2017

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John Peter Wild
Manchester University

Kerstin Droß-Krüpe
Kassel University

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John Peter Wild, Manchester University

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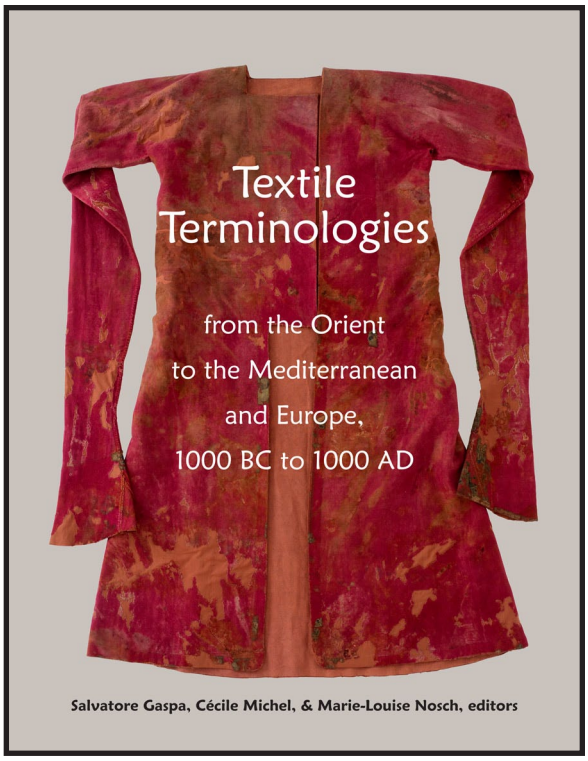
In *Textile Terminologies from the Orient to the Mediterranean and Europe, 1000 BC to 1000 AD,* ed. Salvatore Gaspa, Cécile Michel, & Marie-Louise Nosch (Lincoln, NE: Zea Books, 2017), pp. 301-320.

doi:10.13014/K2251GB2



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Ars polymita, *ars plumaria*: The Weaving Terminology of *Taqueté* and Tapestry

John Peter Wild and Kerstin Droß-Krüpe

In Roman Egypt papyrologists and archaeologists sometimes seem to inhabit two different, if parallel, worlds, each apparently unaware of the treasures to be found in the other.[1] This paper, however, is a co-operative venture between an ancient historian with papyrological interests – Kerstin Droß-Krüpe – and an archaeologist – John Peter Wild. In the research field of textiles we overlap, and we want to offer you insights from each of our worlds.

At some point in the later 2nd century AD an unnamed magnate in the territory of the Lingones in central Gaul dictated a will in which he stipulated that a number of his prized possessions should be cremated with him on his funeral pyre.[2] Among those listed are *vestes polymitae et plumariae*.[3] What do these two textile terms mean? And what did the textiles themselves look like? The images in Figures 1 and 2 are our provisional suggestions. The two items shown here are of wool – they are actually from Roman Egypt – and at first glance they look in decorative terms rather similar to one another;[4] but the textile in Figure 1 is in *taqueté – vestis polymita,* we argue – mechanically woven – while the piece in Figure 2 is in tapestry weave, *vestis plumaria*, and hand-woven.

The structures of the two weaves can be characterised as follows:

Tapestry weave, made famous by the Gobelin workshops in Paris, is essentially a mosaic in coloured wool yarns, constructed free-hand, and concealing the underlying warp.[5] The weaver has available on individual spools a selection of dyed yarns which he or she interlaces with the warp threads according to the requirements of the pattern. A distinctive feature of tapestry is the oblique lines or even vertical slits where weft yarns in different colours meet one another and turn back (Fig. 3). Across an area, an accomplished weaver can achieve the subtle, gradual, changes in colour visible in the highest-quality floor and wall-mosaics and in wall painting.

1. For a welcome recent exception see Palme & Zdiarsky 2012.
2. *CIL* XIII, 5708; Le Bohec 1991, 46 for dating; Le Bohec 2003. The inscription is only recorded in a 10th-century manuscript now in Basel.
3. The relevant part of the text as established by P. Sage *ap.* Le Bohec 2003, 354 reads: *volo autem omne instrumentum ... mecum cremari ... et vestis polymit(ae) et plumari[ae ?] ... quidquid reliquero.*
4. Fig.0.1: Wild & Wild 1998, 223, Fig. 10-1; Fig.0.2: Schrenk 2004, 447; compare Trilling 1982, 98 no. 108, Pl. 8 (*taqueté*) with *ibid*. 31 no.1, Pl. 1 (tapestry).
5. Seiler-Baldinger 1973, 44-48.

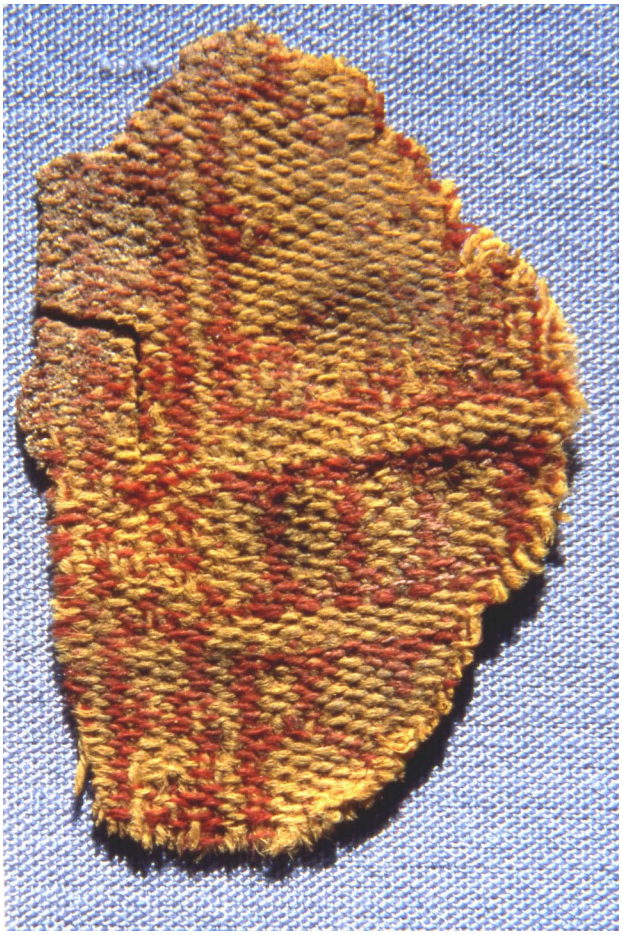

Fig. 1. Detail of a Late Roman wool textile in *taqueté* from the Roman port of Berenike on the Red Sea coast of Egypt (BE96 0227). On-site photo: J.P. Wild.

Fig. 2. Detail of a wool textile in tapestry weave from Egypt, now in the collection of the Abegg-Stiftung, Bern, showing a bunch of lotus flowers (Inv. Nr. 5345). Photo by courtesy of the Abegg-Stiftung, CH-3132 Riggisberg.

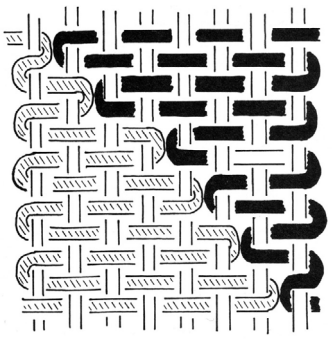

Fig. 3. Diagram of the meeting and reversal of weft yarns in tapestry weave. After Seagroatt (1979), 14.

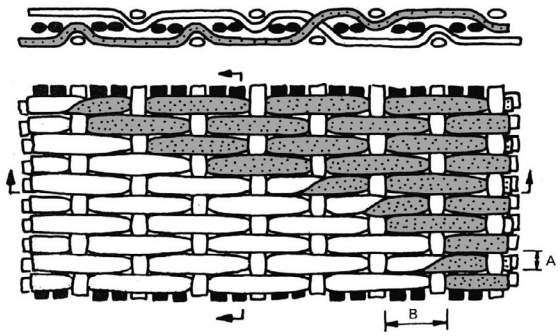

Fig. 4. Diagram of the structure of *taqueté*. Drawing by courtesy of D. De Jonghe.

Taqueté, also known as 'weft-faced compound tabby' and in German *Leinwandschusskompositbildung*, aims for a similar decorative effect, but rarely in more than two colours. It is created mechanically by means of a complex planned sequence of different sheds on the loom, which the weaver memorises.[6] The overall decorative scheme is constructed by repeating a single pattern unit, sometime in mirror image. The weave structure can be recognised by the fact that a weft thread in one colour disappears to the reverse side of the cloth behind an adjacent thread in a different colour as the pattern changes, only to re-appear on the obverse again later when it is required (Fig. 4).

A variety of ancient sources can be deployed to inform discussion and argument about textile structure and terminology.

Roman inscriptions and papyri in Greek and Latin are crucial documents, but tend to be laconic: both the writer and the reader knew exactly what was meant by a given technical expression, but we are left in the dark. Authors of classical literature write at greater length, and at first sight more helpfully; but their reliability is variable and often difficult to check. Poets, for example, treat of technical matters with artistic licence, especially when the vocabulary does not fit the metre. Scholars who consult another much-quoted source, the late Roman and early medieval encyclopaedists and glossators like Hesychius and Isidore, are well advised to exercise caution: for such compilers may simply be guessing.

Ancient art, particularly funerary art, is a rich source of textile images, but, taken alone, the latter usually lack the necessary detail for precise technical identification. Surviving archaeological textiles are a relatively new and growing resource, and one might expect to find examples of *vestis polymita* and *plumaria* somewhere in the extant textile corpus. Both techniques are described explicitly as woven-in, and not decoration added afterwards, so that narrows the range of possibilities.[7]

Vestis polymita

I (JPW) need to start by revisiting, and recanting, what I wrote in 1967 about the *ars polymita*.[8] I argued then that it meant 'tapestry weaving'; but I now accept that it refers to weaving *taqueté,* weft-faced compound tabby, as Grace Crowfoot, Donald King and others suggested long ago.[9]

Commentators often begin with the passage in Pliny's *Natural History* where he claims that Alexandria invented the weaving of *polymita*, with *plurima licia*, 'multiple threads'.[10] The Greek *mitos* and the

6. Ciszuk 2000; Verhecken-Lammens 2007.

7. *polymita*: Martial, *Epigrammata* XIV, 50; *plumaria*: Lucan, *Bellum Civile* X, 125-126; Jerome, *Epistulae* 29, 6 (ed. Labourt 1953).

8. Wild 1967; partial recantation; Wild 1991.

9. Crowfoot & Griffiths 1939, 47; King 1981.

10. *Naturalis Historia* VIII, 196 (*c*. AD 77-79).

Latin *licium*, however, are generic terms, and their specific sense depends on the context in which they are used. They could refer to warp or weft threads, for instance, or to the heddle cords for opening sheds on the loom.[11]

In 1967 I was misled, I now think, by a key passage in a letter (of about AD 395-397) from Jerome to Fabiola in which he is describing the sash of the High Priest in Jewish ceremonial.[12] He says that it was woven in the form of a tube, 4 digits (*c*. 7.4 cm) wide, like a cast-off snake-skin. It had scarlet, purple and blue weft, but linen (or at any rate plant-fibre) warp, with flowers and gem motifs 'woven in the *ars polymita* that you would think were not woven by a craftsman's hand but added', *i.e.* embroidered. Linen warp with polychrome patterned weft in a tubular format sounded to me in 1967 much more likely to be tapestry weave than mechanically woven *taqueté*, and I opted for tapestry, noting some flat-woven tapestry sashes in the archaeological record.[13]

So far, however, no direct archaeological evidence has been found for either *taqueté* or tapestry in tubular form; but Dominique Cardon has published from Maximianon and Krokodilō in the Eastern Desert of Egypt a group of early Roman tubular textiles in 2/1 herringbone twill weave with multi-coloured plied warp.[14] The existence of a tubular form of *taqueté* therefore cannot be ruled out. On the other hand Jerome's phraseology echoes the Latin of his translation of the Hebrew text of the Book of Exodus; he may have been unaware (or chose to ignore) that *taqueté* was not known in Old Testament times. It would probably be unwise to place too much weight on his words.[15]

Petronius,[16] Pliny[17] and Martial[18] mention *polymita* in the 1st century AD. A dearth of archaeological finds of *taquetés* at that early date, which seemed to me an obstacle in the 1960s, has recently been alleviated by finds of early Roman *taquetés* at Berenike (Fig. 5),[19] Mons Claudianus,[20] Maximianon and Krokodilō[21] and Masada.[22] There are today several hundred Late Roman wool *taquetés* from Egypt.[23]

Polymita was used for covering beds, couches and pillows according to both Martial and documentary papyri.[24] In Roman Egypt there are several finds of feathers still adhering to *taqueté* upholstery covers,[25] and we have noted at Berenike that wool textiles in *taqueté* have had only one side exposed to strong daylight.

Another recent development is the recognition and recording of the *zilu* loom still in use today in parts of Iran for weaving *taqueté*.[26] It is vertical and

11. LSJ 1968 *s.v*. μίτος; TLC *s.v*. μίτος; Beekes 2010, 958 *s.v*. μίτος. *Multicia* in Latin is not necessarily a synonym for *polymita*: SHA, *Aurelian* 12; Juvenal, II, 66, 76; Tertullian, *de Pallio* IV, 4.

12. Jerome, *Epistulae* 64, 12 (ed. Labourt 1953).

13. For a flat-woven sash from Nubia see Mayer Thurman & Williams 1979, 62 no.16 (B213, 4) (colour plate p.15); 64 no.21 (B251, 2); narrow 'pyjama cords' from Quseir: Eastwood 1982, 286, 302 nos. 26-28. The πολύμιται ζῶναι of the *Periplus Maris Erythraei* 49 is probably a copyist's error for πολυμίτα ζῶναι, two separate items, not one. We are grateful to Eleanor Dickey for advice on this point.

14. Cardon 2003, 631, 645 (Z.25008-2), Fig. 326,b; Fig. 343; Pl. IV, 1 (lower centre).

15. In the Vulgate *Exodus* 29, 39 (39, 29) Jerome translates or paraphrases the Hebrew description of a similar sash as *opus plumarii*.

16. *Cena Trimalchionis* 40, 5 (*c*. AD 40-50).

17. *Naturalis Historia* VIII, 196.

18. *Epigrammata* XIV, 150.

19. Wild & Wild 2000, 256, Fig.11-12, Pl.11-13.

20. Ciszuk 2000.

21. Cardon 2003, 635.

22. Sheffer & Granger-Taylor 1994, 212-215.

23. Vogelsang-Eastwood 1988a.

24. Martial, *Epigrammata* XIV, 150; SB III, 7033, 37 (AD 481); P.Ital.I,8,II,6 (AD 564).

25. Schrenk 2004, 139-140 Nr. 47; Vogelsang-Eastwood 1988a, Vol. III, 592-596.

26. Vogelsang-Eastwood 1988b; Thompson & Granger-Taylor 1995; Ciszuk 2000; Thompson 2003, 207-209. A very wide, wide-sleeved, one-piece silk tunic in the Abegg-Stiftung's collection at Riggisberg (the "Erotentunika") (Schrenk 2004, 180-184 Nr. 61),

Fig. 5. An Early Roman wool *taqueté* from Berenike (BE97 0118) (compare Fig. 1). On-site photo: J.P.Wild.

very large, and features two types of shed: the one is opened in plain tabby weave with heddle rods, the other type, the pattern-making sheds, is opened by draw-cords in various hierarchies – pulled out horizontally. These cords are good candidates to be the *mitoi* of *polymita*. Pliny could well be right about invention in Alexandria: the shedding mechanism of the ancient ancestor of the *zilu* loom could, like the water mill, be another brainwave emanating from the circle attached to the Museum in Ptolemaic Alexandria.[27]

So, if *vestis polymita* is *taqueté*, what is *vestis plumaria*?

Vestis plumaria

The lexica are almost unanimous in translating *vestis plumaria* as 'embroidered textile' and they have been followed faithfully by most editors of papyri.[28] Indeed, at first reading, 'embroidery' seems to fit in all 95 instances of the use in Latin and Greek of terms based on the root *plum-*. But on closer inspection there are some broader issues.

Kerstin Droß-Krüpe has pointed out elsewhere that most classical references relating unambiguously to embroidery and using phrases like *acu pingere*, 'decorate with a needle', refer to foreign exotica

dated iconographically to the first half of the 4th century AD, is identical in outline to the earlier one-piece cruciform wool tunics woven on the standard Roman wide vertical loom; but it was woven in weft-faced compound twill, more advanced than *taqueté*. It may point to a link between the *zilu* loom and an ancient vertical prototype.

27. Wilson 2002, 8, 10; Wilson 2008, 355; Greene 2008, 804-809.

28. LS 1955 *s.v. plumarius*; OLD *s.v. plumarius* ("brocaded with a feather pattern"); LSJ 1968 *s.v.* πλουμαρικός; Lampe 1961 *s.v.* πλουμαρικός; Pruneti 1988-1999, *passim*.

Table 1. The Latin text of Chapter XX of the Edict of Diocletian.

XX	1	[De mercedi]bus plumariorum et sericarioru[m]	
	1a	[plumari]o in strictoria subserica pro uncia [una	x ducentos]
	2	in strictoria holoserica per singulas unc[ias	x trecen]tos
	3	in chlamyde Mutinensi in uncia una	x viginti quinque
	4	in chlamyde Ladicena ut s(upra) in uncia una	x vigi[n]ti quinque
	5	barbaricario ex a[u]ro facient<i> operis primi in uncia una	x mille
	6	operis secundi	x septingentos quinquaginta
	7	barbaricari[o i]n holos[eri]ca in uncia una	x quingentos
	8	operis secundi in uncia una	x quadringentos
	9	sericario in subserica pasto diurnos	x viginti quinque
	10	in holoserica pura pasto diurnos	x viginti quinque
	11	in holoserica scutlata	x quadraginta
	12	gerdiae pastae in tunica pexa indictionali	x duodecim
	13	in tunicis Mutinensibus vel ceteris pastae	x sedecim

rather than Mediterranean fashion.[29] But there *was* a Mediterranean tradition of embroidery of considerable sophistication, exemplified by a well-known panel from Achmîm where chain stitch and couched wool thread has been deployed to represent the personification of Autumn (Fig. 6), one of an original quartet.[30] Nonetheless the corpus of surviving embroideries from the Roman world discussed recently by Annette Schieck is relatively small and – one has to admit – not very inspiring.[31]

I argued very briefly in 1999 that the *ars plumaria* was not embroidery, but tapestry weaving,[32] and Kerstin Droß-Krüpe came to the same conclusion in her study just mentioned.[33] What is the evidence?

In AD 301 the Emperor Diocletian made a forlorn attempt to control rising prices for consumer goods and services by promulgating an Edict on Maximum Prices, intended to be applied across the Empire, and probably respected particularly in the eastern provinces which he ruled directly. The archetype was in Latin, but Greek translations were posted in the East. The compilers took an empire-wide view of the most significant merchandise to be included, along with its prices in notional *denarii*. There has been argument about the artificiality of the pricing structure, but for us it is the relative costs that reveal the relative qualities of the goods that matter most.[34]

In Edict Chapter XX on pay in the textile industry the *plumarius* is paid per ounce of yarn for working on long-sleeved silk tunics (*strictoriae*), half-silk tunics and two of the most expensive half-moon cloaks (*chlamydes*) in wool (Table 1).[35] His lowest rate of

29. Droß-Krüpe & Paetz gen. Schieck 2014, 211. For specifically Greek terminology see Patera 2012.

30. Pritchard 2006, 30-31, Fig.3.3.

31. Droß-Krüpe & Paetz gen. Schieck 2014, 214-227.

32. Wild 2000, 210.

33. Droß-Krüpe & Paetz gen. Schieck 2014, 212; Rea (1996, 191) suspected a connection with "tapestry work".

34. For text and commentary see Lauffer 1971; for text incorporating later finds: Giacchero 1974; Reynolds 1989; for the wider context: Corcoran 1996, 205-233; Meissner 2000; for the Edict's nominal empire-wide validity: Kuhoff 2001, 544-550; for actual limited observance: Crawford 2002; for pricing structure: Meissner 2000, 99; Böhnke 1994, 482; Demandt 2008, 29. A new edition of the Edict is in preparation by M.H.Crawford.

35. EdD XX, 1-4.

Fig. 6. Late Roman embroidered panel in wool on a linen ground from Egypt, now in the Whitworth Art Gallery, Manchester (inv. no.T.1968.252). It shows the personification of a season, probably Autumn. Photo by courtesy of the Whitworth Art Gallery, Manchester.

pay, 25 *denarii* per ounce, is twice what a specialist (female) wool weaver could earn for a day's work.[36]

In Chapter XIX on wool textiles reference is constantly made to the value of the purple wool embodied in the decorative features. In the entries for two sorts of expensive bed covering (*rachana* and *stragula*),[37] for high-quality long-sleeved tunics in wool (*strictoriae*)[38] and probably for the higher class of *chlamys* on which the *plumarius* worked,[39] it is prescribed that the textiles should be sold according to the weight of *plumatura* (πλουμάρισις in the Greek texts); but no upper price limit is set. For the less valuable and elaborate items, the jargon used in Chapter XIX is '*clavans purpurae libras* x', 'with *clavus* bands containing x pounds of purple yarn'.[40]

The compilers had no need to clarify their terminology. A glance through the catalogues of some of the principal collections of so-called 'Coptic' textiles in European museums – effectively the clothing of the well-to-do of Late Roman Egypt, often salvaged from their burial grounds with minimal or no archaeological record – leaves no doubt that tapestry weave is the dominant, almost exclusive, mode of Roman textile decoration.[41] Egypt, thanks to local climatic conditions ideal for the preservation of organic materials, offers a snapshot of a phenomenon which is reflected in contemporary iconography across the whole Roman Empire,[42] and among its neighbours, such as the Palmyrenes and Sasanians, further East.[43]

If the dominant decorative form according to the Edict is *plumatura*, and the dominant technique in the archaeological record is tapestry weave, it is hard not to identify the one with the other. This is juxtaposition of evidence, however, not proof. But at present it has to be the basis of our hypothesis.

Some supporting amplification is to be found in comparing the range of textile goods for which the use of tapestry weave for decoration is archaeologically attested with the textile spectrum of which the written sources give us a glimpse.

Only a handful of types of textile were created entirely in tapestry weave, notably couch furnishings, curtains and wall-hangings.[44] More commonly, individual tapestry-woven inserts are found in garments of wool, linen and silk which are otherwise unadorned. On (long-sleeved) tunics (Fig. 7) the technique was employed for weaving figured and plain bands (*clavi*) down front and back, roundels and panels at the shoulder, pairs of short bands at the wrist, and sometimes halters at the neck and horizontal bands at knee level.[45] Cloaks are embellished with roundels and panels and other simpler motifs, placed in the corners, depending on garment shape.[46] Furnishing fabrics also feature corner decoration, and bands marking the start and finish of the web.[47]

36. EdD XX, 12-13 for wages of a *gerdia*, 'female weaver'.
37. EdD XIX, 6; XX, 36.
38. EdD XIX, 20: this is a lacunose entry and there is some doubt about the items listed.
39. EdD XIX, 22.
40. EdD XIX, 8-13, 15-16, 18-19, 21, 23-24, 27.
41. For example Trilling 1982; Lorquin 1992; Schrenk 2004; Pritchard 2006.
42. For example in the mosaics of the Late Roman villa near Piazza Armerina in Sicily (Carandini *et al*. 1982, *passim*; Wilson 1983) and mosaics in the North African provinces (Dunbabin 1978). The Late Roman mosaics at Noheda (Spain) depict a riot of exuberantly decorated costumes, many theatrical, but others more everyday (Tévar 2013).
43. Schmidt-Colinet 1995.
44. Trilling 1982, Pls. 1, 2; Schrenk 2004, 26-45; Willers & Niekamp 2015; von Falke & Lichtwark 1996, 344-345 Nr. 394. Theocritus (*Epigrammata* XV, 78-83) refers to large (tapestry-woven ?) hangings in Ptolemaic Alexandria (3rd century BC) and an epigram in the *Anthologia Graeca* (IX, 778) was originally attached to a tapestry map of the world.
45. Long-sleeved tunics: von Falck & Lichtwark 1996, 272-273, Nr. 312; Schrenk 2004, 152-164; wide-sleeved tunics: Pritchard 2006, 52-59.
46. Maciej Szymaszek is currently preparing a corpus of all Roman-period textiles, mostly cloaks, carrying decoration of tapestry-woven gamma-motifs.
47. Cushions: Paetz gen. Schieck 2009; curtain: Gervers 1977; spreads with loops: von Falck & Lichtwark 1996, 301-302 Nr. 341a-b; Verhecken-Lammens 2009, 132 Fig. 6; *sabana* (?): Carroll 1988, 94 no. 9.

Fig. 7. Long-sleeved tunic in linen from Panopolis (Achmim), Egypt, now in the Museum Kunstpalast, Düsseldorf (Inv. Nr. 12746). Photo by courtesy of the Stiftung Museum Kunstpalast, Düsseldorf (Artothek).

References to long-sleeved shirts (*strictoriae*, στιχάρια) with *plumatura* abound in the papyri,[48] and Diocletian's Edict adds the wide-fitting *dalmaticae* to the list, together with half-moon cloaks (*chlamydes*) and rectangular cloaks (*fibulatoria*).[49] Papyri mention veils and head-coverings with tapestry decoration (described as πλουμαρικὰ).[50] Household furnishings had more modest tapestry decoration. Under this heading we find a (wool) blanket,[51] 'spread' (*rachana, stragula*),[52] and cushion cover.[53] Most items, however, were anonymous linen sheets and towels with a touch of colour:[54] Late Roman church inventories mention altar cloths and curtains.[55]

48. P.Oxy. XIV, 1741, 16; P.Fouad 74, 6; SB XVI, 12940, 12; SPP XX, 245, 6; SPP XX, 275, 3-4; P.L.Bat. 25, 28; compare EdD XIX, 18, 20, 40; XXVII, 8-10 (ed. Giacchero 1974).

49. EdD XIX, 9; XXVII, 12-22 (ed. Giacchero 1974); XIX, 21, 24.

50. PSI IX, 1082, 14-15; compare EdD XXVII, 29-33 (ed. Giacchero 1974).

51. P.Cair.Masp. I, 6 v. 85, 88.

52. EdD XIX, 6, 36.

53. P.Berol. 25405, 7-8.

54. *faciale*, 'face cloth': SB III, 7033, 45; EdD XXVII, 23-28 (ed. Giacchero 1974); *sabanum*, 'hand towel'; P.Oxy. XVI, 2054, 8; 'linens': SPP III, 83, 4; SB XVIII, 13965; SB XX, 14202, 5, 6; Diethart 1983, 13, doc. 3, 10; P.Ant. I, 44, 8-9, 13; SPP XX, 245, 13, 14.

55. P.Lugd.Bat. 25, 13, 20, 27-29, 31.

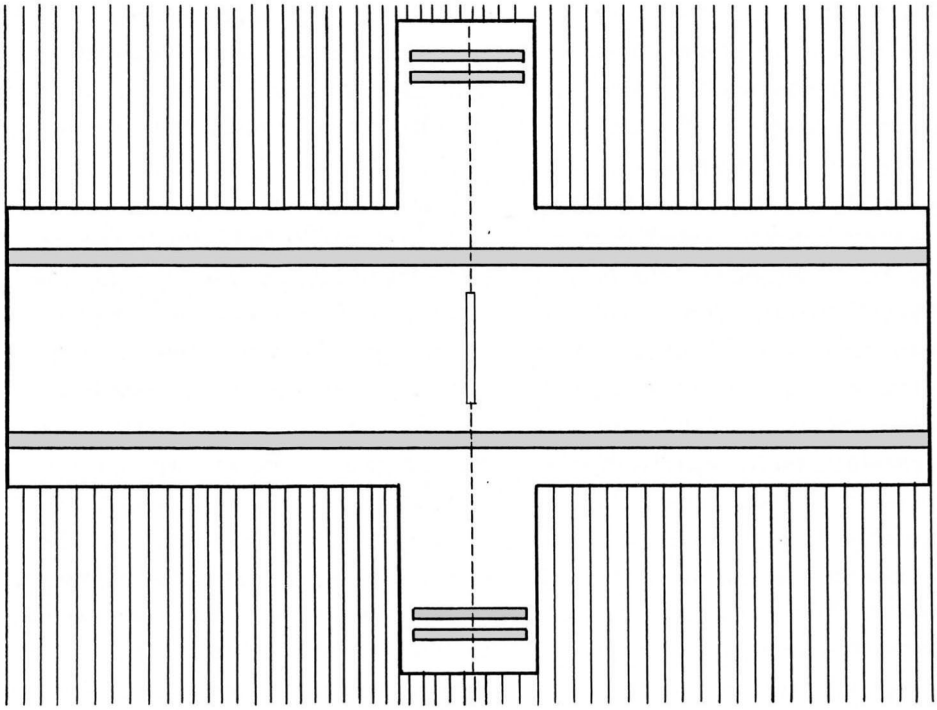

Fig. 8. Outline drawing of a sleeved tunic as woven in one piece on the loom. After Carroll (1988), 38.

The craft of the *plumarius*

Some 40 *plumarii* (and two *plumariae*[56]) are known to us from a span of seven centuries (see Appendix 1). Vitruvius in Augustus' reign and the compilers of Diocletian's Edict 300 years later both make special provision for the work of the *plumarius*.[57] A late Roman contract of apprenticeship provides for a girl, Evangeleia, to be trained as a πλουμαρίσσα by 'experienced πλουμαρίοι'.[58] But what did *plumarii* actually do?

Garments of wool and most linen textiles in antiquity were woven to shape on the loom as a single web of cloth (Fig. 8): they required little subsequent tailoring.[59] Tapestry-woven decoration in panels, roundels and *clavus*-bands was integrated into the weaving on the loom as the appropriate stages were reached, and this is when the *plumarius* would be called upon to exercise his skills. But it was no simple matter.

To intensify the effect of the areas of dyed weft, the warp within the chosen ornament – band, panel or roundel – was often grouped and crossed (so-called *croisage*) (Figs. 9, 10), so that the weft yarn could be beaten up tighter.[60] The precise configuration of the warp crossing varied greatly.[61] Common to all, however, was that the warp re-arrangement started and ended within the flanking ground weave, a diagnostic feature most clearly seen along the edges of tapestry-woven bands. This means that the weaver, before and after inserting the coloured weft yarn, passed a few

56. For *plumariae*: P.Oxy. LIX, 4001, 19-20; P.Aberd. I, 59. (In P.Coll.Youtie II, 95, 6 A. Delattre reads πλου[μ]αρισσ(ης) in preference to the original editor's τα<ρ>σι[κ]αρισσης; but the sense of the context militates against this reading.) For a general survey of specialists see Ruffing 2008, 722, *plumarii*.

57. Vitruvius, *de Architectura* VI, 4, 2; EdD XIX, XX *passim*.

58. P.Aberd. I, 59.

59. Burnham 1973, 2-5; Granger-Taylor 1982; for an example see Pritchard 2006, Figs. 4.4a, 4.4b.

60. De Jonghe & Tavernier 1983; Granger-Taylor 1992.

61. Schrenk 2004, 489-491.

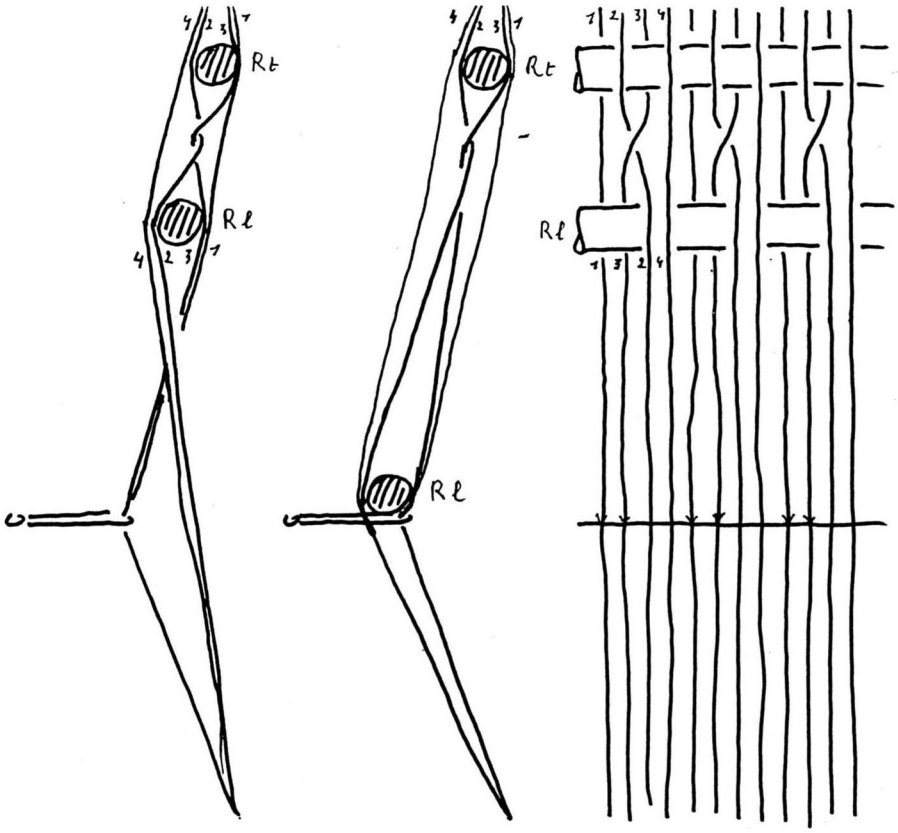

Fig. 9. Drawing showing the grouping of warp yarns on the loom for *croisage* (warp crossing). Drawing by courtesy of D. De Jonghe.

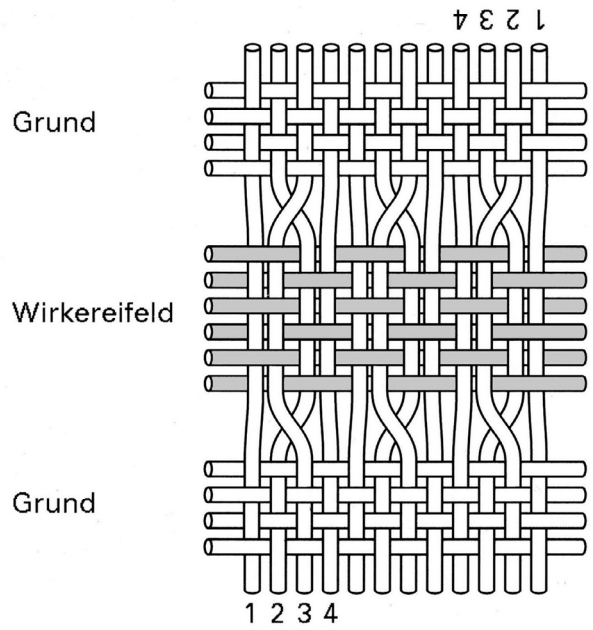

Fig. 10. Diagram of a typical example of the structure of *croisage*. After Schrenk (2004), 489, with permission.

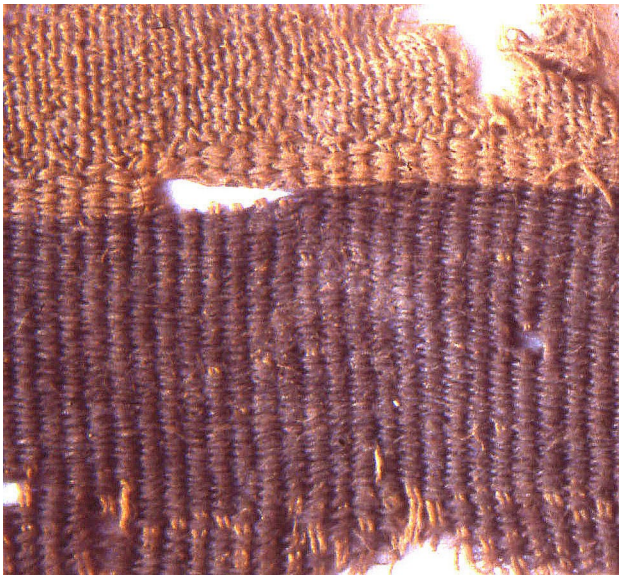

Fig. 11. The shadow effect of *croisage* on the ground weave adjacent to a tapestry-woven band on an Early Roman wool textile from Mons Claudianus in the Eastern Desert of Egypt. Photo: J.P. Wild.

yarns of ground weft through the new shed, and thus created a shadow effect (Fig. 11). In some cases – perhaps on particular loom types[62] – some of the warp was eliminated from the weaving by being pushed to the back and ultimately cut or worn off. In some textiles, warp crossing and elimination appear in combination.[63] In some independent tapestry motifs the ground weft also floated on the back.[64] It is noteworthy in some cases that in successive bands on a single textile the same warp threads were grouped or eliminated, so some sort of mechanical device was used to store and repeat the shed.[65]

Another enhancement, easily mistaken for embroidery, is the so-called 'flying thread' technique (Fig. 12).[66] On an otherwise plain tapestry background white linen thread carried on spools is wrapped around warp threads and passed obliquely over the weft to create a network pattern in silhouette, all carefully counted out.

Finds of inked and/or painted cartoons on papyrus (ἐντύπα, χαρτάρια[67]) (Fig. 13) indicate that the *plumarius* might have a repertoire of design motifs from which a customer could choose, as has been argued for mosaics and wall paintings.[68] The cartoons may have served as a general guide rather than being copied at 1:1 as is modern practice.[69]

Diocletian's Edict hints that the *plumarius* may have chosen and provided his own dyed yarn, an expensive business. The complexity of Roman dyers' practices being revealed by modern dyestuff analysis may reflect the pressure which the *plumarius* exerted on dyers to achieve a particular fashionable colour nuance.[70]

The ταβλία πλουμαρικὰ, tapestry-woven panels, on tunics, cloaks and bedspreads in late antiquity were sophisticated works of art in their own right.[71] Ever more elaborate textile decoration was being demanded at every level in society as time went on. The huge 'Dionysus Hanging' in the Abegg-Stiftung, Bern, recently published, is a monument to the skills and dexterity of late Roman tapestry-weavers[72] The *plumarius* must have had a pivotal rather than an ancillary role in the weaving profession. Wealthy patrons might employ him on piecework in their domestic workshops; but the *plumarius* in

62. Granger-Taylor 1992.

63. E.g. Pritchard 2006, 50 (T.1996.92).

64. Bogensperger 2012, 93 Abb. 34; Pritchard & Verhecken-Lammens 2001, 23-24 Fig. 3.2.

65. De Jonghe & Tavernier 1983, 182 Fig. 3, 174-175; Ciszuk & Hammarlund 2008, 127-129.

66. Verhecken-Lammens 2013. 'Flying thread' might be implied in SB XX, 14214, 10 which lists a garment 'decorated with tapestry and by needle and 'point'(?)'.

67. Nauerth 2009.

68. For a corpus of tapestry weavers' cartoons on papyrus see Stauffer 2008; for wall painters' copy-books see Ling 1991, 217-220.

69. Nutz & Ottino 2013, 56-57.

70. Cardon *et al*. 2004; Wouters *et al*. 2008.

71. P.Mich. XIV, 684, 12; Iohannes Lydus, *de Magistratibus Populi Romani* II, 13 (ed. Wünsch 1967, 68-69).

72. Willers & Niekamp 2015. Around the time of the Arab conquest of Egypt and thereafter tapestry-woven ornament seems to have been woven separately from the garments to which it was later sewn: Pritchard 2006, 83.

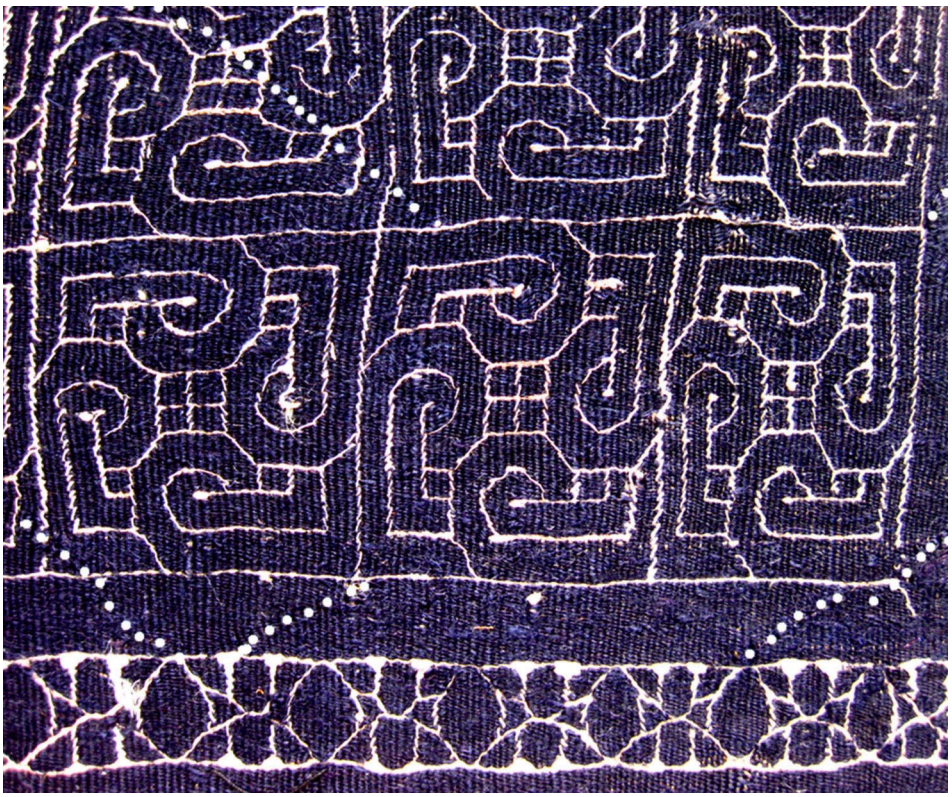

Fig. 12. The 'flying thread' technique on a Late Roman tapestry-woven panel from Egypt in the Musées Royaux d'Art et d'Histoire, Brussels (inv. no. ACO Tx.183). Photo by courtesy of C. Verhecken-Lammens.

turn probably employed humbler weavers to do the basic ground-weaving.

The etymology of *plumarius* and its congeners

There is a final intriguing question to ask: what was the connection (if any) between *plumarius*, 'tapestry weaver', and *pluma*, 'feather'? Kerstin Dross-Krüpe has already considered this problem, but the sources shed little direct light on it.[73] Petronius alludes to the variegated shimmer of a peacock's plumage in textile-metaphorical language ('*aureo Babylonico*')[74] and two hundred years earlier Plautus includes '*plumatile*' in a catalogue of new-fangled clothing designations.[75] Some sort of visual likeness between a bright multi-coloured feather and tapestry weaving might have been in their minds and given rise to the neologism *plumarius*.

Be that as it may, the profession of *plumarius* was established in Italy at least by the close of the Republican period.[76] It occurs for the first time in Greek as a loanword in a papyrus dated no earlier than the late 3rd century AD.[77] Tapestry weaving, however, was already known in Classical and Hellenistic Greece;[78]

73. Droß-Krüpe & Paetz gen. Schieck 2014, 211-212.

74. *Cena Trimalchionis* 55, 2-4; compare Lucan, *Bellum Civile* X, 122.

75. *Epidicus* 233 (ed. Goetz & Schoell 1895).

76. Varro, Frag. 33, in Nonius Marcellus 162, 27 (ed. Lindsay 1903).

77. P.Oslo III, 161, 14-15.

78. Wace 1934, 110; Wace 1948; Wace 1952; Spantidaki & Moulherat 2012, 195-196.

Fig. 13. Papyrus from Egypt with a cartoon for tapestry-woven textile decoration, now in the Ägyptisches Museum und Papyrussammlung, Staatliche Museen zu Berlin – Stiftung Preußischer Kulturbesitz (Inv. Nr. P9926). Photo: Sandra Steiss. Copyright: Ägyptisches Museum und Papyrussammlung, Staatliche Museen zu Berlin.

but the practitioner was known simply by the portmanteau term ποικίλτης, 'decorator'.[79] One might suggest that as the craft of tapestry weaving became ever more demanding and sophisticated, a new term was coined to give the operative a more distinctive title.[80] As a loanword *plumarius* (presumably through Greek) is found in Coptic writings,[81] as one might expect, and once in Syriac.[82] But, more surprisingly, *pflūmāri* occurs in Old High German, borrowed (before the second *Lautverschiebung* of *c*. AD 400) from the Latin vocabulary of the northern Roman frontier provinces.[83]

Concluding comments

Already at the beginning of this paper we revealed the conclusion we had reached: *vestis polymita* is *taqueté*, *vestis plumaria* is tapestry. Such a premature revelation may seem *unwissenschaftlich*. But we would plead that trying to match textile with text is like playing a game of football on shifting sands. The players move, the ball moves, and so do the goalposts. Scoring a goal is more a matter of luck than fine judgement. But it is fun to try.

Appendix 1: Sources for textile terms based on the root *-plum-/-πλουμ-*

1. Papyri and Ostraka

Note: Abbreviations for papyrological publications used below are cited according to the standard set out in J. F.Oates *et al*. (2001) *Checklist of editions of Greek, Latin, Demotic and Coptic papyri*, *ostraca and tablets* (fifth edition), Oxford, and in later editions online at www.scriptorium.lib.duke.edu/papyrus/texts/clist.html.

3rd century AD: P.Oslo III, 161, 14-15 [late C3 or very early C4 (Pruneti 1998-1999, 152)]; *4th century*: P.Oxy XXIV, 2421, ii, 32 [AD 312 - 323]; P.Dub. I, 20, 3 [AD 329]; PSI IX, 1082,14-15: P.Oxy LIX, 4001,19-20 [late C4]; P.Oxy XIV, 1741,16; PSI VIII, 959, 33 [end C4]; *4th/5th century*: P. et O. Eleph. DAIK 324, 2-4; P.Aberd I, 59, i, 6-7; iii, 2 [C5/6 Turner]; SB XXIV, 16204 = P.Ant. I, 44, 9, 13 (*cf*. Rea 1996); SB XII, 11077, 26; *5th century*: SB XVI, 12838 [ostrakon] [mid C5]; SB XVI, 12839 [ostrakon] [mid C5]; SB XVI, 12840 [ostrakon] [mid C5]; SB XII, 11075,11 [*c*. AD 400-450]; SB III, 7033, 39, 45 [AD 481]; P.Fouad 74, 6 [end C5 Diethart]; *5th/6th century*: P.Berol. 25405, 8; *6th century*: P.Cair.Masp. II, 67163, 7, 12 [AD 569]; SB XVI, 12940,12 [= P.Vindob. G.23204]; SPP XX, 245.6, 8, 13, 14; P.Mich. XIV, 684, 12; SB XII, 10935, 21; SPP XX, 275, 1, 3-4; P.Cair.Masp. I, 6 v 85, 88; *6th/7th century*: SPP III, 83, 4; P.Vindob. G.25737 (Diethart 1986, 75-77, 12-13); SB XX, 14214, 10 (P.Vindob. G.10740: Diethart 1990, 108, doc.12, 10); SB XX, 14105, 5; P.Vindob.G.25737, 13 (Diethart 1986, 75-77); *7th century*: SB XIV, 11543, 6 [AD 616/617]; P.Oxy XVI, 2054, 8; SB XX, 14202, 5, 6 (P.Vindob. G.4993 + 23239: Diethart 1990, 82 doc.1, 5-6); P.Prag. II, 153, 1; Diethart 1983, 13, doc 3.10; P.Heid. IV, 95, iv, 64; P.Heid. IV, 97, 26; *7th/8th century*: P.L.Bat. 25, 13, 20, 27-31; *8th century*: P.Lond. IV, 1433, 247 [AD 706-707]; P.Apoll. I, 75, 3 [AD 703-715]; P.Apoll. I, 38, 6-7 [*c*. AD 708-709]; P.Apoll. I, 65, 9 [AD 710-711]; P.Apoll. I, 83 [AD 712-713]; P.Apoll. I, 49, 5; *Coptic*: P.Ryl. Copt. 238, 15 [= *ἐμπλουμαριος].

2. Inscriptions

CIL VI, 7411 (Vicari 2001, no. 50) (Rome) [Augustan]; CIL VI, 9814 (Rome 'outside gate of St John')

79. Droß-Krüpe & Paetz gen. Schieck 2014, 213. In P.Cair.Masp. II, 67163, 7, 12 the same craftsman describes himself as both ποικλτής (l.7) and πλουμάριος (l.12).

80. For a discussion of the implications of loanwords for archaeology see Wild 1976.

81. P.Ryl.Copt. 238, 15. We are grateful to C. MacMahon for the information that the term is also used by Shenute in his (Coptic) writings.

82. As *plumia*: Ioannes Ephesius, *Historia Ecclesiastica* II, 6 (*Scriptores Syri* (Paris 1935), Vol. III, iii, 105-106). We are grateful to Sebastian Brock for advice on this term.

83. We owe this reference to Roland Schumacher (see his article in this volume).

[1st century AD]; CIL VI, 9813 (Vicari 2001, no. 51) (Rome) [1st/2nd century AD]; CIL XIII, 5708 (ILS 8379) (Le Bohec 1991) [AD 150-200]; Edictum Diocletiani, *passim* (Lauffer 1971; Giacchero 1974) [AD 301]; CIL VI, 31898 (Rome) [4th century?]; SEG XXVII, 1977, no. 995 (Tyre); SEG LIV, 2004, no. 1512 (Pompeiopolis, Cilicia) [5th/6th century]; CIG 4434 (b) (Cilicia); SEG LVIII, 2008 [p. 336] (IGCVO, 153A) (Sicily) [late Roman]; SEG XXXVII, 1987, no. 1345 (Tarsus, Cilicia) [5th/6th century]; MAMA III, 496 (Korykos) [5th/6th century]; MAMA III, 685 (Korykos) [5th/6th century]; MAMA III, 441 (Korykos) [5th/6th century]; MAMA III, 285,b (Korykos) [5th/6th century]; MAMA III, 403 (Korykos) [5th/6th century]; MAMA III, 364 (Korykos) [5th/6th century].

3. Literature

1st century BC: Varro (Frag. 33) in Nonius Marcellus, p.162, 27 [*c*. 44 BC]; Vitruvius, *de Architectura* VI, 4, 2 [under Augustus]; *1st century AD:* Lucan, *de Bello Civili* X, 123-126 [AD 62 or 63]; *2nd century AD*: (*vacat*); *3rd century AD*: (*vacat*); *4th century AD*: Firmicus Maternus*, Mathesis* III, 6, 4 [*fl.c*. AD 340]; *Scriptores Historiae Augustae, Carus* XX, 5; Jerome [Hieronymus], *Epistulae* 29, 4 *Ad Marcellam* [AD 384]; Jerome, *Epistulae* 29, 6; Jerome, *Epistulae* 64, 12 *Ad Fabiolam* [AD 395-397]; *5th century AD*: Prudentius, *Hamartigenia*, 294-295 [*c*. AD 405]; Caesarius Arelatensis, *Regula ad Virgines* XLII [AD 503-543]; *Liber Pontificalis* I, cxlvi, cxlvii [AD 471]; *6th century AD*: Procopius, *de Aedificiis* III, 247 [AD 553-555]; Johannes Malalas, *Chronicographia* 17, 9, 20 [*c*. AD 565-570]; Gregory of Tours, *de Gloria Martyrum* 97 (S. Sergius) [AD 583-594]; *7th century AD*: Aldhelm, *de Laudibus Virginitatis* 15.

The decoration of the textiles associated with the Jewish Tabernacle is repeatedly mentioned in the Vulgate text of *Exodus*, chapters 26-39, where a variety of terms are employed, presumably on the authority of Jerome (*Epistulae* 29, 4). This terminology, and the corresponding Greek of the Septuagint, is discussed by Mossakowska-Gaubert (2000), 305.

Appendix 2: Word forms built on the root *-plum-/-πλουμ*

* not attested in Greek

Latin:

plumarius
plumare (?) [SHA, *Carus* XX, 5]
plumatus [Lucan, *de Bello Civili* X, 122; Caesarius Arelatensis, *Regula ad Virgines* XLII]
plumatura [Edict of Diocletian passim]

Greek:

πλουμάριος
φλουμάρης [P.Oxy. XXIV, 2421, ii, 32; SB XII, 10935]
πλουμαρία [P.Oxy. LIX, 400, 19-20]
πλουμαρίσσα [P.Aberd. I, 59]
*πλουμαριζω [restored from Coptic: Riedel & Crum (1904), 55]
πλουμαρικός [P.Dub. I, 20; PSI VIII, 959, 33]
πλουμάρισις [Edict of Diocletian passim]
πλουμίον [Procopius, *de Aedificiis* III, 247]
πλουμ(ία) [SPP XX, 245, 6]
πλουμαρία [= πλουμία] [P.Oxy. XVI, 2054]
πλουμαρισίμος [= πλουμαρι<ο>σήμος] [P.Ant. I, 44, 9]

Adjectival forms:

ἔμπλουμος [P.Fouad. 74, 6; SB XX, 245, 13]
εὔπλουμος [P.Ant. I, 44, 13]
ὀρθόπλουμος [SB III, 7033, 39; P.Apoll. I, 49, 5]
ὀθονεμλ(ουμάριος ?) [SB XII, 11077, 26]
*ἐμπλουμάριος ? [P.Ryl.Copt. 238, 15]

Abbreviations

Abbreviations for papyrological publications are cited according to J. F. Oates *et al*. (2001) *Checklist of editions of Greek, Latin, Demotic and Coptic papyri, ostraca and tablets* (fifth edition). Oxford.

CIG A. Broeckh (1828-1877) *Corpus Inscriptionum Graecarum*. Berlin.

CIL T. Mommsen *et al*. (1862-) *Corpus Inscriptionum Latinarum*. Berlin.

EdD S. Lauffer (1971) *Diokletians Preisedikt*. Berlin.
M. Giacchero (1974) *Edictum Diocletiani et collegarum de pretiis rerum venalium*. Pubblicazioni dell'Istituto di Storia antica e Scienze ausiliarie dell'Università di Genova. Genoa.

IGCVO C. Wessel (1989) *Inscriptiones Graecae Christianae Veteres Occidentis*. Bari.

ILS H. Dessau (1892-1916) *Inscriptiones Latinae Selectae*. Berlin.

LS C. T. Lewis & C. Short (1955) *A Latin dictionary*. Oxford.

LSJ H. G. Liddell, R. Scott & A. S. Jones (1968) *A Greek-English lexicon*. Oxford.

MAMA W. M. Calder *et al*. (1928-) *Monumenta Asiae Minoris Antiqua*. Manchester.

OLD P. G. W. Glare (1980-1982) *Oxford Latin dictionary*. Oxford.

SEG *Supplementum Epigraphicum Graecum* (1923-).

ZPE *Zeitschrift für Papyrologie und Epigraphik.*

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