume I. Loeb Classical Library* (Harvard University Press: Cambridge, MA, 2006), pp. 176–205. For Chrysoloras’s ekphrasis on Constantinople see Christine Smith, *Architecture in the Culture of Early Humanism* (Oxford University Press: New York and Oxford, 1992), pp. 199–215.

58. *Vasari on Technique*, see note 30 above.

59. Neither Brown’s focus on Vasari’s chapters on materials nor his perspective favouring architecture should seem surprising. Writing at a moment of great interest in *Sachkultur* as well as in new materials and old, and their manner of fabrication he responded to the issues that had most currency in his culture.

disappear.⁵⁵ He praises the marble clad roof of the Temple of Jerusalem, which from afar glistens ‘like a snow-covered mountain’, as he does the gilded bases and capitals of the Porticus Octaviae or the carved figures in the marble and alabaster columns of the Temple of Diana at Ephesus (VI, 13).⁵⁶ The ekphrases of Lucian (‘The Hall’) or Chrysoloras (on Constantinople) certainly offered a model for such effusion in the face of buildings that he had never seen, but the enthusiasm goes beyond the literary or conventional and rings true.⁵⁷

Alberti also turns to the transformation of materials at the hands of craftsmen/architects and more importantly, of objects, into architecture: in his origin stories wooden columns become stone (as per Vitruvius), clay pots and tablets, cups, tree bark, foliage and fruit, dishes and vases, baskets and fruit, beads and flowers become capitals as do bronze vessels. In fact his compositions are far more heterogeneous than Vitruvius’s who merely imagined a translation from wood into stone and a carving of particular gendered features (such as for the Ionic, taken from a woman’s body) directly into the stone. A few decades after Alberti, Francesco di Giorgio also expanded the repertory of objects that translate into ornament and included gems, earrings, necklaces and other hair ornaments in his visual description of the Ionic and Corinthian orders. The process seems pictorial at first blush, but it is more akin to staging: the assemblage is composed in real space, with real objects just as Callimachus saw them when he passed the Corinthian maiden’s tomb marker. It is only in a second phase that the heterogeneous objects that make up architectural details and ornaments morph into a seamless whole; and this happens once they are carved into a single material, as if drawn on paper. Like paper, marble too unifies the composition and erases the origins of the parts. The process Alberti outlines in these stories of origins is paradigmatic for it is precisely that process through which manifold materials and the forms they are attached to continued to enter architecture.

Vasari

But for all his interest in materials and crafting in a variety of scales and assemblages of heterogeneous objects, Alberti does not offer many openings for a reading of the relationship between *Kleinarchitektur*, crafts, and architecture. For this we must turn to Vasari. In his introductions to the three arts Vasari broaches the subject of materials. It is a portion of his text which has received less concentrated attention than the *proemii*, or the individual lives. But this has not always been so. Quite exceptionally the introductions to the three arts were singled out and published as a separate book in 1907 in a volume titled *Vasari on Technique*.⁵⁸ Baldwin Brown, the author of the introduction acknowledges William Morris as the fountainhead for the contemporary interest in crafts and materials that led him to produce this volume, thus once more confirming the connection between nineteenth-century architectural issues and historical scholarship. Speaking from this perspective Brown notes that Vasari gives all the crafts to the painter, and warns that by rights they should belong to the architect’s sphere.⁵⁹ That was exactly where Burckhardt had located them, under decoration, as part of architecture – and it is precisely where the architects, his own contemporaries, Semper and the nineteenth-century reformers of the arts alike, sought to place them. For Semper cloth and the art of vestments, pottery and metal work, furniture making and weaving all

pertained to the forms of architecture, whether as memories embedded in ornamental forms or conceptually, as ways of treating surfaces and signal relationships with the body of the user.⁶⁰ It should come as no surprise then that he was also the one who recovered the *sgraffito* technique for façade ornamentation (and popularised it in Vienna where it occurs again not coincidentally on the façade of the Museum für Kunst und Industrie by Heinrich von Ferstel), that technique most related to the crafts of scratching, scoring, and removing materials such as *niello*, damask fabrics, and engraving. As we have seen, on the other hand, Vasari places all surface techniques from *sgraffito*, *niello*, *damaschina*, intarsia (in wood and stone), engraving, and wood blocks under painting as he does anything, regardless of material, that is worked with a sharp instrument and produces a line and a flat image on a flat surface.⁶¹ His choices (no doubt conditioned by his desire to establish *disegno* as the intersection and fountainhead of the arts) certainly set a pattern and they contributed to these applied arts being relegated away from architecture, any bridges between them being thus lost from view.

However, when it comes to architecture and sculpture Vasari's divisions are more blurred: in his account marbles and stone are used interchangeably by the two arts and suggest a corresponding possible migration of techniques and ideas. As Vasari himself points out, various marbles such as the *mischio* and varieties of *pietra serena* 'one sees at Rome at the present day both [in] ancient and modern works, such as columns, vases, fountains, door ornaments, incrustations and various inlays on buildings, as well as many pieces in the pavements'.⁶² The same materials are used elsewhere for *nobili statue*. Other types, such as 'marbles of a very fine grain and consistency . . . were continually being made use of by all who carved capitals and other architectural ornaments'.⁶³ It is this category of carving or *intaglio* to which belong 'mouldings, friezes, foliage, eggs, spindles, dentils and shells' that the orders belong to as well. Indeed, the fact that it is precisely in this context of materials and carving that he deals with the orders in his *Vite* has escaped notice.⁶⁴ This is a radical departure from the traditional Vitruvian-type of architectural treatise where the orders are discussed as part of proportions and temple layouts or evaluations of ancient ruins. Instead, if we look at the chapter of materials as a whole, in Vasari's description the orders emerge as an in-between space where the arts meet. It had been like this for Pliny in his *Natural History* and although his taxonomy according to materials had certainly been noticed in the Renaissance, the architects had not followed suit in their treatises. Yet this in-between space comprises the many sculpted components of architecture (rather than its masonry) – that space where craft and material slippages across the arts could take place. Given that Renaissance architects paid so much attention to the caryatid story in Vitruvius and thought of columns as living – or enlivened – members of the architectural frame, such exchanges with sculpture are only to be expected and their absence in the texts all the more surprising.

When it comes to individual lives Vasari reinforces this middle ground of carving that lies at the intersection of the two arts. Scholars have tended to focus on the key biographies of major artists when reading the *Vite*, but the lesser artists play an important role too in recovering Vasari's conception of the arts, and, I would argue, they are the ones who, sometimes by their mere presence in his account, reveal what happened in the every-day practice of art and how its various branches communicated. As is well known, Vasari is bent on devising a scheme that buttresses the primacy of design and to this end he seeks to bring the arts into order: architecture, painting and sculpture become the three sister arts to which the other art forms are subordinated. And yet he writes a history and must be true to the lives that he records: as result, and in

60. Although Semper returned to these ideas often and reworked them in lectures and books, his treatise remains the most developed location for his theory of architectural making. For Semper bibliography see Harry Mallgrave, *Gottfried Semper, Architect of the Nineteenth Century* (Yale University Press: New Haven, 1996) and most recently N. Winfried and W. Oechslin (eds), *Gottfried Semper 1803–1897. Architektur und Wissenschaft* (GTA and Prestel Verlag: Zurich and Berlin, 2004).

61. Vasari, *Le Vite*, pp. 72–88.

62. *Vasari on Technique*, p. 38.

63. *Vasari on Technique*, pp. 43–44.

64. Vasari, *Le Vite*, pp. 30–1. The work in which are carved 'cornice, fogliami, fregi, uovali, fusaruoli, dentelli, guscie et altre sorte d'intagli, in que' membri che sono eletti a intagliarsi da chi le fa, ella chiama opera di quadro intagliata over lavoro d'intaglio.' It is to this work 'd'intaglio' that belong the orders and that is how he comes to his excursus on the orders.

65. In the 1550 edition Mosca was included in Antonio da Sangallo's life. Vasari, *Le Vite*, p. 821.

66. Vasari, *Le Vite*, Vol. 5, p. 49 and 418.

67. Giorgio Vasari, in Gaston C. de Vere (trans.), *Lives of the Painters, Sculptors, and Architects* (Alfred A. Knopf: New York, 1996), p. 380. Giorgio Vasari, in Rosanna Bettarini and Paola Barocchi (eds), *Le Vite de' più eccellenti pittori scultori e architettori* (Sansoni: Florence, 1967; 1st edn, Giunti: Florence, 1568), Vol. 5, p. 344: 'se bene aricchiscono l'opere, confondono le figure, la dove il lavoro di quadro, quando e fatto bene, e molto piu bello che l'intaglio e meglio accompagna le statue'. Despite his later criticism in the 1520s, Michelangelo had tried to hire Mosca (or El Moscha) to work on the moldings of the Medici Chapel. See William Wallace, *Michelangelo at San Lorenzo*, p. 126.

68. The criticism occurs in Book III, on antiquities. Serlio, *Tutte l'opere d'architettura*, Book III, f.106 v.

69. Jacob Burckhardt, *Der Cicerone* (C.H. Beck and Schwabe & Co. AG: Basel and Munich, 2001), Vol. 2, p. 192.



Fig. 14. Detail of marble doorframe, South transept portal, Duomo, Florence. (Photo by: Alina Payne.)

some ways despite his own purpose, Vasari provides a record of art-making that is sometimes at odds with the scheme he constructs. Thus, in the 1568 edition Vasari adds a separate life for Simone Mosca 'unique and rare marble carver' who 'made divine festoons' ('fece festoni, che sono divinissimi') for the Holy House at Loreto.⁶⁵ This seems an unusual addition as he does not credit Mosca with any independent work except one, his last. But by its mere presence this biography does, however, indicate the importance of such artists – neither sculptor as such nor architect, but one who worked as part of larger teams of artists gathered around Antonio da Sangallo or Vasari, even Michelangelo himself, and whose contribution to their larger projects justified the attention Vasari pays him. In the sensitive description of his work one hears echoes of Desiderio da Settignano's life (like Mosca a native of the same small town on the outskirts of Florence), whose 'sweet and graceful' style Vasari associated with a 'love of contours' ('amor dei contorni') characteristic of the 'rilievi stiacciati'.⁶⁶

But despite the appearance of Mosca, by the 1560s there are not many such craftsmen with a sufficiently significant status left whom Vasari can record. By the close of his modest life, Mosca's one *capolavoro* remains the chapel in Orvieto cathedral whose construction he led, and though much praised by Vasari, one senses that he was the victim of a shift in taste. Invited to Rome by Pope Julius III as part of Vasari's own team, he is dismissed upon Michelangelo's disparaging comments on *intaglio* work which in his view:

although they enrich a work, they confuse the figures, whereas squared work, when it is well done, is much more beautiful than carving and is a better accompaniment for the figures, for the reason that figures do not brook other carvings about them ...⁶⁷

Among architects Serlio too had been critical of excessive *intagli* on Roman triumphal arches whose mouldings were assemblages of carved profiles without *opera di quadro* relieving the agglomeration of visual incident.⁶⁸ The fine detail work of the stone carver (*intagliator*) that had made up such a part of the fifteenth-century *Kleinarchitektur* as it had of medieval ornament (such as that on the portals of the Duomo) was apparently no longer relevant and the *amor dei contorni* superseded, as were the blurred boundaries between the minor and monumental arts (Fig. 14). A shift in scale had occurred, what Burckhardt called *conventionelle Verschwollenheit* (conventional excessive swollenness') that accompanied the monumentalisation of architecture that accelerated in the sixteenth century, and caused the loss of the detail for the *Einzelnen* (individual unit) and the loss of the decorative with it.⁶⁹

A capital by Francesco di Giorgio and a contemporary reliquary share an aesthetic of detail and craftsmanship, they enter into a dialogue just like the altar by Michelozzo in San Miniato with Giuliano da Sangallo's later vestibule in Sto. Spirito, or Alberti's San Pancrazio chapel and the Desiderio da Settignano's Marsuppini tomb. There seems to be a smooth transition from one scale to another, and even if there is an enlargement, it does not affect the quality or amount of the detail. From this perspective, the Medici Chapel in San Lorenzo (Florence) is perhaps the last time this kind of dialogue between scales is still at work. As is well known, Michelangelo considered a carved tomb structure placed in the middle of the space and eventually moved to one envisaging the whole architectural space as tomb – it is as if the original catafalque-like free-standing 'object' had exploded and leaving the centre void had attached itself in discrete pieces along the walls, floor, and ceiling. The object has become a space in an inversion of inside and outside (Fig. 15).



Fig. 15. Michelangelo Buonarroti, Medici Chapel, from Heinrich von Geymüller and Carl von Stegmann, *Die Architektur der Renaissance in Toscana* (1885–1908).

Like his fifteenth-century predecessors Michelangelo and his closely supervised team of skilled sculptors carved the stone; the smallest details are in marble and received the same treatment as the figures – the same level of finish. The whole chapel is and comes across as one huge, continuous piece of sculpture. The high quality of the ‘statuario’ marble used throughout, on walls, blind openings, doorframes, architectural elements, and the freestanding sculptures force this reading.⁷⁰ The whole ground level presents itself as a monolithic entity placed within an open portico of grey *pietra serena* pilasters that engage in a dialogue with Brunelleschi’s Old Sacristy.⁷¹ It is no wonder that the artists, when permitted to view it, were amazed and dumbfounded.⁷² Here the scale of the *Kleinarchitektur* and architecture merge into each other, and touch, they are one: the viewer is invited into the centre of the ‘object’ and forced to close-up view (Fig. 16). The equivalence between crafted ‘object’ and monumental architecture cannot be pushed any further. When subsequently Michelangelo turned to St Peter’s the enormous scale placed him before the impossibility of translating craft from sculpture into architecture. Even as he changed the stone facing into structural stone (as Vitale Zanchettin has recently shown), that is, as he sought to make the building one solid stone organism like his sculptures, the gigantic scale precluded the attention to the detail that can be lavished on a single piece of sculpture.⁷³ Over-sized stone members designed for monumental effect and the distant view preclude any intimacy with the detail and crafting that need to have the viewer up close. As Gaston Bachelard and Susan Stewart have

70. On Michelangelo’s very close supervision of the quality of his crew’s work and his choice of marble (which he selected himself on site in Carrara) see William Wallace, *Michelangelo at San Lorenzo*, pp. 125 and 85.

71. On the dialectic between white marble as ‘modern work’ and the *pietra serena* as a reference to Brunelleschi see Pietro Ruschi, ‘La Sagrestia Nuova, metamorfosi di uno spazio’, in Pietro Ruschi (ed.), *Michelangelo architetto a San Lorenzo* (Mandragora: Florence, 2007), pp. 35–6.

72. Vasari, *Le Vite* (1568), Vol. 6, pp. 54–5.

73. Vitale Zanchettin, ‘Le verità della pietra. Michelangelo e la costruzione in travertino di San Pietro’, in Georg Satzinger and Sebastian Schütze (eds), *Sankt Peter in Rom 1506–2006* (Hirmer: Munich, 2008), pp. 159–74.



Fig. 16. Michelangelo Buonarroti and Silvio Cosini, Detail of wall decoration, Medici Chapel (New Sacristy), San Lorenzo, Florence, Scala/Art Resource, NY.

74. Gaston Bachelard, *The Poetics of Space* (Beacon Press: Boston, MA, 1994), pp. 148–82; Susan Stewart, *On Longing* (Duke University Press: Durham and London, 1993), pp. 37–69.

75. Scamozzi, *L'Idea dell'architettura universale*, vol. 2, pp. 194–5 deals with this topic in Book VII dedicated to materials: 'Non e dubbio alcuno, che per la cognitione delle pietre, e molto meglio a saper la natura di esse in genere, non che sia possibile saperlo di specie in specie; perche sarebbono come individui, de' quale il sito, le posture, & anco le proprie falde tra esse sono molto differenti; *ne si puo far certo giudicio di esse se non toccandole col scalpello*. Le pietre si possono conoscere sensitamente, perche quando sono piu forti, e dure si vede parimente, c'hanno del lustro, & alcune scintille salinge: *all'orechio* un sono pieno, e sonoro; e specialmente ne'pezzi grandi: *al odore* rendono non so che di solfo, o corneo, massime quando si battono co' marrtelli da'denti, overo che si raschiano col'taglio de'ferri: *al gusto* manca qualita, e sapore delle altre; come quelle c'hanno piu dell'humido, che del terreo, e finalmente al tatto elle sono piu gravi, e pesanti dale altre. Ancora *con l'Aiuto* si consoscono quelle pietre, che sono piu dure, e dense delle altre' [my emphasis]. Likewise Federico Zuccaro defines architecture as similar to sculpture (though admittedly as part of an effort to reinforce the connection between the arts under the auspices of the academy) and the Accademia della Crusca and Filippo Baldinucci define the architect as one who works the stone or is a 'fabro o artefice', respectively. See Detlef Heikamp (ed.), *Scritti d'arte di Federigo Zuccaro*, (Olschki: Florence, 1961), p. 264. See entry 'architetto' in *Vocabolario della Crusca* (Florence, 1612), s.v.; and the entry

argued the small scale, like the miniature, intensifies experience with its emphasis on the graspable, with the density of information it offers that 'accelerates' the details through scale compression.⁷⁴ This immediacy and communication power disappears in the face of capitals, brackets, cornices, etc. several stories high. At this scale they can only be controlled and comprehended by the abstraction of the drawing that alone can maintain the unity of the work: the overall is in the eye of the designer, not in the maker's. Perhaps this is what Burckhardt meant by *Verschwoellenheit*. The physical continuity between sculpture and architecture is broken, even if architecture continues to exhibit sculpted surfaces. To be sure, architects continued to be attentive to stone and its properties and Vincenzo Scamozzi's list of ways in which an architect should approach it testifies to a very sensual connection with the materials that draws on the whole body: sight, touch, hearing, smell, and even taste come into play.⁷⁵ Likewise, *Kleinarchitektur* continued to be produced, but the tight relationship of exchange with the architecture of large buildings would become increasingly tenuous, though architects – all the way to Hector Guimard, Gerrit Rietveldt, and Mies van der Rohe – would continue to push against this barrier, and would seem (and be evaluated as) anachronistic when they tried. Even if Michelangelo's last titanic effort was without a future, the creative dialogue between architecture and the other arts across the crafts at the level of *factura* had lasted a good long while.

What do objects, materials, and scale in architecture offer a Renaissance scholarship that 'looks awry'? In the first instance they raise the issue of crafting, a feature traditionally discussed with respect to medieval work and far less with respect to Renaissance architecture for which it is almost written out of its history.⁷⁶ As far as architecture goes, the prevailing line of Renaissance scholarship has looked to an intellectualised world, one in which perspective and mathematics, proportional harmony and literary pursuits, humanistic exegesis, and theoretical concerns form the boundaries of its

discourse, and, in doing so, keep it away from the crafts and the artisan's workshop. This is not to say that scholarship on the architectural *chantier* has not developed apace, both with respect to particular building operations that lasted centuries (such as the Duomo in Florence) and from the perspective of a developing architectural profession.⁷⁷ But what if beyond managing the building site with all its complexities *making* also remained a fundamental issue and problem of *artistic performance* for architecture? What if making contributed its own aesthetics at a point when the architect was as yet not entirely distanced from manual work?⁷⁸ What if the architect/sculptors of the Quattrocento represented an important moment for architecture that the post-Wölfflin reading of the High Renaissance as the 'serious' (read: important) Renaissance, its classical fulfilment, vis-à-vis the 'merry' and 'gracefully pleasing' bourgeois art of the previous century has obscured?⁷⁹ And what if contrary to the modernist strong architect myth that privileged the individual genius and the large-scale enterprise, the Renaissance architect had also dealt in the small scale, the delicate and the precious and it had left a positive imprint on his monumental work? And finally, how might this way of rethinking Renaissance architecture destabilise traditional narratives of the culture as a whole for which after all, it served as physical context, stage set, and backdrop? It will take some time to answer all these questions, but in the meantime perhaps Burckhardt's *allgemeiner neuer Styl* signalling as it does a common taproot from which all arts and crafts drew their life juices might be a starting point for reflecting upon the complex process of transfers between them.

'architettura' in Filippo Baldinucci, *Vocabolario toscano dell'art el disegno* (Santi Franchi: Florence, 1681), s.v.

76. See most recently Wolf-Dietrich Löh, 'Dante's Tafelchen, Cenninis Zeichenkiste. *Ritratto, disegno und fantasia* als Instrumente der Bilderzeugung in 'Trecento', *Perspektiven mediävistischer Forschung*, vol. 13, no. 1, 2008, pp. 148–79. It is also indicative of scholarly trends that among the essays collected in *Marmi antichi* that look to the use and reuse of ancient marbles in later work, there should be only one essay dealing with the Renaissance, and this one focusing on the later period and into the seventeenth century.

77. For example Odette Chapelot (ed.), *Du projet au chantier: maîtres d'ouvrage et maîtres d'œuvre aux XIIIe-XVIIe siècles* (EHESS: Paris, 2001); Claudia Conforti and Andrew Hopkins (eds), *Architettura e tecnologia: acque, tecniche e cantieri nell'architettura rinascimentale e barocca* (Nuova Argos: Rome, 2002).

78. See Paul Joannides, 'Michelangelo, profile di base di colonna', in Sergej Androsov and Umberto Baldini (eds), *L'Adolescente dell'Ermitage e la Sagrestia Nuova di Michelangelo*, (M&M: Florence, 2000), pp. 132–4 who has tentatively suggested that the contour of Michelangelo's *sagome* for the Medici Chapel column bases that differ from his drawn profiles resulted in part from the act of cutting the paper *sagome* (used as full scale 'models' by the workshop) that constituted a creative moment in its own right.

79. See especially Heinrich Wölfflin's necessarily reductive definition of the Renaissance to set up a powerful dialectic to the Baroque in *Renaissance und Baroque* (1888), and his definition of the High Renaissance in *Klassische Kunst* (1899) that lay at the basis of subsequent scholarly evaluations. On the repercussions of this trend for scholarship on sculpture see Carl, *Benedetto da Maiano*, pp. 13–17; on the broader context for such Renaissance and Baroque readings and their outcomes see Alina Payne, 'Alois Riegl and the Beginning of Baroque Studies', in Alois Riegl, *The Development of Baroque Art in Rome* (The Getty Research Institute: Santa Monica, 2010).