The Relics of the True Cross – An Interdisciplinary Approach

Dr. Georges Kazan and Prof. Thomas Higham

ORCID: https://orcid.org/0000-0001-7802-0157, https://orcid.org/0000-0002-5949-598X

Abstract

The Wood of the Cross upon which Jesus Christ was crucified is the greatest Christian relic of all. In materialising the memory of Christ's suffering, it paved the way for the public circulation and veneration of other relics within Christianity, such as the bones of martyrs.[1] Such relics were highly valuable and easy to counterfeit.[2] At the Reformation, the sheer quantity of Wood of the Cross in circulation made it a target for Protestant theologians seeking to impugn the authority of the Roman Catholic Church.[3] In response, Catholic scholars began to undertake the first scientific studies of relics.[4] The history of the Wood of the Cross therefore offers new insights nor only into the development of the Christian world, but also into its scientific methods and concepts of materiality. Today, in the twenty-first century, analyses have become available that permit us to obtain robust data from materials such as wood and bone. Set within the context of the written sources, this can provide new historical information concerning the origins, circulation and veneration of Christian relics. The present article sets out current research aims, provides a general overview of the historical and material evidence and proposes methods suitable for an integrated study of the Wood of the Cross. These will be developed further as the authors' research progresses.[5]

Aims:

As one of its oldest, most widespread and highly valued expressions, the Wood of the Cross is

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[1] The transfer of and trade in human relics remained illegal in Roman law. See *Codex Theodosianus* IX.17.7, *SC* 497, pp. 172-174; *Codex Iustinianus* I.2.3, III.44.14 in ed. P. Krueger, *Corpus iuris civilis, Vol. 2, Codex Iustinianus*, (Berlin, 1877), pp. 12, 148.

[2] For an early warning about traffickers in false relics, see Augustin, *De Opera Monacphorum* I.28, *PL* XL, col. 575.

[3] J. Calvin, *Traité des reliques* (Geneva, 1599), p. 22, compares the amount of the Wood of the Cross in circulation with the load of a great ship; H. Kipping, *Liber singularis de cruce et cruciariis* (Bremen, 1671), p. 232, claims that the volume of the Wood in circulation could have raised enough crosses to crucify three hundred men.

[4] E.g. J. Gretser, *De Sancta Cruce* (3 vols, Ingolstadt 1598, 1605, 1616) ; C. Rohault de Fleury, *Mémoire sur les instruments de la Passion* (Paris, 1870) ; A. Frolow, *La relique de la vraie Croix, recherches sur le développement d'un culte* (Paris, 1961); A. Frolow, *Les reliquaires de la Vraie Croix* (Paris, 1965).

[5] See G. Kazan, 'Exploring the past through relics: the Oxford Relics Research Cluster', Material Religion 14.3 (2018), 1-3. The authors would like to thank Keble College (University of Oxford), for its ongoing support for this and other research undertaken by the Oxford Relics Cluster, as well as the Oxford University Press John Fell Fund and the Turku Institute for Advanced Studies for funding this research.

central to the understanding of material religion within Christianity. As such, its history reveals the development of major concepts of materiality and immateriality within Western culture. The purpose of this scientific study of relics of the Wood of the Cross is not to confirm their authenticity, which remains a religious matter. Instead, the authors seek to advance a collaborative, interdisciplinary assessment of this important evidence, in which an analysis of the written sources and material contexts is compared with new data obtained directly from the relics themselves, using scientific analyses that are either minimally invasive or entirely non-invasive. This explores and compares the origins, use, circulation and chronology of relics of the Wood and of the substances applied to them for purposes of veneration and as media for holy healing. The aim is not only to reach a clearer understanding of the history of the relics of the Wood of the Cross, particularly during Late Antiquity and the Middle Ages, but also to shed new light on their audiences over the centuries - those who valued, adorned, documented and preserved them. This research therefore offers new insights into the evolution of religious, political and personal practices concerning the Wood of the Cross and enables a modern reassessment of the written and oral sources that concern them, and of the material contexts created to embellish and define them.

Provisional Methodology:

Our work to date has led us to evaluate relics of the Wood of the Cross on the following criteria:

1. Historical background
2. Material context
3. Morphology
4. Species
5. Surface analysis of secondary substances and contaminants
6. Scientific dating

For the purposes of this study, it has been useful to undertake a preliminary analysis of the history of the relic based on the available written and material evidence, although an in-depth assessment of the manuscript traditions and possible interpolations is still required. At present, historical sources are considered chronologically, with evidence from contemporary texts progressively compared with that from later sources. Texts and objects from the main centres of the cult of the Cross (Jerusalem, Constantinople and Rome) are also given particular attention.

Historical Background

Following its mention in the Gospels, tradition relates that the Wood of the Cross was rediscovered in Jerusalem during the construction of the new cathedral complex at the site of Christ's Passion, which began in ca. 325 and was completed in 347. A Roman temple, built in ca. 135, previously occupied the site: the cathedral's Christian builders considered all the wood and stone used in its construction to be spiritually tainted, and cleared these away before construction began.[6] Based on the accounts of its discovery, Jerusalem's relic of the Wood of the Cross would therefore predate this temple's construction and could date to the first century or earlier.[7]

The first clear mentions of the Wood's existence are variously dated to A.D. 348, 350 or 351.[8] These state that by that time fragments of the relic were already been spread across the known world, a claim supported by archaeology.[9] Such relics were circulated as prestige gifts, issued by the bishop of Jerusalem to prominent pilgrims and foreign dignitaries. According to legend, the Cross was discovered in 326-328 by Helena, mother of the Emperor Constantine (ca. † 330). Given that this was around twenty years before the first mention of the Wood in contemporary sources, and almost seventy years before the legend first appears in surviving sources, and considering the significant variations in the major narratives relating to the alleged discovery, it has been suggested the Wood was discovered only later, in 347 or shortly before.[10]

While fragments of the Jerusalem relic of the Wood were widely circulated, these were usually small objects intended for private devotion, with one notable exception.[11] In ca. 545, the contemporary historian Procopius mentions another major relic of the Wood of the Cross venerated publicly at Apamea in Syria, said to have been covertly obtained from Jerusalem many years

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[6] Eusebius, *Vita Constantini*, *GCS* 7, III.27, p. 96.

[7] It seems there was a shortage of wood suitable for construction in Jerusalem and that such wood was regularly reused. J. Zias, E. Sekeles, 'The Crucified Man from Giv'at ha-Mivtar: A Reappraisal', *Israel Exploration Journal* 35/1 (1985), pp. 22-27: p. 26-27.

[8] Cyril of Jerusalem, *Catecheses* IV.10, *PG* 33, col. 467-470, X.19, *PG* 33, coll. 685-687 and XIII.4, *PG* 33, col. 777). See J.W. Drijvers, *Cyril of Jerusalem: Bishop and City* (Leiden, 2004), pp. 56–58.

[9] See Y. Duval, *Loca sanctorum Africae: Le culte des martyrs en Afrique du IVe au VIIe siècle* (2 vols, Rome, 1982), vol. 1, pp. 331-337.

[10] J. Wilkinson, *Egeria's Travels* (3rd edition, Warminster, 1999), pp. 171-173. First surviving mention : Ambrose, *De Obitu Theodosii Oratio*, 46-47, *PL* XVI, coll. 1401-1402. Before Ambrose, the legend is said to feature in a lost work by Gelasius, Bishop of Caesarea (367–373, 379–395), nephew of Cyril of Jerusalem, to whom the legend is sometimes connected. For a summary and discussion of the sources, see P. Maraval, *Lieux saints et pèlerinages d'Orient (IVe-VIIe siècle)* (Paris, 1985), pp. 97, 234-235, 253 and E. Cronnier, *Les inventions de reliques dans l'Empire romain d'Orient (IVe-VIe s.)* (Turnhout, 2016), p. 125, n. 3.

[11] Cf. Paulinus of Nola, *Epistulae*, ed. W. von Hartel, *CSEL* 29 (Vienna, 1894), pp. 267-268.

before, measuring approximately one cubit in length.[12] The relic was forcibly removed to Antioch in order to be sawn in half lengthways in 565 at the orders of the Byzantine Emperor, Justin II (565–574): one half was returned and the other removed to Constantinople, where it was exposed for veneration at the cathedral of Hagia Sophia for ten days.[13] From this time, it seems, Constantinople's rulers would assume the privilege of making public gifts of the Wood as a token of imperial favour.[14] In ca. 574, we propose, the remainder of the relic was transferred from Apamea relic to Constantinople.[15]

Jerusalem remained the authoritative seat of the Wood of the Cross until the relic was seized by the Sasanian Persians in 614. According to one source, the relic remained sealed inside its casket, which was unlocked by the key of the Bishop of Jerusalem upon its return, indicating that it was therefore the same object.[16] Despite its recovery by the Byzantine Emperor Heraclius in 628 and its triumphant display in Jerusalem in 630, the relic was then permanently transferred to Constantinople, known as the New Jerusalem.[17] Constantinople thus became the centre of the relic's cult, assuming the Jerusalem tradition of exposing the relic to public veneration during the feast of the Exaltation of the Cross on 14 September.

There appears to be no clear mention of the Wood's presence in Jerusalem until the city's capture by armies of the First Crusade in 1099, when a relic of the Cross was revealed by the city's

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[12] Procopius of Caesarea, *History of the Wars*, trans. and ed. H.B. Dewing, G. Downey (5 vols, Cambridge MA, 1914-1928), *Loeb Classical Library* 48, 81, 107, 173, 217, vol. 1, *The Persian War*, II.11, pp. 354-359; Evagrius Scholasticus, *Historia Ecclesiastica*, IV.26, *PG* 86/2, coll. 2743-2746.

[13] Michael the Syrian, *Chronique de Michel le Syrien, Patriarche Jacobite d'Antioche (1166-1199)*, X.1, trans. and ed. J.-B.Chabot (4 vols, Paris, 1899-1924), vol.1, pp. 284-285.

[14] Justin II presented the Frankish queen and nun, Radegunda, with a portion of the Wood in 569, which she received in a highly-publicised ceremony (see Venantius Fortunatus, *Hymnus in Honore Sanctae Crucis*, *PL* LXXXVI, coll. 95-96), and gave another relic to the Church of Rome, the *Crux Vaticana*, which survives today in Rome's Treasury of St Peter's,

[15] Giorgius Cedrenus, *Annales*, ed. I. Bekker (2 vols, Bonn, 1838-1839), vol. 1, p. 685. The two references have been interpreted as referring to the same event (Maraval, *Lieux saints*, p. 346). The sources for the 565 and 574 translations were both composed a few centuries later but record other events accurately. In view of this, the fact that the Apamea tradition subsequently disappears, and based on descriptions of the relics in Constantinople (see 'Morphology'), we propose that the Apamea relic was indeed removed in two stages.

[16] Nicephorus, Patriarch of Constantinople, *Short History*, trans. and ed. C. Mango (Washington, 1990), 18, pp. 67.

[17] Nicephorus, *Short History*, XVIII, p. 66-67. A Constantinopolitan source, the *Chronicon Paschale*, ed. L. Dindorff (2 vols, Bonn, 1832), vol. 1, a. 614, records the exaltation of the Wood of the Cross in Constantinople on 14 September. While the year given appears to be 614, later in the entry for the same year the exaltation of the Holy Lance is described as taking place on Sunday 28 October. This date fits the year 630, and not 614. This record therefore supports Patriarch Nicephorus' account that the relic was returned to the capital directly after its exaltation in Jerusalem on 21 March 630.

inhabitants to the city's new Latin patriarch, Arnulf of Chocques.[18] Jerusalem's new Latin sovereigns imitated Byzantine practices, carrying their Wood of the Cross before their armies as a military talisman and exposing it for veneration as it had been in fourth-century Jerusalem, placed inside a silver casket, alongside the reputedly rediscovered relics of the *Titulus Crucis*, Ring of Solomon and Horn of Anointing.[19] Control of the Holy Land lent credence to the crusader's ability to produce relics such as these and others, such as a head of John the Baptist rediscovered in ca. 1145. These relics, in turn, served to lend added legitimacy to the crusader states and encourage the flow of pilgrims to the Holy Land. While some European rulers, such as Sigurd I Magnusson of Norway (ca. 1090-1130), eagerly sought fragments of the crusader relic of the Wood, it seems that in the Latin West relics of the Wood from Constantinople were still preferred.[20]

This state of affairs was not to last long. In 1187, Crusader Jerusalem's relic of the Cross was captured by Saladin at the Battle of Hattin, and shortly thereafter vanished from history.[21] Furthermore, in 1204, the armies of the Fourth Crusade sacked Constantinople. Relics of great antiquity, including the Wood of the Cross, were scattered throughout the palaces and cathedrals of the Latin West. Constantinople's Greek rulers, upon recapturing the city in 1261, appear to have followed the example of the crusaders in the Holy Land in replenishing its famed supply of relics, which they used as diplomatic gifts in their attempts to win allies in their struggle with the Ottoman Turks.[22] By the fifteenth century, such practices had caused a relic with a Byzantine provenance to be viewed with suspicion.[23]

Unlike Jerusalem and Constantinople, however, Rome does not appear to have obtained a

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[18] Albert of Aachen, *Historia Ierosolimitana: History of the Journey to Jerusalem*, trans. and ed. S. Edgington, VI.38, pp. 450-453; *Raymond d'Aguilers, Historia francorum qui ceperint Jerusalem*, trans. J. Hill and L. Hill (Philadelphia, 1968), p. 154.

[19] Peter the Deacon, *Liber de locis sanctis*, ed. R. Weber, *CCSL* 175 (2 vols, Turnhout, 1965), p. 93. Cf. *Itinerarium Egeriae* 37.1-4, eds A. Francheschini, R. Weber, *CCSL* 175 (2 vols, Turnhout, 1965), vol. 1, pp. 37-90: 37.1-4, pp. 80-81. The Byzantine tradition of carrying relics of the Wood into battle is first recorded by the early seventh century: see below, n. 47.

[20] Snorri Sturluson, *Heimskringla*, ed. & tr. E. Monsen , tr. A. H. Smith, *Heimskringla, Or The Lives of the Norse Kings* (New York 1990), p. 612. In 1118, King Henry I of England requested relics of the True Cross from Constantinople, not Jerusalem : see the *Aldgate Chronicle*, London Guildhall MS 122, IV, fol. 16.

[21] Jacques de Vitry, ed. R. Huygens, *Les Lettres de Jacques de Vitry (1160/1170-1240), évêque de Saint-Jean d'Acre* (Leiden, 1960), p. 124-125.

[22] See G. Majeska, *Russian Travelers to Constantinople in the Fourteenth and Fifteenth Centuries* (Washington, 1984).

[23] H. Klein, 'Eastern Objects, Western Desires: Relics and Reliquaries between Byzantium and the West', *Dumbarton Oaks Papers* 58 (2004), pp. 283-314, 312-314.

major, authoritative relic of the Wood of the Cross.[24] The earliest clear evidence for the cult of the Wood dates to the later fifth century. Pope Hilarus (461-468) and his successors had a modest supply of the relic with which they were able to found chapels to the Holy Cross within the Lateran Cathedral and St Peter's Basilica.[25] These seem to have consisted of small fragments: when Pope Gregory the Great (590–604) chose to distribute relics of the Wood, he was able to provide only tiny splinters, usually packed alongside other relics. Avitus, Bishop of Vienne (494–518) makes clear that such relics did not have the same appeal as the Jerusalem Wood: he acknowledges that while the Pope then possessed a fragment of the Wood, it was preferable to request such relics not from Rome but directly from Jerusalem, so as to 'free us from any hesitation and doubt'.[26] A commemoration in early May of the Finding of the Cross was established in Naples after the translation into Latin of the *Acta Cyriaci* in that city during the late sixth century, with some churches in Rome adopting this feast in the early seventh century.[27] However, when Pope Sergius I (687–701) rediscovered a small relic of the Wood within the treasury of St Peter's Basilica, he chose to follow Jerusalem and Constantinople in instituting the Feast of the Exaltation of the Cross on 14 September.[28]

The popes of Rome and other rulers in the Latin West continued to seek and gratefully accept relics of the Wood from Jerusalem and Constantinople throughout the Middle Ages.[29]

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[24] The legend recounted in the *Liber Pontificalis*, in which Constantine presented to Rome's Sessorian basilica (Santa Croce in Gerusalemme) a portion of the True Cross mounted in gold and gems, does not seem to have made a noticeable impression on other sources from the period and is considered by scholars as probably anachronistic. *Liber Pontificalis*, trans. and ed. L. Duchesne, *Le Liber Pontificalis. Texte, introduction et commentaire* (2 vols, Paris, 1886, 1892), vol. 1, XXXIV, p.179. J.W. Drijvers, 'Helena Augusta: the Cross and the Myth: some new reflections', in *Millennium. Yearbook on the Culture and History of the First Millennium C.E.* 8 (2011), pp. 125-174, pp. 144-146.

[25] *Liber Pontificalis*, vol. 1, XLVIII, p. 242; *Liber Pontificalis*, vol.1, LIII, p. 261.

[26] Avitus of Vienne, *Epistula* XVIII, *PL* LIX, col. 236. Avitus, *Epistula* XXIII, coll. 239-240 expresses his thanks to the Patriarch of Jerusalem.

[27] E. Ó Carragáin, 'Interactions between liturgy and politics in Old Saint Peter's, 670-741: John the Archcantor, Sergius I and Gregory III', in eds. R. McKitterick, J. Osborne, C.M. Richardson and J. Story, *Old Saint Peter's, Rome* (Cambridge, 2013), pp. 177-189: p. 186

[28] *Liber Pontificalis*, vol. 1, p. 374. The gemmed cross in which it was found, now lost, it believed to be that found in the early twentieth century inside a silver Carolingian casket within the altar of the Chapel of St Laurence, containing a modest fragment of the Wood inside a central cavity, filled with balm. See E. Thunø, *Image and Relic: Mediating the Sacred in Early Medieval Rome* (Rome, 2002), pp. 17-21. R.M. Jensen, *The Cross: History, Art and Controversy* (Cambridge MA, 2017), pp. 112-114.

[29] Cf. P. Riant, *Exuviae sacrae Constantinopolitanae* (2 vols, Geneva, 1877-1878), vol. 2, p. 56; A. Potthast, *Regesta Pontificum inde ab anno post Christum natum MCXCVIII ad annum MCCCIV* (2 vols, Berlin, 1874- 75), vol. 1, p. 199, no. 2318. Examples in Italy include the staurotheque of Emperor Nicephorus II Phocas (963-969) at the church of S. Francesco in Cortona, the Byzantine triptych (late tenth-early eleventh century) in the Museo Diocesano of Monopoli, and the Byzantine staurotheque (eleventh or twelfth century) at the Abbey of Nonantola.

Rome's gifts of the Wood continued to be rare and consist of small fragments until Pope Urban II (1088-1099) began to dispense relics of the Wood on a far vaster scale than previously, consecrating altars across France as he galvanised support for the First Crusade. In spite of the Schism between the churches of Rome and Constantinople in 1054, Constantinople has been suggested as a plausible source.[30] This theory seems to be supported by the date and origin of the eleventh-century byzantine reliquary of the Wood at Holy Cross Abbey in Poitiers, given Urban II's passage through the area in 1096, when he dedicated the nearby church of St Jean de Montierneuf.[31] If Constantinople supplied Urban with relics and reliquaries as part of a concerted strategy, this would add weight to Runciman's view that the Byzantine Empire played an important role in the launching of the First Crusade.[32] A scientific study of the date, species and origin of relics of the Wood distributed by Urban II may help answer this important question.

Following the Schism and the reputed discovery of a rival relic of the Wood in crusader Jerusalem, a number of traditions began to appear in written sources that gave antiquity and authority to Rome's cult of the Wood of the Cross, allowing the city to gradually rival Constantinople (and its title of New Jerusalem) and crusader Jerusalem. The earliest clear reference to Helena having brought a relic of the Wood to Rome dates from around the year 1100, and relates to the city's Lateran cathedral.[33] Meanwhile, a seal of Cardinal Gerardo Caccianemici, the future Pope Lucius II (1144–1145), was found on the casket of the *Titulus Crucis* relic concealed in a wall of the Roman church of Santa Croce in Gerusalemme.[34] The tradition that Helena had deposited relics of the Wood at Santa Croce appears for the first time in the fifteenth century, and in 1492. By this time, as the last of the great patriarchal sees surviving in Christendom, Rome's tradition for possessing and venerating relics of the Wood of the Cross had become the most authoritative.

Material Context

The written sources reveal that Constantinople possessed its own major relic of the Wood from 565 and all of the major relics of the Wood from 630 until its sack by crusaders in 1204. Reliquaries

[30] P. Frankopan, *The First Crusade: The Call from the East* (Cambridge MA, 2012), p. 106.
[31] The authors would like to thank Fr. Patrice Gourrier (Poitiers) for his leading role in the development of this hypothesis (personal conversation).
[32] S. Runciman, *A History of the Crusades*, 3 vols. (Cambridge, 1951-4), vol. I, *passim.*
[33] Drijvers, *Helena Augusta*, p. 145.
[34] S. Infessura, *Diario della città di Roma di Stefano Infessura scribasenato*, ed. O. Tommasini (Rome, 1890), p. 270.

produced for the imperial elite at Constantinople could therefore make a far more lavish use of the Wood than those elsewhere and were particularly prized. Byzantine craftsmen established a number of major reliquary forms for the Wood, which would be acquired or imitated by Western craftsmen. By examining these caskets, one may gain a better understanding of their contents' history.

Traditionally, the Wood of the Cross was kept in a decorative casket. In Jerusalem, this is described as being of gold and silver, or merely of silver.[35] In Apamea, the relic of the Wood was stored in a wooden chest, adorned with gold and gems, while at Constantinople, the Apamea relic was exposed inside a golden, gemmed box. Later, all major relics of the Wood were exposed at Constantinople in a wooden casket, inside an ornate chest.[36] By the ninth century, these types of *theke* (a Greek word, meaning chest or casket) seem to have inspired a more formalised type of Byzantine reliquary used for relics of the Wood, known as a *staurotheke* (tr. cross casket).[37]

According to the *Liber Pontificalis*, compiled in the sixth century, the emperor Constantine ordered the erection of golden, gem-studded crosses at the basilicas of St Peter and of St Paul in Rome and possibly at Jerusalem, after his vision of a radiant cross in the sky before his victory outside Rome in 312.[38] These did not contain relics.[39] A golden cross, studded with gems, appears as a two-dimensional decorative motif in mosaics, paintings and engravings. Known as the *crux gemmata*, this form was developed under Constantine to serve as an object for imperial devotion, expressing the sanctity of the Cross in material form before the Wood of the Cross was discovered.[40] A tradition in Byzantine coronations, dating back to at least 393, also involved the use of a jewelled cross, kept in the imperial palace chapel of St Stephen, identified by scholars as

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[35] Gold and silver: *Itinerarium Egeriae*, 37.1-4, pp. 80-81, silver: see note **Error! Bookmark not defined.**.
[36] *Procopius, The Persian War*, II.11, pp. 354-7; Adomnanus, *De locis sanctis* ed. L. Bieler, *CCSL* 175 (Turnhout, 1965), III.3, pp. 228-229.
[37] A sixth-century source relates that Constantine gave a relic of the Wood to the bishop of Constantinople inside a gold *theke* (Alexander the Monk, *Historiographia : Historicum encomium de inventione pretiosae et vivificae crucis*, *PG* 87.3, coll. 4075-88 : 4080-4081). In the Latin West, a cuboid form was also used for portable altars and altar stones from the tenth century. some of which contained relics of the Wood (e.g. the portable altar of Countess Gertrude, Cleveland Art Museum (USA): Ottonian, ca. 1045). By the 13th c., relics of the Wood could be enclosed in reliquary crowns, such as the Couronne de Liège, now in the Paris Louvre (Liège, 1250-1275). Neither form of reliquary was associated with the Wood of the Cross in particular. See G. Kazan, 'Entre l'histoire et la science, Le bois de la Croix après l'an mil', *Bulletin trimestriel du Trésor de Liège* 57 (déc. 2018), pp. 5-17 : pp. 11, 17 n. 53.
[38] *Liber Pontificalis*, vol.1, XXXIV, pp. 176, 178. Cf. n. 24.
[39] Drijvers, *Helena Augusta*, p. 147.
[40] Cf. Eusebius, *Vita Constantini*, III.49, p. 98; *Liber Pontificalis*, vol.1, XXXIV, pp. 176, 178.

the Cross of Constantine.[41]

By the sixth century, this form was regularly adapted to serve as a reliquary for the Empire's secular and religious elite in Constantinople, Jerusalem and Rome. By the first half of the sixth century, a jewelled processional cross matching the description of the Cross of Constantine was paraded through Constantinople on feast days and said to contain a fragment of the Jerusalem Wood.[42] In Rome, whereas Pope Hilarus (461-468) had offered a separate gold, gemmed liturgical cross to his chapel of the Holy Cross, he placed the relic in a *confessio* beneath the altar. However, a few decades later, Pope Symmachus (498–514) chose instead to place his relic inside a *crux gemmata*.[43] The Church of Jerusalem, meanwhile, offered St Simeon the Younger (521–597) a relic of the Wood, enclosed inside a golden cross, which also contained fragments of Golgotha and the Holy Sepulchre.[44] Imperial reliquaries of the Wood issued by Justin II (565–574) from Constantinople adopted the form of a *crux gemmata*, such as the famous *Crux Vaticana*, which he offered to the Church of Rome during his reign, and the fragment of the Wood donated to Radegunda in Poitiers in 569.[45] The use of *crux gemmata* reliquaries as magnificent public gifts was soon adopted by the Church of Rome and imperial elite.[46] Meanwhile, the imperial battle insignia, which under Constantine had been transformed into the cruciform Chrismon, is known to have been adapted to include relics of the Wood of the Cross by the reign of the emperor Maurice (582–602).[47]

During the eras of Iconoclasm (726–787 and 814–842), the Cross gained special importance in Byzantine art, replacing many holy figural images. During this period, the earliest examples of reliquaries using Byzantine cloisonné glass enamel technique were produced.[48] These feature figural decoration and are preserved in the Latin West, suggesting they were produced or

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[41] J.A. Cotsonis, *Byzantine Figural Processional Crosses* (Washington D.C., 1994), pp. 8-11. H. Klein, 'Constantine, Helena, and the cult of the True Cross in Constantinople', in J. Durand, B. Flusin (eds.), *Byzance et les reliques du Christ* (Paris, 2004), pp. 31-59: p. 36.
[42] Theodore Lector, *Theodoros Anagnostes Kirchengeschichte*, ed. G.C. Hansen, *GCS* 3 (Berlin 1971), p. 13.
[43] See n. 25.
[44] *Vie grecque de sainte Marthe mère de Syméon*, LVIII-LIX, in P. Van de Ven (trans. and ed.), *La vie ancienne de S. Syméon le Jeune, 521-592* (2 vols, Brussels, 1962-1970), vol. 2, pp. 296-312: 302-303.
[45] Baudonivia Pictaviensis, *Vita s. Radegundis*, II. 16, in *Scriptores rerum Merovingicarum*, ed. B. Krusch (7 vols, Hannover, 1884-1920) vol. 2, p. 388.
[46] *S. Gregorii Magni Registrum epistularum*, ed. D.L. Norberg, *CCSL* 140-140A, (2 vols, Turnhout, 1982), *Epistula* IX, vol. 2, p. 810; *Vie de Théodore de Sykéon* trans. and ed. A.-J. Festugière (2 vols, Brussels, 1970), vol. 1, CXXVIII.
[47] Theophylact Simocatta, *Historiae*, ed. C. de Boor, rev. P. Wirth (Stuttgart, 1972), pp. 73-74.
[48] Examples include the ninth-century Beresford Hope Cross pendant (Victoria & Albert Museum, London), the cruciform reliquary casket of Pope Paschal I (817–24) in (Musei Vaticani, Rome) and the early ninth-century, oblong Fieschi Morgan staurotheke (Metropolitan Museum of New York).

brought by those fleeing Byzantine Iconoclasm. Reliquaries decorated with enamel panels remained popular at Constantinople into the twelfth century.

Byzantine artisans continued to produce major reliquaries for the Wood in the style of the *crux gemmata* and the *staurotheke*, sometimes in combination. The Limburg Staurotheke contains a double-armed cross, inscribed with the names of the Byzantine emperors Constantine VII and Romanos II, who reigned jointly from 945 to 959. It contains seven fragments of the Wood, which measure 2 mm to 4 mm thick and 17 mm wide, the largest being 21 cm long, set on top of a wood core, encased in gilded silver. At some point between 963 and 985, this relic was provided with a precious *staurotheke* by Basil, an illegitimate son of Romanos I. Later, at the end of the tenth century, another major form of reliquary for the Wood, the *triptych*, emerged in Byzantine art by around the late tenth century.[49]

The above reliquary forms could also be produced in miniature for the purpose of private devotion.[50] Furthermore, relics of the Wood could be incorporated into personal objects, such as rings and *encolpia* (pectoral pendants with a hollow cavity for relics).[51] A number of examples of various shapes, many cruciform, dating from the fifth to seventh centuries, survive from Constantinople, Rome and Jerusalem.[52] Personal reliquaries of this type could also serve as diplomatic gifts.[53] During the ninth century, *encolpion*-type reliquaries of the Wood continued to be employed at the highest level of society, using the costliest materials. The use of large crystals as settings for relics of the Wood seems to have been popular in the Byzantine Empire, with

[49] D. Krueger, 'The religion of relics in Late Antiquity and Byzantium' in ed. M. Bagnoli, *Treasures of Heaven: saints, relics and devotion in medieval Europe* (London, 2010), pp. 5-7: pp. 12-13.
[50] For a miniature, staurotheque-type silver reliquary from Jabulkovo, Bulgaria (Constantinople or Asia Minor, AD 350–400), see A. Minchev, *Early Christian reliquaries from Bulgaria (4th-6th century AD)* (Varna, 2003), p. 37, no. 25.
[51] For a ring containing a relic of the cross, see Gregory of Nyssa, *Vita Macrinae*, *PG* 46, coll. 960-1000: col. 989. For the use of *encolpia*, see John Chrysostom, *Contra Judaeos et Gentiles, quod Christus sit Deus*, IX, *PG* 48, col. 826.
[52] Dumbarton Oaks (Inv. Nr. 53.12.22): M. Ross, *Catalogue of the Byzantine and Early Mediaeval Antiquities in the Dumbarton Oaks Collection* (3 vols, Washington, D.C., 1962-1972), vol. 2, p. 23, no. 17 (Constantinople); Musei Vaticani (Inv. Nr. M.S. 1101): eds. M. Brandt, A. Effenberger, *Byzanz. Die Macht der Bilder. Ausst. Hildesheim, Dom-Museum* (Hildesheim, 1998), p. 31 (Rome); Israel Museum (Inv. Nr. IAA 1997-9004): Y. Israeli, D. Mevorah, *Cradle of Christianity. Weisbord Exhibition Pavilion, Spring 2000 - Winter 2001* (Jerusalem, 2000), p.140 (Jerusalem).
[53] *S. Gregorii Magni Registrum epistularum, Epistula* XIV,12, vol. 2, p. 1082-1083.

examples offered by Constantinople's patriarchs to the Church of Rome in 811 and 880[54] and by the Byzantine emperor Basil I to Louis II, King of the Eastern Franks and Holy Roman Emperor in 872.[55]

Byzantine reliquaries of the Wood that reached the Latin West could also be rehoused within larger Western reliquaries, which sometimes imitated their appearance.[56] Alternatively, Byzantine relics arriving in the West, or relics intended to be identified as such, could be rehoused inside completely new reliquaries.[57] Such works imitated not only Byzantine forms but also their fabric. For example, the use of large crystals on reliquaries and pendants was also imitated in the West from the ninth century.[58] From the twelfth to fourteenth centuries, craftsmen in the Latin West imitated Byzantine models more economically, using gilded copper and elegant Mosan or Limoges champlevé enamels.

Further to these major examples, the expansion of the cult of the Wood of the Cross beyond the elite ranks of society can be seen in the Byzantine East with the devotion to holy oil and wax sanctified by contact with the Cross. During the sixth and seventh centuries, pilgrims visiting the Wood in Jerusalem often collected liquid *eulogia* (tr. 'blessings') from the Wood in *ampullae* made of base materials such as tin or lead, or even of terracotta. From the seventh century, the Wood of the Cross was venerated in the imperial capital, where it was said to exude a healing balm.[59] From the ninth to the twelfth century, a series of relatively affordable bronze, cruciform *encolpia*, was mass-produced at Constantinople: these held sanctified wax or balm, or even small pieces of the Wood or other relics.[60] The material context of relics of the Wood can therefore be useful for indicating their use and the chronology of their appearance in the material record.

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[54] V Grumel, J. Darrouzès, V. Laurent, *Regestes des Actes du Patriarcat de Constantinople* (7 vols, Leuven, 1972-1991), vols. 2-3. *Les Actes des Patriarches II-III: Les Regestes de 715 à 1206*: pp. 39-40, no. 382 and p.147, no. 554. Text reproduced in Klein, *Eastern Objects*, p. 292, n. 52 and n. 54.

[55] Frolow, *La relique*, p.86.

[56] Produced between 1154 and 1158, the Stavelot Triptych (J.P. Morgan Collection, New York), holds two smaller Byzantine triptychs and is the earliest known reliquary of this form made in the Latin West. See B. Baert, *A Heritage of Holy Wood: The Legend of the True Cross in Text and Image* (Leiden, 2004), pp. 80-82.

[57] E.g. the *Triptyque de la Sainte* Croix, produced 1160–1170 (Grand Curtius Museum, Liège). See Klein, *Eastern objects*, 290-291 ; Kazan, 'Le bois de la Croix après l'an mil', pp. 13-15.

[58] See *Annales Fuldenses*, ed. G. H. Pertz, *MGH*, SS 1 (Hannover, 1826; repr. 1976), p. 384. Klein, *Eastern Objects*, p. 293, suggests that the so-called Talisman of Charlemagne, sometimes identified as the Byzantine reliquary of the Wood given by Emperor Basil I in 872, may in fact be a Western imitation of an Eastern product. Scientific analyses may help to resolve this issue.

[59] Adomnanus, *De locis sanctis*, III.3, pp. 228-229.

[60] B. Pitarakis, *Les croix-reliquaires pectorales byzantines en bronze* (Paris, 2006), pp. 109-119, p. 203.

Morphology

Another method for assessing relics of the Wood is to investigate their physical properties directly, beginning with their size and shape. According to a leading scholar on the history of the relic, J.W. Drijvers, it seems probable that, during the excavation and construction of Jerusalem's cathedral buildings, 'It is not likely that three complete crosses were found, as the later legends tell us, but rather a small chunk or chunks of wood.'[61] This is supported by the account of the pilgrim Egeria, who witnessed the display of the relic in ca. 384 and describes it as small enough to be and displayed on a single table (*mensa*) along with the *Titulus*. The Wood would be held down by the bishop, with one hand placed at either extremity.[62] This would suggest that the main relic of the Wood discovered in Jerusalem during the reign of Constantine was a maximum of 150 cm long, but probably no longer than approximately 50 cm, or the distance between a person's hands when held comfortably apart at shoulder width. The Apamea relic is described as measuring one cubit in length. While a range of different cubits had been established by this time, it seems most probable that the length of this was between 44 cm and 47 cm. This size would easily fit with Egeria's description of the Wood.

In the Byzantine world, where icons were a subject of special veneration, the very dimensions of holy objects were sacred. Given that even the longest fragments of the relic preserved at Limburg are only a few millimetres thick and considering Paulinus of Nola's account of the size of the Jerusalem Wood remaining unchanged despite the frequent removal of fragments, thus maintaining its frontal appearance, we would conclude that the Wood was divided lengthways in thin slices.[63] Given their apparently similar sizes, just as the Apamea relic was divided lengthways in 565, that this relic had itself been removed previously from Jerusalem's Wood of the Cross in the same way, or was intended to resemble its appearance.[64]

Adomnan's account of the pilgrimage of Arculf recounts that three major pieces of the Wood were in Constantinople by ca. 680. These, we presume, consisted of the Jerusalem relic

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[61] Drijvers, *Helena Augusta*, p. 28.
[62] *Itinerarium Egeriae* 37.2, pp. 80-81.
[63] Paulinus of Nola, *Epistulae*, XXXI.6, p. 274.
[64] It is impossible to equate the Apamea relic with the *Titulus*, rather than of the Wood of the Cross, since the *Titulus* is recorded by the Piacenza Pilgrim as still being present in Jerusalem in ca. 570. Antoninus of Piacenza, *Itinerarium* XX, trans. J. Wilkinson, Jerusalem Pilgrims before the Crusades (rev. ed., Warminster, 2002), pp. 139. Only one source, Rufinus of Aquileia, *Historia Ecclesiastica*, I.8, *PL* XXI, coll. 476-478, mentions in ca. 397 the existence of more than one silver reliquary of the Wood in Jerusalem. This suggests that a second piece may have existed in the fourth century, either a part of the main relic or with a separate origin, which may have been that taken to Apamea.

recovered from Persia in 628, and both parts of the divided Apamea section. Based on the evidence above, all three parts measured about one cubit in length. Adomnan describes the Wood relics laid out to form a cross: one piece representing the transverse beam, and another the main upright shaft. The passage indicates that only upon careful inspection could one observe that the latter had, in fact, been cut into two equal parts.[65] We would therefore identify these two portions of equal length with the Apamea relic, cut lengthwise, and the transverse with the Jerusalem relic. Adomnan notes that all three pieces were displayed inside the same elaborately decorated wooden casket and exposed for veneration on an altar that measured two cubits long by one cubit wide. If the box fitted the dimensions of this altar, it would have accommodated the longitudinal arrangement of the two parts of the Apamea relic, each a maximum of one cubit long, while allowing for a transverse beam, hypothetically identified here as the Jerusalem Wood, which would thus also to have measured a maximum of one cubit in length. This would support the hypotheses presented above.

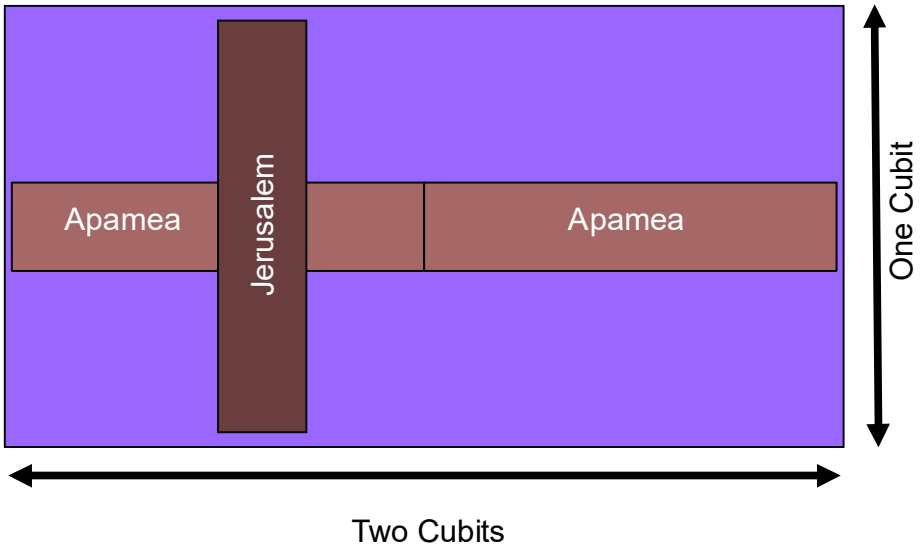

Figure 1. Proposed layout of major relics of the Wood at Constantinople in ca. 680.

These findings can be compared to the estimates for the total volume of the Cross and the major relics of its Wood by the nineteenth-century French scholar and architect Rohault de Fleury.

[65] Adomnanus, *De locis sanctis*, III.3, pp. 228-229 : "Sed et hoc non negligenter intuendum quod non duo, sed tria ibidem instar crucis habeantur brevia ligna, hoc est transversum lignum, et longum, incisum et in duas aequas divisum partes."

According to his calculations, at the time of the Crucifixion the upright beam would have measured approximately 480 cm in length, and the transverse at least 225 cm, the width and thickness of both shafts being about 16 cm, giving a total volume of approximately 180 million mm^3.[66] However, de Fleury calculated that existing relics of the Wood (as well as some lost examples known only from descriptions) amounted to less than 5 million mm^3. He tripled this figure to account for any remaining unknown fragments, thus reaching 15 million mm^3, a figure he deemed acceptable based on his estimated total volume of the Cross. If de Fleury's modest estimate of 16 cm for the original width and thickness of the beams of the Cross can be considered realistic, and if (as proposed above) the original length was a cubit of at most 47cm, then the maximum likely volume of the Jerusalem relic of the Wood would have been around 12 million mm^3. Interestingly, this would correspond approximately to de Fleury's estimate of the total volume of relics of the Wood in circulation, although based on their different wood species it is clear that many of these have a separate origin.

It therefore appears that the largest relics of the Wood issued by Byzantine emperors and the Jerusalem Church rarely approached 30 cm in total length or significantly exceeded 2cm in width or 4mm in thickness.[67] This would suggest that larger relics are less likely to have originated from the earliest known fragments of the Wood, held in Jerusalem and subsequently in Constantinople. Morphology is thus a valuable discriminator in the evaluation of relics of the Wood. Overall, it would also seem useful to record the volume of relics studied and maintain a running total for comparison with the estimated volume of the Wood discovered in the fourth century. This can be done using traditional methods, or with the assistance of 3D photography, laser scanning or CT imaging.

Species

According to the Sacred Tradition of the Eastern Orthodox Church, the True Cross was made from three different types of wood: cypress, pine and cedar. This is an allusion to decoration of the Temple of Jerusalem in the Book of Isaiah 60:13. This suggests a theological interpretation of the Wood's make-up, based on its interpretation as a New Testament type, intended as a mystical

[66] Rohault de Fleury, *Mémoire*, pp. 59, 71-74, 162-163
[67] E.g. the Cross of Constantine VII and Romanos II, now in Limburg Cathedral, mentioned above.

reflection of a prototype in the Hebrew Bible. The tradition appears to have been established around AD 400, when it is repeated by John Chrysostom, Bishop of Constantinople, a man familiar with relics of the Wood, which he describes elsewhere.[68] While the separate species listed are all evergreen and coniferous, there appears to have been some difficulty in the interpretation of the Hebrew word תְּאַשּׁוּר, with some translations preferring cedar, others box-wood, although the former seems more likely. By the time of the venerable Bede (672-735), this difficulty had been resolved after a fashion by increasing the list of trees to four different species: Cypress, Pine, Cedar and Boxwood.[69] Bede had access to the accounts of pilgrims visiting Byzantine and Roman relics of the Cross, as well as a relic of the Wood of his own. He goes further by specifying which of these woods were used to make the different parts of the Cross: the main upright beam of cypress, the transverse of cedar, and the upper end of pine, with boxwood included, perhaps cautiously, not as the fabric of the actual Cross, but merely as the material used for the *Titulus*.

Based on the evidence above, however, it seems likely that only one piece of the Wood was discovered in Jerusalem. Several sources identify a single species. The Piacenza Pilgrim, who viewed the Jerusalem relic of the Wood himself, describes it as coming from a nut tree.[70] Justus Lipsius in the sixteenth century concluded that the Wood was of a single species – oak - since this this tree was common in Judaea, and its wood was strong and appropriate for the task.[71] Jacob Gretser meanwhile, in his *De Cruce Christi* (1598), examined numerous relics of the Wood, admitted that he could not clearly identify their species, but was certain that this was not oak. Rohault de Fleury, meanwhile, concluded that the majority of the relics of the Wood he examined were coniferous, mainly consisting of pine or perhaps of cedar.[72] He based this opinion on a study of four relics of the Wood using the most advanced scientific analysis for this available in his day: examination by microscope. The relics in question came from celebrated European church collections: Santa Croce in Rome, Notre Dame in Paris, and the Cathedrals of Pisa and Florence. In each case, the species was determined to be pine. A fragment of olive wood, fixed by a Roman nail to the heel-bone of the Crucified Man from Giv'at ha-Mivtar, suggested to the anatomist Nicu

[68] John Chrysostom, *De adoratio pretiosae crucis*, 3, *PG* 52, coll. 835-840: 839.
[69] Beda Venerabilis, *De Cruce Domini*, *PL* XCIV, coll. 555-556.
[70] Antoninus of Piacenza, *Itinerarium* XX, pp. 139.
[71] Justus Lipsius, *De Cruce* (Antwerp, 1594), III.13, p. 157.
[72] Rohault de Fleury, *Mémoire*, p. 62.

Haas that olive wood was indeed used for crucifixion in first-century Jerusalem.[73] However, Zias and Sekeles's subsequent study shows that this merely consisted of a small block of olive wood used to hold a crucifixion nail in place, broadening the head so that it could not slip out.[74]

The physical origins of a relic of the Cross can today be explored scientifically in a number of different ways. Wood species are commonly and inexpensively identified using macroscopic and microscopic analyses. This usually involves observations of a wood sample being taken in the transverse, radial and tangential planes, which can require the removal of small sections, allowing the structure of the wood to be more clearly visible. An alternative to any invasive study is the use of Computed Tomography (CT) Imaging, which can provide sufficiently clear images of the internal structure of a wood fragment without causing any damage to the object. For an even more precise species and geographical origin, wood DNA analysis is a growing area of research.

By identifying and recording the species of tree from which relics of the Wood of the Cross derive, it is possible to further classify and compare the main relics of the Wood of the Cross, revealing possible connections between relics of the same wood species and verifying or refuting the ancient traditions that identify their origins. Based on the present study, relics originating from the Jerusalem Wood should all be of the same wood species, although if the Apamea relic had a separate origin, then Byzantine relics exalted in Hagia Sophia may be of two separate species. The upper part relic of the Wood in Poitiers, which a tradition that survives among the community of nuns founded by Radegunda identifies as the relic received from Justin II, is thought to be oak, while the Limburg relics have been identified as sycamore wood. Further research in this area, within the context of the above conclusions, offers the prospect of valuable advances in our understanding of the history of this relic, especially before its massive expansion in the eleventh century.

Surface Analysis

In the Byzantine Empire, the veneration of Christian relics often involved the use of holy oil or wax. Gifts of holy oil or wine could be poured as a libation into the reliquary or principal lamp at

[73] N. Haas, 'Anthropological Observations on the Skeletal Remains from Giv'at ha-Mivtar', *IEJ* 20 (1970), pp. 38-59: p. 56.
[74] Zias, Sekeles, 'Crucified Man', p. 24.

a relic shrine, while liquid or unguents could be taken by visitors as secondary relics, imbued with holy healing properties. In the case of the True Cross, the account of a pilgrim to Jerusalem from the sixth century recounts the application of *ampullae* (small flasks) of oil being touched to the relic, with their contents boiling over as a sign that they had absorbed the relic's holy powers.[75] At Constantinople, the casket in which the Wood of the Cross was kept in ca. 680 was filled with perfumed oil.[76] Adomnan mentions that this emanated from the knots in the wood of all three fragments, and had miraculous healing properties. Examples of relics of the Wood, obtained from Jerusalem and kept for personal devotion at Constantinople in the early fifth century, describe these being packed in wax and used for anointing by the owner.[77]

In view of this information, importance must be given to the composition of surface materials present on relics of the Wood of the Cross. For the characterisation of substances found on the surfaces of such relics, a combination of three different analytical methods is used to analyse samples. First, FTIR (Fourier Transform Infrared Spectroscopy) can be used to identify a broad range of organic and inorganic materials. This requires only very small samples (a few micrograms) and is non-destructive. The next process is Scanning Electron Microscopy with Energy-Dispersive X-ray analysis (SEM–EDX), used to explore the microscopic structure and the elemental composition of inorganic materials. Finally, Gas Chromatography / Mass Spectrometry (GC/MS) enables molecules present in complex organic materials such as fats and resins to be characterised, in order to identify the nature of the organic substances present on the surface of a relic.

By identifying the types of waxes and oils which came into contact with relics of the Wood, it should be possible not only to understand the mysterious origin of these holy substances, but also to investigate any known pharmacological activity that these may have, shedding new light on the miraculous healing that played an important part in the spread of early Christianity. Furthermore, it should be possible to determine relics from the same tradition (e.g. Constantinople), regardless of their date and species.

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[75] Antoninus of Piacenza, *Itinerarium* XX, pp. 139.
[76] Adomnanus, *De locis sanctis*, III.3, pp. 228-229.
[77] John of Beth Rufina (John Rufus), *Life of Peter the Iberian*, in trans. and ed. C.B. Horn, R.R. Phenix, *The Lives of Peter the Iberian, Theodosius of Jerusalem, and the Monk Romanus by John Rufus (Bishop of Maiuma)*, (Atlanta, 2008), LVII, p.83.

Isotope analysis for scientific dating and indication of environment

Where fragments are large enough, or where a characteristic tree-ring pattern can be identified that relates to a particular climactic event, dendrochronology can be used to provide an approximate or precise date depending on the number of tree rings present, with CT scanning providing the opportunity to explore tree lines non-invasively. However, given the small size of many relics of the Wood of the Cross, this cannot at present be employed consistently as a reliable method. Instead, AMS (accelerator mass spectrometry) radiocarbon (^{14}C) dating allows even small wood fragments to be grouped by age. Radiocarbon dating by AMS requires only a microscopic sample of wood (about 5-20 micrograms) to date a relic of the Cross, sometimes to within a few decades, leaving little trace. This provided our project with the opportunity to date relics of the True Cross itself for the very first time. Given the longevity of trees, the wood anatomy of a relic should be examined to inform decisions concerning sampling and radiocarbon dating.[78] Further to this, stable oxygen 13 ($\delta^{18}O$) and carbon 13 ($\delta^{13}C$) isotope analysis can provide data relevant to broader contemporary environment and climate, whilst the isotopic ratio of radiogenic strontium ($\delta^{87}Sr/\ \delta^{86}Sr$) can be used to aid in identifying geographic provenance.[79]

When this study began, only the *Titulus Crucis* from the Basilica of Santa Croce in Gerusalemme in Rome had been scientifically dated in this way.[80] This consists of an irregularly-shaped tablet made of walnut wood, approximately 26 cm × 14 cm × 4 cm in size, weighing about 687 g. The object was found by scientists to be a piece of walnut wood, with a radiocarbon date ranging from between AD 980 to 1146, which would fit with the relic's first recorded mention in ca. 1300, and with the evidence from its medieval seal (from ca. 1140) mentioned earlier. The Byzantine relic of the *Titulus*, discovered with the Wood in the fourth century and described by Egeria in 384, seems to have disappeared after its last mention by the Piacenza Pilgrim in ca. 570. Based on the radiocarbon date and the lack of other possible sources, it would appear that, if the object was not created as a copy of the original, a hypothesis considered by Bella and Azzi, the

[78] For the radiocarbon dating of wood, see N. Palincaș, 'Radiocarbon dating in archaeology: Interdisciplinary aspects and consequences (an overview)', *AIP Conference Proceedings 1852*, 060006 (2017); https://doi.org/10.1063/1.4984870.

[79] S. Rich et al., 'Provenancing East Mediterranean cedar wood with the 87Sr/86Sr strontium isotope ratio', *Archaeological and Anthropological Sciences* 8/3 (2015), pp. 467–476.

[80] F. Bella, C. Azzi, 'C14 Dating of the Titulus Crucis', *Radiocarbon* 44/3 (2002), pp. 685–689. Radiocarbon age = 1020 ± 30 BP. Calendar age = A.D. 996–1023 (1 σ) A.D. 980–1146 (2 σ), calculated using the INTCAL98 program (M. Stuiver et al., 'IntCal98 radiocarbon age calibration, 24,000–0 cal BP.' *Radiocarbon* 40/3 (1998), pp. 1041–83).

only known source would have been the *Titulus* exposed in Crusader Jerusalem.

Radiocarbon dating has also been used to date another holy cross, the wooden core of the Cruz de la Victoria, not a relic of the Wood but an ancient processional cross preserved in the Cathedral of San Salvador de Oviedo.[81] According to tradition, this simple oak cross, measuring 92cm by 72cm, was carried into battle at Covadonga in 722 against the Muslim army of al-Andalus by King Pelagius of Asturias, and was later encased in gold and decorated with precious stones by King Alfonso III in 908, becoming the emblem of the Kingdom of Asturias. However, the results demonstrated that the wooden core is in fact contemporary with its ornate casing, and dates to the early tenth century. The ninth-century Cruz de los Angeles, also in Oviedo Cathedral, is a not regarded as a relic of the Wood but may be considered a relic, said to have been mysteriously crafted by angels for Alfonso II of Asturias (reigned 783 and 791– 842). It is made from two 46cm-long pieces of wild cherry wood.[82] Both artefacts appear to be royal processional crosses donated to the cathedral, each containing small cavities for precious relics, with the Cruz de la Victoria's central compartment presumably intended for a tiny piece of the True Cross.

These examples suggest that ancient wooden liturgical or processional crosses, which presence the Holy Cross of the Crucifixion in the manner of icons, could, like relics, be considered sacred. In the case of the Cruz de la Victoria, their wooden core could later be identified with an earlier, revered object. This may explain the origin of some putative relics of the Wood, such as those that, according to this study, are longer than 47cm, significantly wider than 2cm or thicker than 4mm. The Cross of San Toribio preserved in Liébana, for example, is the largest known relic of the Wood of the Cross. It measures 63.5 cm in length and 39.3 cm across, and is 3.8 cm thick. Its dimensions correspond more closely with those of processional crosses, such as those in Oviedo, than with those of early relics the Wood described above. In 1958, a scientific investigation carried out by Madrid's Forestry Research Institute, concluded that the relic is of a Mediterranean Cypress wood (Cupressus sempervirens), and could be older than 2,000 years. This tree is common in Palestine and, as noted already, its wood is considered by the earliest sources to have been formed part of the True Cross, specified by the seventh century as the Cross's upper extremity (although tradition relates that the Liébana relic comes in fact from the left arm of the

[81] 'Cruz de la Victoria', in ed. C. García de Castro Valdés, *Signum Salutis, Cruces de orfebrería de los siglos V al XII* (Oviedo, 2008), pp. 157-165; A. García Álvarez-Busto, I. Muñiz López, *Arqueología Medieval en Asturias* (Gijon, 2010), p. 49.
[82] J.D. Dodds, B.F. Reilly, J.W. Williams, *The Art of Medieval Spain, A.D. 500-1200* (New York, 1993), pp. 146-148.

Cross). The relic is also said to have been brought to Spain in 443 from the Holy Sepulchre in Jerusalem after the Holy Land was threatened by Persian invasion. However, although Sassanian Persia and Byzantium were regularly in conflict, Jerusalem remained untouched by Persians until its capture, along with the Wood, in 614. The relic is preserved within a seventeenth-century reliquary and the first written reference to its presence appears in an inventory from 1316. Based on the criteria presented above and compared to evidence elsewhere, the relic's historical background, material context, and morphology do not suggest a date earlier than the era of First Crusade. However, such a conclusion must remain hypothetical. Unless the Cross is once again studied scientifically and radiocarbon dating is carried out, its precise chronology will remain a mystery.

Conclusion

This preliminary study has applied an interdisciplinary approach to propose a number of conclusions concerning the origins and history of relics of the Wood of the Cross and their use. It suggests that the original relic, found in Jerusalem by the mid-fourth century, probably consisted of a single piece of wood, a little under half a metre in length. Thin slices were taken from this to produce lesser relics, conferred as elite gifts. Its species is unknown, although it reputedly had the appearance of wood from a nut tree. From the mid-sixth century, Constantinople obtained from Apamea what appeared to be a large, possibly full-length slice of the Wood, said to have been removed from Jerusalem and began to issue relics of the Wood. From 630 until 1204, the Jerusalem relic of the Wood joined the Apamea Wood in Constantinople. Both were exposed for public veneration and soaked in sanctified balm. These relics were then gradually divided into numerous small, thin strips to allow the original relics to maintain their frontal appearance for as long as possible. Elsewhere, before the Crusades, even the holiest relics of the Wood generally consisted of small fragments, measuring rarely more than a few centimetres in length and a few millimetres in thickness.

Following the crusader capture of Jerusalem in 1099, an increasing number of places would claim to possess a part of the city's prestigious Wood of the Cross, along with the privilege of distributing fragments and producing reliquaries. The number of relics of the Wood in circulation appears to have increased, leading to an increasing number of relics of differing shapes, sizes and species.

The early cult of the Wood within the Eastern Roman Empire seems to have established an artistic and ritual context for its subsequent presentation and veneration. Before the Crusades, this context was predominantly influenced by Late Roman or Byzantine styles, both with regard to public and personal reliquary forms. Fragments of the Wood in Byzantine reliquaries, or reliquaries of Byzantine appearance, were popular in the Latin West (especially following Constantinople's capture by the Fourth Crusade in 1204), perhaps providing a sense of authenticity, given Constantinople's control of the major relics of the Wood for almost six centuries.. This reputation had been largely lost by the time of the city's final fall to the Ottomans in 1453, while by this time traditions had arisen in the Latin West that Rome had possessed holy relics of the Wood since the time of Constantine.

While our understanding of the Wood's historical and material background continues to be reviewed and developed, it has provided us with a number of criteria, such as the size, shape, species of Wood of the Cross and the form of its reliquaries, which can be used to create hypothetical assessments of relics of the Wood. In order to test these hypotheses, however, scientific analyses are essential. In addition to a diverse technical expertise, this also requires close collaboration with churches and museums, without whose support such research is not possible. Together, these methods now offer important new information concerning the origin of relics of the Wood of the Cross, as well as their role in our history.

Abbreviations used:
CCSL = Corpus Christianorum, Series Latina.
CSEL = Corpus Scriptorum Ecclesiasticorum Latinorum,
GCS = Die Griechischen Christlichen Schriftsteller.
MGH = Monumenta Germaniae Historica.
PG = J.-P. Migne, *Patrologiae Cursus Completus, Series Graeca*.
PL = J.-P. Migne, *Patrologiae Cursus Completus, Series Latina*.
SC = Sources Chrétiennes