New perspectives on fragments of terracotta sculpture associated with Pietro Torrigiano at Westminster Abbey

Scientific analysis and study of the related documentary and visual evidence plausibly links a group of terracotta sculptural fragments at Westminster Abbey, London, with the work undertaken there by the Florentine sculptor Pietro Torrigiano (1472–1528) and especially with the adornment of the high altar of the Abbey's Henry VII Lady Chapel.

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A recent examination of fifty-four fragments of terracotta sculpture at Westminster Abbey, London, along with related documentary and visual evidence has provided new information about the sculptural commission for the high altar of the Henry VII Lady Chapel (Fig.1) with which the fragments have traditionally been associated.[1] The analysis is based on two assumptions: the first is that the fragments have always been at the Abbey and were not imported for use as rubble to construct a wall; and the second is that they originally formed

[1] The authors wish to thank the Leche Trust with Jeremy Howard and Rosemary Ewles, the Dean and Chapter of Westminster and colleagues Tony Trowles, Matthew Payne, Christine Reynolds, Vanessa Simeoni, Marc Bormand, Anne Bouquillon, Rachel Boyd, Teresa Callaioli, Paul Drury, Sophia Dumoulin, Maurice Howard, Jo Norman and Jack Soultanian. This article is dedicated to my father, Michael Hewitt Jenkins (1928–2024). This study was partially funded by the Leche Trust in 2022–24, and a workshop held at Westminster Abbey in May 2023 supported by the Paul Mellon Centre for Studies in British Art. At that time, the fragments were catalogued in an internal unpublished catalogue, Westminster Abbey Collection, London.

part of one or more figurative religious sculptures that were probably destroyed in an act of iconoclasm in 1643/44.[2]

In 1861 the master mason Henry Poole discovered the fragments embedded at the triforium level in a wall of the north-west tower of the abbey church.[3] They had been used as rubble to create a wall by closing off the nave arcade. The wall probably dates from around 1650, when additional rooms were created for the regicide John Bradshaw, who lived in the Deanery at this time.[4] Poole did not record how many pieces of terracotta he had found, although he mentioned 'many of colossal figures, draped and armoured as military men'.[5] These are no longer at Westminster Abbey and their present whereabouts is unknown. Since their discovery, the fragments have been associated with the high altar of the Henry VII Lady Chapel, which was commissioned in 1516 from the Florentine sculptor Pietro

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[2] For the destruction of the Lady Chapel's high altar, see J. Spraggon: *Puritan Iconoclasm during the English Civil War*, Woodbridge 2003, pp.85–93, reviewed by Simon Watney in this Magazine, 146 (2004), pp.334–35. Sir Robert Harley's parliamentary 'Committee for the Demolition of Monuments of Superstition and Idolatry' purged Westminster Abbey of all 'scandalous pictures [. . .] and the statues or images in the tombs and monuments' on 24th April 1643. John Vicars recorded that on 30th December 1643 the altar and crucifixes were demolished by order of Parliament 'in the presence of the Committee for innovation'. Payments were made for 'taking down the Altar [and] rassing [*sic*] out the painted images' on 19th April and 14th May 1644.

[3] For Poole's appointment as the master mason at Westminster Abbey in 1856, see C. Reynolds, ed.: *Surveyors of the Fabric of Westminster Abbey, 1827–1906: Reports and Letters*, Woodbridge 2011, p.xx; and H. Poole: 'Annals of the masonry carried out by Henry Poole, abbey master-mason, 1856–67: 1861', *Journal of Proceedings of the Royal Institute of British Architects* 6 (1890), pp.113–16, at p.116.

[4] For building work in the north-west tower, see R. Rackham: 'The nave of Westminster', *Proceedings of the British Academy* 4 (1909), pp.1–64, at pp.49–50; T. Tatton-Brown: 'Westminster Abbey: archaeological recording at the west end of the church', *The Antiquaries Journal* 75 (1995), pp.171–88; Warwick Rodwell, Consultant Archaeologist at Westminster Abbey, in correspondence with Susan Jenkins, 22nd December 2022, suggested that the wall was built c.1650 to provide additional accommodation for Bradshaw.

[5] Poole, *op. cit.* (note 3), p.116.

Torrigiano (1472–1528).[6] The first scholarly analysis of this altar, published by Alfred Higgins in 1894, quotes the contract with Torrigiano, dated 11th March 1516, which describes a square altar made of marble, copper gilt and terracotta that was based on an agreed design ('as appereth by the patren').[7] The altar comprised a black marble base with four white marble columns and sixteen gilt-bronze balusters supporting the black altar stone (measuring 183 by 91.5 centimetres), the whole surmounted by an altar canopy of white marble decorated with a gilt-bronze frieze and supported by gilt-bronze pillars.[8] The contract specified that:

> upon the bakesyde of the saide awlter shalbe set a table of copp.gilt in length and brede [*sic*] after the proporcion of the worke and in the sides of the same table shalbe made ii historyes the oon of the resurrection of our Lorde [. . .] the foreparte all gilt and upon the bakesyde of the same table shall be made the hystory of the nativite of oure Lorde in lykewise gilt and at evy ende of the same table shall be set a square pyllour of copper gylt.[9]

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[6] For Torrigiano, see F. Pereda: *The Man Who Broke Michelangelo's Nose*, University Park 2024. For the association of the pieces with this altar, see A. Higgins: 'On the work of Florentine sculptors in England in the early part of the sixteenth century with special reference to the tombs of Cardinal Wolsey and King Henry VIII', *The Archaeological Journal* 51, no.1 (1894), pp.129–220 and 145–50, esp. at p.150, where he proposes that the pieces belong to an 'earlier date'; *Royal Commission on Historical Monuments (England): an Inventory of the Historical Monuments in London, vol.1. Westminster Abbey*, London 1924, p.45; and Victoria and Albert Museum, London (V&A), unpublished conservation reports by J. Larson and J. Darrah, 1986.

[7] Higgins, *op. cit.* (note 6) pp.145–50; a transcription of the contract appears in J. Britton: *The Architectural Antiquities of Great Britain*, London 1809, II, pp.23–25.

[8] These pillars were apparently faulty, see Higgins, *op. cit.* (note 7), p.205, appendix 4, note 5113 II.

[9] Britton, *op. cit.* (note 7), p.24. 'Table' is an archaic form of 'tablet', see *The Compact Edition of the Oxford English Dictionary*, London 1979, p.3216.

It has always been assumed that the Resurrection and Nativity panels mentioned in the contract were gilt-bronze reliefs; this was seemingly confirmed by Lord Burghley in his description of the altar fifty years later.[10] However, it is not clearly specified, which opens up the possibility that they were made of another material, such as terracotta, since both materials are known to have been used to make altarpiece reliefs.[11]

Several studies have been published on early sixteenth-century English architectural terracotta decoration, but none on the use of terracotta for religious sculpture, largely due to the scarcity of surviving references and examples.[12] Rare before 1510, terracotta sculpture was briefly popular in England until around 1540, initially encouraged by the patronage of Cardinal Wolsey.[13] Henry VIII acquired terracotta religious sculptures for Whitehall Palace,

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[10] 'The back of the said aulter both the sydes stories metle and gylte', British Library, London, Lansdowne MS 116, fol.13, c.1570, quoted in Higgins, *op. cit.* (note 7), appendix VII, p.216. P. Lindfield: 'New thoughts on the high altar canopy in the Henry VII Chapel', *Journal of Historic Buildings & Places* 1 (2022), pp.29–47, at p.31; and A. Darr: 'Pietro Torrigiano and his sculpture for the Henry VII Chapel, Westminster Abbey', unpublished PhD thesis (New York University Institute of Fine Arts, 1980), I, p.242 and 257–58 and II, appendices 1–3, document D.15A with reference to Westminster Abbey Muniments (hereafter WAM) 6638*.

[11] For terracotta altarpieces, see J. Harris: 'Donatello's polychromed sculpture: case studies in materials and meaning', unpublished DPhil. diss. (Courtauld Institute of Art, University of London, 2010), I, pp.67–98; M. Vaccari: 'The Cavalcanti altarpiece', *Sculpture Journal* 9 (2003), pp.19–37; and B. Boucher, ed.: *Earth and Fire: Italian Terracotta Sculpture from Donatello to Canova*, New Haven and London 2001, pp.108–11, cat. no.4.

[12] See, for example, T. Smith and B. Watson: 'Suffolk Place, Southwark, London: a Tudor palace and its terracotta architectural decoration', *Post-Medieval Archaeology* 48 (2014), pp.90–132; S. Gunn and P. Lindley: 'Charles Brandon's Westhorpe: an early Tudor courtyard house in Suffolk', *The Archaeological Journal* 144 (1988), pp.272–89; S. Anderson *et al*.: 'Architectural terracotta from Westhorpe Hall, Suffolk', *The Archaeological Journal* 160 (2003) pp.125–59; and A. Baggs: 'Sixteenth-century terracotta tombs in East Anglia', *The Archaeological Journal* 125 (1968), pp.296–301.

[13] P. Lindley: 'Playing check-mate with royal majesty? Wolsey's patronage of Italian Renaissance sculpture', in *idem* and S. Gunn, eds: *Cardinal Wolsey: Church, State and Art*, Cambridge 1991, pp.260–85.

including ‘a picture of Moises made of earthe sette in a boxe of woode’ and ‘a picture of saincte Johns headde in a dishe of earthe’.[14] Terracotta elements were certainly commissioned for the high altar of the Lady Chapel. According to the contract, Torrigiano was to decorate the corners of the altarpiece canopy with ‘iiii Aungells of Erthe bakid in an oven after the colour of white marble evy of them kneeling of the heith of ii foote of assise from the knes upward’, each holding a symbol of the Passion.[15] Under the altar was to lie ‘a bakyn ymage of erthe coloured of criste dede’ measuring around 1.5 metres long, a size based on the length of the altar stone. The work was to be completed by November 1519 and Torrigiano received an advance of £1000 secured against a bond for which three Lucca merchants stood surety.[16] A much smaller payment of £33.15s to his fellow Florentine Benedetto da Rovezzano (1474–c.1554) in 1526 ‘for setting up Our Lady’s Altar in Our Lady Chapel at Westminster’ indicates that it was he – not Torrigiano – who oversaw the installation.[17] The responsibility for the commission lay with the signatories to the contract and much of this must have fallen to Abbot John Islip of Westminster (abbot 1500–32).[18] At the time, Islip was overseeing the building of the Lady Chapel and in 1511, with William Bolton, the prior of St Bartholomew’s, he commissioned from Torrigiano the monument to Lady Margaret Beaufort, based on a ‘pattern’

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[14] D. Starkey, ed.: *The Inventory of King Henry VIII: Society of Antiquaries Ms 129 and British Library Ms Harley 1419, The Transcript*, London 1998, p.240, nos.10734 and 10742, p.234, no.10494.

[15] Higgins, *op. cit.* (note 7), pp.145–50.

[16] WAM 6638*, see transcription in Britton, *op. cit.* (note 7), II, p.25. Lucca merchants Peter, Benedict and John Baptist Mor[o]velli and John Campna stood surety for the bond.

[17] WAM 30626. This is believed to be the last payment for the Lady Chapel altar following Torrigiano’s departure for Spain in around 1525, see Lindley, *op. cit.* (note 13). See also A. Darr: ‘Pietro Torrigiani and his sculpture in Henrician England: sources and influences’, in C. Sicca and L. Waldman, eds: *The Anglo-Florentine Renaissance Art of the Early Tudors*, New Haven and London 2012, pp.49–80; and A. Darr: ‘New documents for Pietro Torrigiani and other early cinquecento Florentine sculptors active in Italy and England’, in M. Cammerer, ed.: *Kunst des Cinquecento in der Toskana*, Munich 1992, pp.108–38.

[18] The signatories were Thomas, Bishop of Durham; John, Bishop of Rochester; Charles, Earl of Worcester; Robert Reed, Knight Chief Justice, John Cutt and John Islip, see Britton, *op. cit.* (note 7), p.23.

prepared by painter Meynard Weywick (active c.1502–25), followed in 1512 by Henry VII's tomb monument and a limestone *Head of Christ* (c.1516–20).[19]

The altar as it appears in the Lady Chapel today is a twentieth-century reconstruction based on the surviving visual information (Fig.3).[20] The sole image of the high altar before its destruction in 1643–44 dates from 1624, when it appears in the background of an illustration to a broadside (Fig.4), an example of which is now in the collection of the Society of Antiquaries, London. The subject of the broadside is a meeting of the Houses of Convocation, which was held in the Lady Chapel on 23rd April 1624, attended by bishops and other clergy of the Church of England. Since the subject is the meeting and not the altarpiece, the depiction of the high altar only serves to identify the location and is partially obscured by some of the participants. It is still possible, however, to distinguish the Resurrection relief at the back of the altar, underneath the canopy, which features a full-length figure of Christ hovering in the air above a sarcophagus. Christ raises his left arm, rather than the usual right arm in blessing, suggesting that the printmaker copied the composition directly onto the printing plate, which was then reversed on printing. An earlier version of this type of Resurrection scene from c.1445, produced by Luca della Robbia as a tympanum relief in glazed polychromed terracotta, can be seen over the north door to the sacristy in the Cathedral of S. Maria del Fiore, Florence. Another slightly later and more careful representation of the Westminster altar appears in Francis Sandford's *A*

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[19] T. Tatton-Brown and R. Mortimer, eds: *Westminster Abbey: The Lady Chapel of Henry VII*, Woodbridge 2003, pp.61, 69, 76, 82 and 84; R. Scott: 'On the contracts for the tomb of Lady Margaret Beaufort….', *Archaeologia* 61 (1915), pp.365–76; J. Warren: exh. cat. *The Wallace Collection: Catalogue of Italian Sculpture*, London (Wallace Collection) 2016, I, pp.68–83, note 14, the head was installed in the wall of the Abbey's new Jesus (now Islip) Chapel; A. Darr: 'From Westminster Abbey to the Wallace Collection: Torrigiano's head of Christ', *Apollo Magazine* 116 (1982), pp.292–98; and J. Goodall: 'The Jesus Chapel or Islip's Chantry Chapel at Westminster Abbey', *Journal of the British Archaeological Association* 164 (2011), pp.260–76.

[20] See Lindfield, *op. cit.* (note 10), pp.29–47.

Genealogical History of the Kings of England and Monarchs of Great Britain (1677) (Fig.5). The image provides further detail on the altarpiece, notably the composition of the Resurrection relief. Again, Christ is shown in the air, here with his right arm raised, and he seems to be surrounded by a blaze of glory with a triangular-shaped halo behind his head. On the left-hand edge of the scene stands a tall Roman soldier wearing skirted armour. At least one other military figure appears on the right side of the empty sarcophagus. The scene is flanked by decorated pilasters corresponding to the square pillars mentioned in the contract. Naturally, neither the broadside nor the book illustration depicts the Nativity relief, as it was placed back-to-back with the Resurrection relief, nor is there any indication of a full-sized terracotta figure of the dead Christ.

Beginning in 2023, new research was undertaken on each of the fifty-four terracotta fragments, which until this time had never been studied comprehensively. The pieces range in size from 7 to 74 centimetres in height; among them are substantial and well-sculpted fragments including a life-size foot (Fig.2), two small knees (Fig.6), thirty-six fragments modelled with drapery (including three of a robe with a decorative hem) and six pieces depicting tree bark (Fig.7).[21] Originally, they formed more than one figure, although how many is unclear. The sampling of the clay from each fragment demonstrates that six types of clay paste were used, and since each paste recipe is likely to represent a separate work, there were at least six different sculptures (although different recipes could have been used for specific parts of a multi-component sculpture).[22] There appear to be parts of both large-scale

[21] The pieces with decorative borders are WA1032., 39, 46 and 54. The pieces with bark are numbers WA1032.6, .11, .12, .16, .49 and .53.

[22] In this context, the term 'paste' is used to describe any mixture of clay, water and additives. A. Johnson: 'Westminster Abbey terracottas: compositional and technological investigation of enigmatic Renaissance sculpture fragments from Westminster Abbey', unpublished MSc diss. (Institute of Archaeology, University College London, 2023). Each specimen was studied with a low-magnification lens and analysed using thin-section sampling, XRF and SEM-EDX testing, see P. Quinn: *Thin Section Petrography,*

and smaller figures. The group of small figures possibly comprised a scene that included figures of two sizes, the smaller of which may have represented angels in the background.[23] Where the worked surfaces indicate drapery, the detail of folds helps to convey the scale. A physical examination of the scale and facture confirms that the pieces were sculpted rather than made in a mould.[24] Efforts to reassemble them have been partially successful, demonstrating that some individual fragments once belonged to the same figure (Fig.8). An estimate of the proportion of fragments surviving from the original composition is probably less than ten per cent. Thermoluminescence testing confirmed a production date between 1472 and 1702.[25]

Although they should be considered as a group, the fragments exhibit significant technical variations (for further details, see Appendix). In particular, they share a marked variation in their internal colour, as half of them are not coloured red 'terracotta' all the way through, but instead display a black core (known as blackheart or *cuore nero*). Some pieces have a thin external red boundary with a dark core within, while in others the black core is pale and uneven throughout the fragment. These differences are not thought to relate to the clay composition but rather were caused by the uneven oxidation of iron during the firing process.[26] This effect

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Geochemistry and Scanning Electron microscopy of Archaeological Ceramics, Oxford 2022, pp.293–97 and 331–40.

[23] WA1032.20 and .35. For the importance of scale, see Z. Sarnecka and A. Dziki: 'Introduction: materiality, scale, and status of early modern terracotta', in *idem*, eds: *The Materiality of Terracotta Sculpture in Early Modern Europe*, New York and London 2023, p.4.

[24] For the process of making sculptures in a mould, see I. Garachon: 'Some technical aspects of the terracotta models from the estate of Johan Gregor van der Schardt', *Simiolus: Netherlands Quarterly for the History of Art* 3 (2019) pp.177–90, esp. pp.187–89.

[25] WAC, unpublished report, Oxford Authentication, October 2022. The pieces tested were numbers WA1032.24, .35, .39, .53 and .54.

[26] For the black core, see B. Boucher, A. Broderick and N. Wood: 'A terracotta bust of Cardinal Giovanni de'Medici', in A. Gonzalez-Palacios, ed.: *Antologie di Belle Arte, Nuova serie nn.52–55: La Scultura II, Studi in Onore di Andrew S. Ciechanowsiecki*, Turin 1996, pp.32–39, at p.37, note 14.

occurs if a reducing atmosphere is created, indicating the difficulties sustained in firing these fragments. The choice and processing of raw materials has a significant influence on the final appearance of a finished terracotta sculpture.[27] For instance, in the fifteenth and sixteenth centuries, the Della Robbia workshop in Florence was known to carefully select and process clays apparently originating from a secret source along the Arno River; the pale buff colour enhanced the luminosity of the overlying glazes.[28] The Westminster Abbey fragments can be classified by eye into two broad groups in terms of their colour: a buff-yellow group and a red group. Buff-coloured pastes were made from a chalky ancient marine marl (loose clay mixed with calcium carbonite), compared with red-coloured pastes, the raw materials of which originated from shallow marine sediments deposited closer to land. Analysed under a microscope, these two groups can be further subdivided into six distinct paste recipes (Fig.9) comprising three buff-yellow types (chalky or calcareous types, containing quartz and shell) and three red (non-calcareous types).

It is interesting to compare the pastes used in the Abbey's fragments with those of other works produced in England at the same time, notably eight terracotta roundels by Giovanni da Maiano (c.1486/7–after 1542) at Hampton Court Palace.[29] Research conducted by Historic Royal Palaces has shown that da Maiano used a red-coloured paste originating from the London

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[27] G. Gentilini: 'La Scultura fiorentina in terracotta del Rinascimento: Techniche e Tipologie', in M. Vaccari, ed.: *La scultura in terracotta: tecniche e conservazione*, Florence 1996, pp.64–103, esp. pp.64–70.

[28] A. Hykin: 'The conservation of Della Robbia sculpture: an exhibition as initiator of work', in E. Hamilton, K. Dodson and L. Kaplan, eds: *Treatment 2017: Innovation in Conservation and Collection Care*, Washington 2017, pp.1–25, at p.5; and W. Walker and C. Riccardelli: 'Workshop practice revealed by two architectural reliefs by Andrea Della Robbia', *Metropolitan Museum Journal* 54, no.1 (2019), pp.47–61, esp. pp.48, 50 and 54.

[29] K. Rawlinson: 'Giovanni da Maiano: on the English career of a Florentine sculptor (c.1520–42)', *Sculpture Journal* 26, no.1 (2017), pp.37–51.

basin that correlates chemically with two of the pastes used at Westminster Abbey.[30] The fragments' paste recipes were further compared with those of other sculptures attributed to Torrigiano dating from the time when he was working in England. Thin section samples were taken from the tomb effigy of Dr John Yonge (1516–20; formerly Rolls Chapel, now Maugham Library, King's College, London; Fig.9G) and two portrait busts of John Fisher, Bishop of Rochester (Figs.9H and 10), and an unknown merchant (Figs.9I and 11).[31] The samples of paste from each of these sculptures were found to correspond so closely to paste 4 of the Abbey's fragments that they almost certainly used the same, or a very similar, raw material source and preparation method.[32] In addition, macroscopic analysis of the paste of the portrait bust of Henry VII by Torrigiano (1509–11; Victoria and Albert Museum, London) also shows a compositional match with paste 4.[33]

Although it requires expertise and a well-chosen clay source to model terracotta, the final success of the sculpture is also highly dependent on the firing process, together with the qualities of the kiln and the skills of the person operating it.[34] There is no direct evidence at Westminster Abbey of kilns for the express purpose of firing terracotta, but it is highly probable that these

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[30] K. Hallett, K. Rawlinson and Z. Roberts: 'The conservation of Giovanni da Maiano's terracotta roundels at Hampton Court Palace (2005–12): a summary report', *Technè: Terres cuites de la Renaissance. Matière et couleur* 36 (2012), pp.102–09, at p.105, which identified the clay as from the London basin; see also K. Hallett: 'ICP-MS analysis on Da Maiano terracotta roundels (1520–21) at Hampton Court Palace – a summary', unpublished research, Historic Royal Palaces, Collections Management Team, pp.1–4. The paste correlates with Abbey pastes 2 and 4 (Figs.9B and 9D).

[31] Thanks to Jack Soultanian of the Metropolitan Museum of Art, New York, and the Crown Estate for making samples available.

[32] There are five examples of red-firing, non-calcareous paste 4 (Fig.9D): WA1032.6, .11, .22, .28 and .53.

[33] Visual analysis on site communicated by Patrick Quinn, September 2024.

[34] For information on kilns and working clay, see C. Piccolpasso: 'Li tre libri dell'arte del vasaio', c.1557, V&A National Art Library, London (hereafter NAL), MSL/1861/7446, esp. fols.26–28 and fols.31–33, with illustrations including fol.35; and C. Piccolpasso: *The Three Books of the Potter's Art*, ed. R. Lightblown *et al*., London 1980.

works were produced on site, as kilns for firing clay moulds and for casting bronze were certainly constructed there.[35] Terracotta sculptures were probably made in what is known as the Tomb House workshop in Dean's Yard, the existence and location of which have been known for some time.[36] This is where Cardinal Wolsey and Henry VIII's elaborate gilt-bronze and marble tomb was created using several purpose-built 'furnaces' (kilns), operated by Italian workmen.[37] It is also where six large terracotta figures for the altar of Wolsey's new college in Oxford (now Christ Church) were awaiting collection in 1530.[38] The care taken to construct a kiln in the Tomb House is evident from a document of 1531, noting that Florentine craftsmen 'Tomaso' and 'Nicholaio' (founder and potter respectively), spent over twenty-eight days to do

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[35] For details, see the unpublished translation provided by Teresa Maria Callaioli of a document submitted by Benedetto da Rovezzano and Giuliano da Maiano in 1531 of 'expenses for work done for His Majesty the King' in the 'Tomb House', National Archives, Kew (hereafter TNA), SP1/68, fol.70r–76v.

[36] For its location, see T. Tatton-Brown: 'The medieval and early Tudor topography of Westminster', in W. Rodwell and T. Tatton-Brown, eds: *The British Archaeological Association Conference Transactions XXXIX, Part I, Westminster I. The Art, Architecture and Archaeology of the Royal Abbey*, Leeds and Wakefield 2015, pp.1–22, at p.4, fig.2. See also M. Biddle: 'Nicholas Bellin of Modena: an Italian artificer at the courts of Francis I and Henry VIII', *Journal of the British Archaeological Association* 29 (1966), pp.106–21, esp. pp.110–15; Darr, *op. cit.* (note 10), pp.58 and 351; and Higgins, *op. cit.* (note 7), p.217. Torrigiano possibly lived and worked there before his departure from London c.1525, see W. Illingworth: 'Transcript of a draft of an indenture of covenants for the erecting of a tomb to the memory of King Henry the Eighth and Queen Katherine his wife', *Archaeologia* 16 (1812), pp.84–88, at p.84, note 2.

[37] Higgins, *op. cit.* (note 6), appendix VI, pp.152–91 and 205–20, transcribed from TNA, SP1/68 fo.70r–76v, kindly checked by Sophia Dumoulin and translated by Teresa Maria Callaioli; for the tomb, see also Lindley, *op. cit.* (note 13), pp.262–78; and F. Caglioti: 'Benedetto da Rovezzano in England: new light on the Cardinal Wolsey-Henry VIII tomb', in Sicca and Waldman, *op. cit.* (note 17), pp.177–202.

[38] The reference to 'vi figures of claye of vii foote apiece' is documented in two sources according to Lindley, *op. cit.* (note 13), pp.264–67. The first is a letter from Benedetto da Rovezzano to Cardinal Wolsey in Jesus College, Oxford, MS 74, fols.189–91, dated by Lindley as 30th June 1529, transcribed in Higgins, *op. cit.* (note 6), appendix III, p.203, corrected to 31st January 1530 in D. MacCulloch: *Thomas Cromwell: A Life*, London 2019, p.598, note 13. The second is in two lists prepared by Rovezzano, transcribed in Higgins, *op. cit.* (note 6), appendix IV, p.205, based on TNA SP1/52, in which it is noted that 'a chamynye of wt marbyll; vi figures of claye of vii foote apiece which sholde have s've̅d for Oxforde'.

so and charged £1.17s. 4d.[39] Such detailed information suggests that the kilns required for firing terracotta would have been constructed with equal care using the expertise of Florentine kilnsmen, whether in the Tomb House or elsewhere at the Abbey.

It is clear that the manufacture of Westminster Abbey's terracotta fragments suffered a number of technical problems, as demonstrated by the black core already described. Many of them also suffered fractures during drying and firing because they were heated too rapidly, causing differential shrinkage between the margins and the core.[40] Experience was required in placing wares in the kiln to allow an even transfer of heat through the space. This was done by eye, with the kiln master judging the firing temperature by the colour of the kiln's interior.[41] Larger pieces of sculpture were usually fired in sections and then assembled to make up the figures.[42] This is likely to have been the case with the Abbey's larger-scale fragments, despite the lack of evidence of joins. The damage to the pieces suggests that there was insufficient technical knowledge to successfully fire bulky sculptures, indicating inadequate kiln construction or perhaps a workforce of itinerant craftsmen unused to the qualities of the local clay or local assistants inexperienced at making clay sculptures intended for firing.[43]

After firing, the fragments were painted and gilded, a process that also involved considerable technical expertise and expense, confirming that they originally formed part of finished works of art, rather than being preliminary models.[44] Although not inexpensive,

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[39] Higgins, *op. cit.* (note 37), TNA SP1/68, fo.70r-76v, fol.74v, November 1531, the account indicates that clay moulds were prepared to cast the metal elements.

[40] C. Hubbard and P. Motture: 'The making of terracotta sculpture: techniques and observations and appendix: analytical investigation techniques for terracottas', in Boucher, *op. cit.* (note 11), pp.83–89, at p.84.

[41] Walker and Riccardelli, *op. cit*. (note 28), p.48.

[42] Hykin, *op. cit.* (note 28), p.6; Hubbard and Motture, *op. cit*. (note 40), pp.91–93.

[43] Walker and Riccardelli, *op. cit.* (note 28), p.54.

[44] See Sarnecka and Dziki, *op. cit.* (note 23), p.2.

carefully painted terracotta was quicker and cheaper to produce than other forms of sculpture and was considered to be more lifelike; consequently, its popularity increased during the Renaissance and technical skills also improved.[45] Half of the Abbey's fragments were examined with cross-section microscopy, which was used to analyse the paint layers in an effort to better understand the effects sought by the painters.[46] The pigment application demonstrates the use of sophisticated techniques and helps to support the conclusion that the fragments come from several sculptures, while also suggesting associations between particular pieces. In addition, the samples were compared with other works by Torrigiano to evaluate how the technique corresponded with the sculptor's known studio practice and his likely collaboration with painters.

The fragments' paint layers were created using traditional pigments richly bound in oil, which were typically applied in up to four layers, over a distinctive pink oil-based ground. The surface glazes (the oil-rich topcoat) provided a smooth gloss finish with subtle surface effects.[47] Precise colours were achieved by applying multiple paint layers, with the artist probably working wet-on-wet. Light-coloured undercoats and strong mid-tones were used to create green-painted surfaces, topped with a rich final surface glaze. Preparatory layers of neutral lead white or yellow ochre were deployed underneath areas of brightly coloured paint to accentuate the brightness. The bright green effect on some pieces was created by mixing verdigris with lead tin yellow and lead white; but to create a duller green, azurite was mixed with iron oxides

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[45] Vaccari, *op. cit.* (note 27), pp.18–25.

[46] WAC, C. Hassall: 'Terracotta fragments, Westminster Abbey', unpublished report, no.D029b, November 2022; and unpublished 'Summary' for 'Terracotta Workshop, Westminster Abbey, 17th May 2023'; see also J. Darrah: 'Terracotta fragments of an altarpiece from Westminster Abbey', unpublished V&A conservation report, JAD 110.

[47] Hassall, *op. cit.* (note 46), unpublished report no.D029b, 'Ground layers', p.2. For comparison, see A.-S. Le Hô: 'La polychromie des sculptures italiennes de la Renaissance: A l'origine des couleurs, état d'avancement des analyses menées au C2RMF', *Techné* 36 (2012), pp.72–77, esp. p.76, fig.6.

and carbon black.[48] Some of the fragments were decorated with gold leaf, which was typically applied directly onto the pink ground, although occasionally the leaf was laid over a layer of lighter paint to enhance the lustre. The sophisticated layering of paint and gold leaf is especially evident on one fragment, where the final application of a dark blue glaze created the now barely visible effect of blue and gold stripes.[49]

Polychrome analysis has assisted in making associations between pieces. Two fragments share the same striated surface markings, but they also have an identical brown paint stratigraphy (pink ground, ochre, lead white, black and organic brown), indicating that they originally formed part of the same sculpture.[50] On the other hand, a piece likewise representing bark, which shares the same underlayer, has an entirely different paint layer structure, showing that it belonged to a different sculpture, even if produced in the same workshop.[51] Two other fragments, with their distinctive pale-pink ground layer and small amount of finely ground charcoal black, were probably both painted by the same hand.[52]

Polychrome analysis further confirms that the fragments originally formed more than one sculpture and were decorated by more than one painter, possibly within the same workshop. The distinctive, sophisticated techniques used by the artists suggest that they were trained in a workshop that produced oil paintings.[53] Although Torrigiano was occasionally commissioned as a painter early in his career, it is more likely that in England he would have hired professionals to decorate and gild sculpture, just as he had done in Florence.[54] The comparison of the

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[48] Hassall, *op. cit.* (note 46), p.5.

[49] *Ibid*., no.1.

[50] *Ibid*., fragments 6 and 16.

[51] *Ibid*., fragment 12.

[52] *Ibid*., fragments 14 and 19.

[53] *Ibid*.

[54] L. Indrio: 'Firenze nel quattrocento: divisione e organizzazione del lavoro nelle botteghe', *Ricerche di Storia dell'arte* 38 (1989), pp.61–70; Monica Galeotti, in correspondence with Susan Jenkins on 16th

polychromy of the Abbey fragments with terracotta sculptures attributed to Torrigiano elsewhere in England, such as the tomb of Dr John Yonge, Maughan Library, King's College London (1516) and the portrait bust of Henry VII, remain inconclusive.[55] One possible link is the distinctive pale pink ground layer of chalk, lead white and red lead identified on the portrait bust of Henry VII, bound with egg tempera and not oil, which was also used on the tomb of John Yonge.[56] This layer is common to all the terracottas by Torrigiano examined in this study and may be characteristic of his workshop.

Evidence survives linking a number of the pieces with the terracotta commissions for the high altar of the Lady Chapel of Westminster Abbey. One fragment from a small kneeling figure, for instance, exhibits traces of white polychromy, and may have formed part of one of the four white, two-foot-high kneeling terracotta angels 'after the colour of marble' that

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January 2024; for Torrigiano's possible training in Andrea del Verrochio's studio, see C. Neilson: *Practice and Theory in the Italian Renaissance Workshop: Verrocchio and the Epistemology of Making Art*, Cambridge 2018, pp.53–56; for occasions when Torrigiano was contracted as a painter, see Pereda, *op. cit.* (note 6), p.70, pp.189 and 223, note 56, citing Darr, *op. cit.* (note 10), document 10; and Britton, *op. cit.* (note 7).

[55] See J. Darrah: 'Monument to Dr John Yong [*sic*] [. . .] An examination of the painted decoration', V&A unpublished report, JAD 112, 1986; and *idem*: 'Paint analysis of Henry VII terracotta bust', unpublished V&A report, 1986 JAD 113; see also C. Galvin and P. Lindley: 'Pietro Torrigiano's portrait bust of Henry VII', THE BURLINGTON MAGAZINE 130 (1988), pp.892–902, at p.894; and *idem* and *idem*: 'Pietro Torrigiano's tomb for Dr Yonge', *Church Monuments* 3 (1988), pp.42–60. For an analysis of the terracotta statues of *St Jerome* and the *Virgin of Bethlehem* by Torrigiano in the Museum of Fine Arts, Seville, see A. Kriznar *et al*.: 'XRF analysis of two terracotta polychrome sculptures by Pietro Torrigiano', *X-Ray Spectrometry* 38 (2009), pp.169–74; for the *Bust of Christ* (c.1490–1510) by Torrigiano in S. Martino a Mensola, Florence, see M. Galeotti: 'Report by Opificio delle Pietre Dure e Laboratori de Restauro', unpublished report, ref.S.2090.01, May 2015, pp.1–28; for the portrait bust of Cardinal Giovanni De'Medici (c.1512; V&A), see A. Kosinova: 'The conservation of the portrait bust of Giovanni de'Medici (later Pope Leo X)', *V&A Conservation Journal* 17 (1995), pp.14–15.

[56] T. Chaplin: WAC, unpublished research summary report (draft) 181.05, July 2024, p.9; and Vaccari, *op. cit*. (note 45), p.19, confirming that both tempera and oil were used as binding media for terracotta.

decorated the canopy of the altar.[57] Other fragments relate to a Resurrection scene, and may originate from Torrigiano's relief. Examples of such works typically depict the central dynamic figure of Christ emerging from the tomb, with Roman soldiers to his left and right, such as in the tympanum relief for the sacristy of Florence Cathedral (Fig.13), as already noted, or the lunette of the *Resurrection* (Fig.12) commissioned from Giovanni della Robbia by the Antinori family. It is noteworthy that partial figures of soldiers 'draped and armoured as military men' were identified among the Abbey's terracotta fragments when they were first discovered, although these are now considered lost.[58] Among the surviving fragments, however, at least two show, on close inspection, markings that resemble the type of embossed metal armour worn by Roman soldiers.[59] Equally importantly, the fragment depicting a dynamic life-size left foot balancing on a shroud-cloth and pushing off from a bark-covered mound (Fig.2), evokes Christ's pose at the Resurrection as he rises from the tomb.

Even if many of the surviving fragments cannot be obviously connected to the high altar of the Lady Chapel, it is highly likely that they were linked to commissions of religious terracotta sculpture intended for display elsewhere in the church. Some of them may have formed part of one or more freestanding terracotta multi-figural groups, which typically depicted scenes from the life of Christ and the Virgin.[60] The popularity of such works, exemplified by Niccolo dell'Arca's *Lamentation over the dead Christ* (c.1460; S. Maria della Vita, Bologna), spread from northern Italy to the Florentine Della Robbia workshop, and this type of sculpture was becoming increasingly familiar in England – a group of the same subject, created c.1510–15,

[57] This is piece number 1032.35, see Hassall, *op. cit.* (note 46), pp.27–28.

[58] Poole, *op. cit.* (note 3), p.116.

[59] The pieces are numbers 1032.46 and 54, and may depict scroll and rosette decoration on the base of cuirass armour.

[60] I. Vranica: 'Making and remaking Renaissance sculpture: the terracotta groups (1460–1560)', unpublished DPhil thesis (University of British Columbia, 2019).

is now part of the V&A's collection.[61] Other fragments may have formed part of wall-mounted high relief sculptures, such as Giovanni della Robbia's *Lamentation* altarpiece (c.1515; Isabella Stewart Gardner Museum, Boston).

In conclusion, an important and rare cache of English sixteenth-century terracotta fragments that derive from religious sculpture were created for and probably on the site of Westminster Abbey. New research confirms an attribution of some of the fragments to Pietro Torrigiano through the match of one of the paste types (paste 4; Fig.9D) with four sculptures made by Torrigiano during his period in England. A number of the fragments can also plausibly be linked to terracotta elements specified in the contract for the high altar of the Lady Chapel, which include a kneeling angel painted to look like marble and (possibly) a Resurrection scene. It is hoped that the steps taken here in the study of these fragments of English Renaissance terracotta will encourage future research into terracotta sculptural commissions for Westminster Abbey and elsewhere.

APPENDIX

Physical assessment of the Westminster Abbey terracotta fragments

Nearly all the fragments have visible voids that relate to the way lumps of clay were pressed together, in many cases being almost cursorily applied as the figure took shape, leaving gaps between the pieces (for example, fragment 2). These voids are often pockets, which have been caused by further working of the clay after application (fragments 6, 10, 20 and 35). Other voids occur due to the separation of lumps of clay that were insufficiently bonded together,

[61] Vranica, *op. cit.* (note 60); for the import into England of multi-figural sculpture groups by the Della Robbia family, see G. Corti: 'New Andrea della Robbia documents', THE BURLINGTON MAGAZINE 112 (1970), pp.749–52; and *idem*: 'Addenda Robbiana', THE BURLINGTON MAGAZINE 115 (1973), pp.468–60.

because as the sculptures began to dry out, each lump shrank towards its centre and pulled away from others next to it (fragments 2, 10, 20 and 38). The water content of the clay clearly varied from sculpture to sculpture across the fragments during the production process: where the clay was wettest, suction marks (fragment 5) and curls of clay (fragment 28) are visible, which were left at the edges of tool marks during the hollowing process. A lower water content must have hindered some areas from bonding, as drier clay requires more work to bond pieces together.

Little apparent effort was made to create walls of even thickness across the pieces, even though this would have made distortion less likely. While a few of the fragments have hollowed-out areas, many are of a thickness that can be considered distinctly risky on account of their bulk. Others, for example fragment 9, include an internal supporting bridge made of squeezed clay, indicating that at least one or two of the figures had been hollowed out to a greater extent. Where hollowing or thinning is evident, it has been done with flat blades (fragment 19), metal loops (fragment 10) or fingers (fragments 5 and 44; Fig.14) and partial fingerprints are evident on several pieces (although these are unhelpful in terms of attribution). Extra clay was added to build bulk on a few fragments, and in the case of fragment 35, the sculptor developed the design idea as work progressed, adding a drapery fold to the smoothly modelled surface of a part of a leg. This can be seen in the cross-section view provided by the break surface, where the two parts shrank away from each other in the drying process, as the smoothed leg did not provide enough of a key for the added drapery modelling. On the pieces where polychromy has been lost, the outer surfaces were apparently smoothed with the use of a brush or cloth, or with smooth or toothed wooden tools shaped for the purpose. Narrower tools were used to create bark-like textures, and finer points for the decoration on the borders of garments. On both outer and inner surfaces of fragment 2 an effort was made to repair a crack in the clay at the drying-out stage, with tool marks criss-

crossing the crack where the applied pressure made an unsuccessful attempt to bring the two sides together.

Finger marks

Laura Dodd (Senior Applications Specialist and Fingerprint/Crime-lite Lead at foster+freeman), David Goodwin (Managing Director of Fingerprint Associates Ltd) and Dzemila Sero (formerly Migelien Gerritzen Fellow, Rijksmuseum, Amsterdam), each contributed to finger mark analysis on the fragments. Twenty-seven pieces were found to display partial fingerprints, and fragments 5 and 44 were found to exhibit the same right, unattributable thumb mark. Sero, who has developed a system for analysis of such impressions, identified marks belonging to a possible 'left loop' (fragment 17) and four possible 'right loops' belonging to the right hands of adult male(s) (fragments 5, 9, 39 and 46).[62] There are scant contemporary marks for comparison, although a fingerprint was discovered on Giovanni da Maiano's terracotta roundel of Tiberius at Hampton Court Palace.[63] Finger marks have also been documented on a portrait bust of Giovanni de'Medici as Pope Leo X probably by Antonio De'Benintendi (c.1512; V&A, London), where the 'transverse walls show thumb marks, the rest of the inside of the shoulders shows smoothing

[62] D. Sero *et al.*: 'The study of three-dimensional fingerprint recognition in cultural heritage: trends and challenges', *ACM Journal on Computing and Cultural Heritage* 14, no.4 (December 2021), pp.51.1–51.20.
[63] Z. Roberts *et al.*: 'In the fingerprints of Giovanni da Maiano: researching and conserving 16th century terracotta roundels at Hampton Court Palace', *Preprints of the 15th Triennial meeting of the ICOM Committee for Conservation* 63, no.1 (2008), pp.208–23.

with fingers and a toothed comb'.[64] No fingerprints have been detected to date on the Torrigiano busts of Henry VII or the busts of Bishop John Fisher or the unknown merchant.

CAPTIONS

1. Henry VII Lady Chapel, Westminster Abbey, London. (Courtesy the Dean and Chapter of Westminster).

2. Fragment of a foot. Terracotta, 26.7 by 29.8 by 28.1 cm. (Courtesy the Dean and Chapter of Westminster; WA1032.53).

3. High altar of the Henry VII Lady Chapel, Westminster Abbey, London. (Courtesy the Dean and Chapter of Westminster).

4. Illustration of the high altar of the Henry VII Lady Chapel, from a broadside 'A venerable aspect of both houses of convocation' for a meeting in Westminster Abbey, 23rd April 1624. (Society of Antiquaries, London, Lemon Collection, 221).

5. Illustration of the high altar of the Henry VII Lady Chapel. (From F. Sandford: *A Genealogical History of the Kings of England and Monarchs of Great Britain*, London 1677).

6. Fragment of a leg with kneecap. Terracotta, 27.4 by 21.1 by 18.8 cm. (Courtesy the Dean and Chapter of Westminster; WA1032.35).

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[64] See Boucher, *op. cit.* (note 26), p.34.

7. Fragment of tree bark. Terracotta, 25.6 by 21.1 by 12.9 cm. (Courtesy the Dean and Chapter of Westminster; WA1032.12).

8. Reassembled terracotta fragments WA1032.21, .34, .46 and .54. (Courtesy Lucy Ackland and Vanessa Simeoni, Westminster Abbey).

9. Photomicrographs showing paste types A, C and E (buff-yellow); B, D and F (red); and three comparators: G (Dr John Yonge), H (John Fisher) and I (Unknown merchant). (Photograph Patrick Quinn and Amber Johnson, UCL).

10. Bust of Bishop John Fisher, by Pietro Torrigiano. 1510–15. Terracotta, 61.6 by 65.7 by 34 cm. (Metropolitan Museum of Art, New York).

11. Bust of unknown merchant, by Pietro Torrigiano. 1510–15. Terracotta, 62.1 by 78.7 by 35.9 cm. (Metropolitan Museum of Art, New York).

12. *Resurrection*, by Giovanni della Robbia. c.1520–25. Glazed terracotta, 174.6 by 364.5 by 33 cm. (Brooklyn Museum, New York).

13. *Resurrection*, by Lucca della Robbia. c.1442–45. Glazed terracotta, 200 by 265 cm. (Sacristy of Florence Cathedral; Bridgeman Images).

14. Partial fingerprint preserved on fragment WA1032.44. (Photograph Laura Dodd, foster+freeman).