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Julia Galliker

During the 1st millennium AD, silk became the most desirable fibre in the Mediterranean region. While the expansion of silk production and consumption is widely acknowledged, specific features of the industry's development are more difficult to discern. Chroniclers had little reason to document silk manufacturing processes, and producers were not inclined to record or publicise their trade secrets. Historical knowledge of silk comes mainly from accounts of its consumption in a variety of forms and contexts.[1]

For the middle Byzantine period (AD 843-1204), the two most elaborated sources associated with silk date from the 10th century. The *Book of the Eparch (BOE)* (911/12) is a collection of regulations applied to guilds under the supervision of the eparch of Constantinople.[2] The *Book of Ceremonies (BOC)*, attributed to Emperor Constantine VII Porphyrogennetos (945-959), is a compilation of 5th- to 10th-century protocols used by court officials to stage imperial rituals.[3]

Together, these sources have shaped much of the existing Byzantine scholarship pertaining to silk. The conventional interpretation is that for much of the middle Byzantine period, silk was an imperial prerogative confined to the most elite members of society.[4] However, close reading of the larger body of source evidence shows that the prevailing Byzantine silk narrative has numerous shortcomings and limited value in the study of historic processes. From the standpoint of contemporary scholarship, the role of silk in the middle Byzantine period requires reconsideration through application of current research methods.

To provide a more secure historical basis for silk research, other types of writing should be considered including histories, chronicles, and testamentary documents. A survey of Byzantine and other contemporary sources dated between the 6th and 13th centuries reveals a large number of textual 'mentions' describing textiles. Many mentions contain only partial information, but include terms associated with silk such as

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1. For a more detailed discussion of the history of silk in the Mediterranean region, see Galliker 2014, 33-80.

2. *BOE*, Koder.

3. *BOC,* Reiske.

4. For example, see Lopez 1945, Muthesius 1995b; Muthesius 1997, Muthesius 2004; Oikonomides 1986; Starensier 1982; Beckwith 1974.

production place, materials, weave type, end use, design, quality, and usage context.

Philologists have long tried to clarify the meaning of textile words in Byzantine sources with limited success.[5] For example, in his preface to *BOC*, Vogt observed that it is not possible to know the precise nuances of textile-related terms.[6] The general view is that lexical analysis can recognise the incidence of various words, but there is seldom sufficient descriptive information in written works to form a reconstructive view of textiles.[7]

Probing more deeply, there are several reasons why textile terminology presents such a challenge. With few exceptions, authors used specific textile terms in context without elaborated definition or provision of descriptive details. Like other specialised lexicons, textile terminology usage was sometimes inconsistent and localised. Moreover, textile terms were not stable, but evolved different meanings over time. Various factors contributed to the migration of meaning including changes in material type, production location, and technology.

In recent decades, new research methods supported by computer information technologies have equipped historians to analyse evidence more exhaustively and dynamically than in the past. To study Byzantine textile terminology, I developed a relational database of textile mentions similar in concept and form to a prosopography.[8] This database comprises over 800 descriptive mentions of textiles found in a variety of Byzantine sources dating from the 6th to 13th centuries. The resulting corpus provides an evidentiary basis to discern patterns that are difficult to perceive with conventional methods.

The textile mention database supports critical examination of textual evidence to define the meaning of terms pertaining to or associated with silk in the middle Byzantine period. This process is aided by considering written sources from a framework that follows the general sequence of silk textile processes including material acquisition and preparation, textile construction, decoration, and pattern reproduction. The larger objective is to use the collective terminology data to redefine historical understanding of silk in the middle Byzantine period by demonstrating its social importance, contribution to technology development, and integration in the regional economy.

Terms for silk in Byzantine writing

Silk was explicitly identified in Byzantine sources by one of three terms: *serika*, *blattia*, and *metaxa*. In the majority of mentions, references to silk were generic and not elaborated. Several scholars have discussed silk terminology in the middle Byzantine period and concluded that the words were part of an evolving lexicon, but that their meaning became more or less synonymous over time.[9] Contextual analysis of the database corpus demonstrates usage patterns that clarify the development and specific meaning of the terms.

Serika

While the incidence of both *serika* and *blattia* was nearly equal among the sources surveyed, the terms developed and were used in different ways. *Serika* was the word used by Theophanes of Byzantium in the second half of the 6th century to describe the transfer of sericulture technology to the empire.[10] Significantly, *serika* was the principal term for finished silk goods employed by all Byzantine historians from Nikephoros, Patriarch of Constantinople (806-815), to

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5. Lombard 1978, 239.

6. *BOC*, Vogt, Vol. I, 30.

7. Schmitter 1937, 201.

8. In its conventional form, prosopography is a method of extracting historical information by compiling information about individuals defined chronologically and geographically based on one or more master criteria. For additional information, see Keats-Rohan 2003; Short & Bradley 2005; Keats-Rohan 2007.

9. For example, *Imp Exp*, 205-207 n. (C) 173; Jacoby 1991-1992, 458 n. 29.

10. *Theo Byz*, 4, 270, 3.

Niketas Choniates (c. 1155-1217).[11] While silk was typically discussed as a luxury good, there were also exceptions. An account by Anna Komnene suggests that silk garments were included on military campaigns. Finding that he had insufficient iron for his troops at the battle of Lebounion (1091), Emperor Alexios I Komnenos (1081-1118) equipped some of his men in silken garments that resembled iron in colour for battle against the Pechenegs.[12]

The term *holoserika* appeared in the 7th- to 8th-century *Rhodian Sea Law* referring to the reward due to sailors for salvaging valuable silks.[13] In a comprehensive analysis of silk terminology centred on the late Roman period (AD 250–450), Schmitter traced the appearance of the Latin word *holosericum* to the early 3rd century.[14] At the time, the word referred to continuous filament silk as compared with inferior spun silk known as *subsericum*. Schmitter concluded that silk had become common enough for the meaning of *serika* to be vague, requiring more specific terms to describe silk quality distinctions and processing stages.[15] Analysis of the *BOC* shows that evolution of silk terminology is also evident for the word *holoserika*, which appeared only in chapters dating from the 5th to 7th centuries.[16]

Blattia

The word *blattia* provides another example of changing terminology associated with silk. Guilland described the semantic evolution of the term from a purple murex dye derived from shellfish in the late Roman period to a generic designation for silk textiles by the 9th century.[17] However, analysis of the corpus indicates that usage remained ambiguous. Some later sources used *blattia* with reference to purple silk. Compiled in the 950s, *De Administrando Imperio* described remuneration to the Pechenegs in *blattia* and other precious textiles in a way that indicates purple silk was involved.[18] Similarly, Anna Komnene used the word with the specific meaning of imperial purple silk in her description of Alexios' gift to Henry IV.[19] In some other texts, *blattia* was combined into a compound word that specifically identified other colours.[20]

Among the 17 mentions of *blattia* in the *BOC*, seven were for garments, one for furnishings and nine for lengths of fabric for decoration. Nearly all references to *blattia* in the text appeared in chapters dated to the 10th century. The compilation also included two enigmatic mentions of *holoblattia*, both in reference to church singers wearing the ceremonial dress of imperial guards for the visit by foreign ambassadors in 946.[21] Other variations of the word, presumably with reference to types of silk, are found in the 11th-century testament of Eustathios Boïlas (*blatenia*)[22] and in the Patmos Inventory dated 1200 (*blattitzin*).[23]

Metaxa

In contrast to *serika* and *blattia*, the word *metaxa* was often used with the specific meaning of raw silk fibre. Prokopios used the term *metaxa* in his account of the introduction of sericulture to Byzantium in 553/4.[24]

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11. Middle Byzantine historical sources include: *Nikeph*; *Theoph*; *Leo Diac*; *Skyl*; *Psellos*; *Attal,* Brunet; *Nik Chon*; *V. Basilii*; *An Komn.*

12. *An Komn,* Leib, VIII, 4, 1, 6-8.

13. *Rh Sea*, 40, 4, 6-9. For discussion of the meaning and incidence of *holoserika* in various sources, see *Rh Sea*, 114 note.

14. Schmitter 1937, 224.

15. Schmitter 1937, 213, 223.

16. *BOC,* Reiske, I: 89, 404, 405; II: 28, 629; II: 51, 701.

17. Guilland 1949, 333-338.

18. *De Adm Imp*, I.6.6-9.

19. *An Komn,* Leib, III, 10, 4, 3-10.

20. For examples of mentions of *blattia* in various colours, see *BOC,* Reiske, I: 97, 441; and *BOE*, Koder, 4.3, 8.1, 9.6.

21. *BOC,* Reiske, II: 15, 577, 589.

22. *Boilas*, 24.125.

23. *Patmos*, Astruc, 22.41.

24. *Prok, De Bello Goth*, Niebuhr, IV, 17.

Surviving fragments of Menander's history, which covered the period 558 to 582 demonstrate a clear distinction between *metaxa* and *serika*. All discussions of bulk trade in raw silk with the Sogdians referred to *metaxa*.[25] In contrast, finished goods, such as hangings and gifts, were called *serika*.[26] Usage by Theophanes Confessor in the early 9th century is less clear. He wrote *metaxa* when describing the Roman capture of Saracen tents in 528/9 and burning the contents of the Persian palace of Destagerd in 625/6, but *serika* in two instances involving silk cloths.[27]

The properties of silk as both a strong and flexible material were recognised for military applications. According to the *BOC*, *metaxa* was included with the equipment assembled for the 949 expedition against Crete. *Metaxa* fibres were made into bowstrings for hand-drawn low-ballistae and for large bow-ballistae with pulleys, alone, or in combination with spart grass fibres.[28]

Use of *metaxa* to refer to woven silk was less common, but was used in certain instances. The term appeared in the Greek version of the 5th-century book of the Armenian Agathangelos.[29] It may have been incorporated in a historicising sense in the hagiographies of Saints Arethas[30] (martyred c. 520) and Gennadios,[31] patriarch of Constantinople (458-471) in the 10th-century editions by Symeon Metaphrastes. The *Imperial Expedition* treatise, revised under Constantine VII Porphyrogennetos, referred to a particular type of striped silk garment imported from Egypt as *lorota metaxota*.[32] A marriage contract from southern Italy dated 1267 referred to silk cushions and face veils as *metaxa* rather than *serika*.[33]

Summary of silk terms

This analysis of the three words for silk, *serika*, *blattia*, and *metaxa*, indicates that the meanings overlapped, but that each term had a distinctive identity. *Serika* was a generic word in common use for finished silk cloths. *Blattia* coincided with *serika* in reference to finished silk cloth, but also signalled an imperial association, apparently as a means to convey status. Usage patterns for *metaxa* show that the word was generally used for raw silk, but might have indicated a particular choice or as a geographical or historical reference.

Terms for silk trade and processing

Fibre trade

Arab literary works and the Cairo Genizah contain substantial evidence concerning the regional silk trade in the 11th and 12th centuries.[34] A handful of Byzantine sources also provide specific information about trade in raw silk. In addition to Menander's account of the Sogdian silk trade as noted above, the 6th-century *Christian Topography* was written from the author's direct experience. He described trade in Ceylon (*Taprobana*) as a transit point for *metaxa* silk and a variety of other exotic goods. He identified *Tzinista*, probably Southern China, as source of raw silk.[35] He also referred to the land-based caravan silk trade through Asia and Persia.[36] The late 10th-century correspondence of Leo, Metropolitan of Synada includes a reference to silk merchants in the Anatolikon theme.[37]

25. *Menand*, 10.1, 24; 10.1, 50; 10.1, 56; 10.5, 14.

26. *Menand*, 10.3, 44; 10.3, 51; 25.2, 66.

27. *Theoph,* de Boor, 179, 25-26; 322, 5-8; 444, 17-18.

28. *BOC,* Reiske, II: 670, 1 and 12; 671, 15; 676, 10-11. For a brief discussion of silk for bow strings instead of gut, see Haldon 2000, 273 and n. 110.

29. *Agathan*, 121.14.

30. *Sym Metaph*, 5.

31. *Sym Metaph*, 134.

32. *Imp Exp*, C.290-291, 293-294.

33. *Syllabus*, CCCIV, 436.

34. For example, see Serjeant 1972; Goitein 1967-1993.

35. *Kos Ind, Wolska-Conus*, II, 45.7; 46.2; XI, 15, 4. Also, see *Kos Ind*, McCrindle, 47 n. 2.

36. *Kos Ind, Wolska-Conus*, II, 45; II, 46; XI, 14-15. For a discussion of *metaxa* in other sources, see 352 n. 45.

37. *Leo Syn*, 42.1-2.

Chapter 6 of the *BOE* represents the most extensive source of information about the silk fibre trade for the middle Byzantine period.[38] The regulations referred to *metaxa* with the specific meaning of silk in a raw state, before degumming and other processing. According to the text, the *metaxopratai* were dealers in raw silk. Their defined role was to buy bulk quantities of *metaxa* coming into the city and resell the material for processing. They were explicitly forbidden from working the material themselves.[39]

Another reference to *metaxopratai* comes from a document containing short notices of tenancy contracts found on the last page of codex *Patmiacus* 171.[40] Consisting of only 27 lines, this brief text provides a glimpse of textile commerce in 10th-century Constantinople. Among the five *ergasteria* (workshops) mentioned in the document, four were associated with various aspects of the textile trade.[41] One workshop (before 957) was formerly occupied by a raw silk merchant.[42] Other tenants included a linen seller, a merchant of head coverings made of goat hair, and a dealer in imported silks.

Descriptions of raw silk transactions in the *BOE* show that the basis for exchange was weight. One reason for close supervision of silk transactions was the potential for fraud by rigging scales or by the addition of adulterants to increase fibre weight. The eparch provided certain guilds, including the raw silk merchants, with weights and measures marked with a seal. The weighting implement associated with silk was the *bolion*, which was either a silk balance or set of weights.[43]

Silk processing

Reeled silk yarns

Specific terms for silk preparation activities are included in only a few Byzantine sources. For example, fibre processing was mentioned in a document from John Apokaukos (c. 1155-1233).[44] An early 14th-century didactic work involving silk cultivation and fibre processing by Manual Philes described various operations in what seems to have been a home-based or small-scale producer in a Byzantine context.[45]

Chapter 7 of the *BOE* referred to the guild of the *katartarioi* as processors of raw silk, but contains few clues about the specific work performed by guild members.[46] Presumably, one of the roles of the *katartarioi* was to reel raw silk. According to Lombard, the word was derived from Latin *catharteum* and Greek *katharteon serikon*, meaning silk that required cleaning.[47]

A possible reference to yarn weight is included in paragraph 8.2 of the *BOE*. The regulations forbade manufacture of *polon* in units of six or eight, but permitted 10 and 12 according to certain requirements. Most scholars have associated these terms with garment construction referring to pieces of cloth joined together.[48] Given the context of use, the term probably applied to yarn fineness, with a low value corresponding to a finer diameter, similar to the modern use of denier.[49] The term *polon* also appeared in the *Kletorologion of Philotheos* with a possible reference to yarn.[50]

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38. *BOE*, Koder, Chapter 6.

39. *BOE*, Koder, 6.14.

40. *Patmos*, Oikon.

41. *Patmos*, Oikon, 347 n. 10. For a discussion of workshops and handicraft production, see Koukoules 1948-1952, II, 1, 235.

42. *Patmos*, Oikon, 346, 3, 2.

43. Hendy 1985, 334; *BOE*, Koder, 6.4.

44. *Jo Apok*, 99.10.

45. *Animalibus*, 65-67.

46. *BOE*, Koder, 7.1.

47. Gil 2002, 34.

48. *BOE*, Koder, 8.2; *BOE,* Freshfield, 245; *Imp Exp*, 217-219 n. (C) 226.

49. Muthesius 1995b, 292; see *Imp Exp*, 218 n. (C) 226.

50. *Listes*, 127.14-15; χιτὼν λευκὸς σὺν ἐπωμίοις καὶ πώλοις χρυσοϋφάντοις λαμπρῶς ἀμφιάζεται.

Spun silk yarns

To consolidate the loose filaments left over from reeling silk filaments, the tangled waste fibres are combed to remove waste and debris.[51] The combed floss is then spun like other discontinuous fibres. The resulting yarn is silk in name, but the quality of the material is inferior in several respects. It lacks the fine, even appearance of filaments and the smooth feel. Even if tightly spun, such silk yarns appear 'hairy' as compared with filament silk, and tend to pill with abrasion and wear.

In general, spun silk was a cheaper substitute for filament yarn and was used in ways that imitated the material. Lopez suggested that both the Arabic and modern Italian words for silk floss, *qatarish* and *catarzo* respectively, come from the Greek word *katartarioi*.[52] Goitein noted the use of the word *qatarish* in an 11th-century business letter referring to floss silk.[53] The distinction between filament and spun silk was stressed in the *Imperial Expeditions* treatise where *prokrita kathara* was used to indicate 'pure' filaments as compared with either spun silk or a composition of mixed fibres.[54]

In the chapter for the *katartarioi* raw silk processors, paragraph 7.2 refers to the *metaxarioi*.[55] According to the text, *metaxarioi* employed women as well as men, a possible reference to insertion of twist in filament yarn or spinning of silk fibres. Identification of spinning as a female domestic occupation is frequent in Byzantine sources where it assumed symbolic meaning to represent female virtue, modesty and diligence.[56] Women also spun in and out of their homes for pay. In one example, Choniates relayed that Emperor Alexios III (1195-1203) accused his wife, Euphrosyne, of adultery. She was led out of the palace "dressed in a common frock, the kind worn by women who spin for daily hire."[57]

The sources covered in the corpus contain several mentions of *koukoularikos*. This material has been translated by various authors as coarse, raw, or spun silk.[58] Contextual analysis indicates that *koukoularikos* referred to spun silk, a cheaper version of cloth made from filament silk. For example, among the garments provided by the *eidikon* for the 949 expedition against Crete were 100 *koukoularikos* tunics and 100 pairs of *koukoularikos* leggings.[59] *Koukoularikos* was mentioned in a tribunal act among documents attributed to Demetroios Chomatenos (c. 1216-1236).[60] Among the various types of textiles mentioned in the text were 20 lengths of *koukoularikos* fabric for monastic clothing. The 1142 Panteleemon inventory includes a *koukoularikos* cloth decorated with a pattern of lions.[61] A marriage contract dated 1267 also referred to a silk veil of *koukoularikos*.[62]

An indication of the relative value of *koukoularikos* in a Byzantine context is obtained from a marriage contract published by De Lange.[63] The document, dated 1022, was written in the town of Mastaura, in the Byzantine region of Lydia. Among the bride's valuables was a double-faced red dress of *koukoularikos* valued at one and a half gold pieces, comprising just 4% of the total value of movable goods.[64] The dowry listed at least 14 textile items for

51. CIETA 2006, 18.

52. Goitein 1967-1993, I, 418 n. 27.

53. See Goitein 1967-1993, I, 104.

54. *Imp Exp*, C.240, 250; for discussion of the term, see 225 n. (C) 250.

55. Simon 1975, 36.

56. For example, see Talbot 2001, 126; Connor 2004, 164-165.

57. *Nik Chon,* Dieten, 488, 39-43; tr. from *Nik Chon,* Magnolias, 268.

58. For example, see *LBG*, 871; Jacoby 1991-1992, 474 n. 118; Koukoules 1948-1952, 25 n. 1.

59. *BOC,* Reiske, II: 678, 4, 8.

60. *Dem Chom*, 84, 6, 69.

61. *Act Pantel*, 7, 74.18.

62. *Syllabus*, 304, 436. A variant spelling appears in the text as: κοκουλλάκιος.

63. De Lange 1996, 1-10. 7, 30.

64. De Lange 1996, 6, 30. Also, see 7 n. 30.

garments and household valued between 0.5 and 2 gold pieces. On a relative basis, the spun silk dress was less valuable than a veil with a silver clasp listed at 2 gold pieces, but more costly than other dresses recorded at 1 gold piece each.

Silk fibre combinations

In addition to silk filament yarns and those spun from loose fibres, 'half' silks were also mentioned in Byzantine sources. 'Half' silks woven from a combination of silk and another fibre had the advantage of economy, since a cheaper fibre type was used for either the warp or weft. Such cloths have a long history in the empire dating from the introduction of silk to the region.[65] In the mid-10th century *Broumalion* ceremony described in the *BOC*, both the *protospatharioi* and the *spatharokandidatoi* were given either a length of *molchamion* or a striped robe.[66] The Greek word *molchamion* was equivalent to the Arabic term *mulḥam*, a half silk widely cited in Islamic writing.[67]

Metal yarns

In addition to the fibre-based materials discussed above, metallic yarns were conspicuously mentioned in the middle Byzantine sources in association with silk. Gold was the usual metal applied to textiles; the corpus contains only two references to silver embroidery.[68] Techniques for incorporating precious metals into textiles are ancient, with archaeological evidence dating to the Bronze Age.[69] While drawn gold wire and flat metal strips were sometimes used for textiles, they are not well suited to applications requiring flexibility and drape. In order to produce a more pliable cloth, thin strips of beaten gold were wrapped around an organic core such as silk, leather,

or gut.[70] An example of a gold-wrapped silk yarn is shown in fig. 1.

Sillographic and textual evidence indicate that there were four types of Byzantine imperial factories: *blattion* for silk weaving, *chrysoklabon* for gold embroidery, *chrysochoeion* to fabricate gold jewelry, and *armamenton* to produce arms and weapons.[71] On 25 December 792 Theophanes Confessor relayed that the imperial gold embroidery workshop, the *Chrysoklabarion* situated at the *Chrysion*, caught fire.[72] The *Kletorologion of Philotheos* dating from 899 described the processional order for three occupations associated with the *Chrysion*: the imperial tailors, the gold embroiders, and the goldsmiths.[73] This grouping suggests that it was the goldsmiths who made the gold yarn used by the imperial workshops.

In addition to producing new gold embellished silks, the imperial gold workshop maintained and renovated existing imperial textiles. The alleged actions of Emperor Michael III (842-867) demonstrated that gold woven or embroidered textiles could be melted down to recover precious metals. Both the *Vita Basilii*, written in the mid-10th century, and John Skylitzes' 11th century *Synopsis Historiarum* described how Emperor Michael III (842-867) allegedly gathered gold vestments belonging to the emperor and high officials and gave them to the *eidikos* to melt down.[74] According to these accounts, Michael's death averted possible destruction of the garments and they were restored to the palace.

Summary of silk trade and fibre processing terms

As this analysis has shown, the properties and performance characteristics of silk fibre types were a feature of the material culture of the middle Byzantine

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65. Jacoby 2004, 209.

66. *BOC,* Reiske, II: 18, 607, 9-12; ἀνὰ μολχαμίου βηλαρίου α´, εἴτε καὶ ἀβδίου.

67. Serjeant 1972, 255; Jacoby 2004, 209 n. 62.

68. *BOC,* Reiske, II: 41, 641.

69. Gleba 2008, 61.

70. Gleba 2008, 61-63.

71. For example, see: Oikonomides 1985, 50-52; *Listes*, 123.6-10.

72. *Theoph,* Mango, 644,

73. *Listes*, 133.9-10.

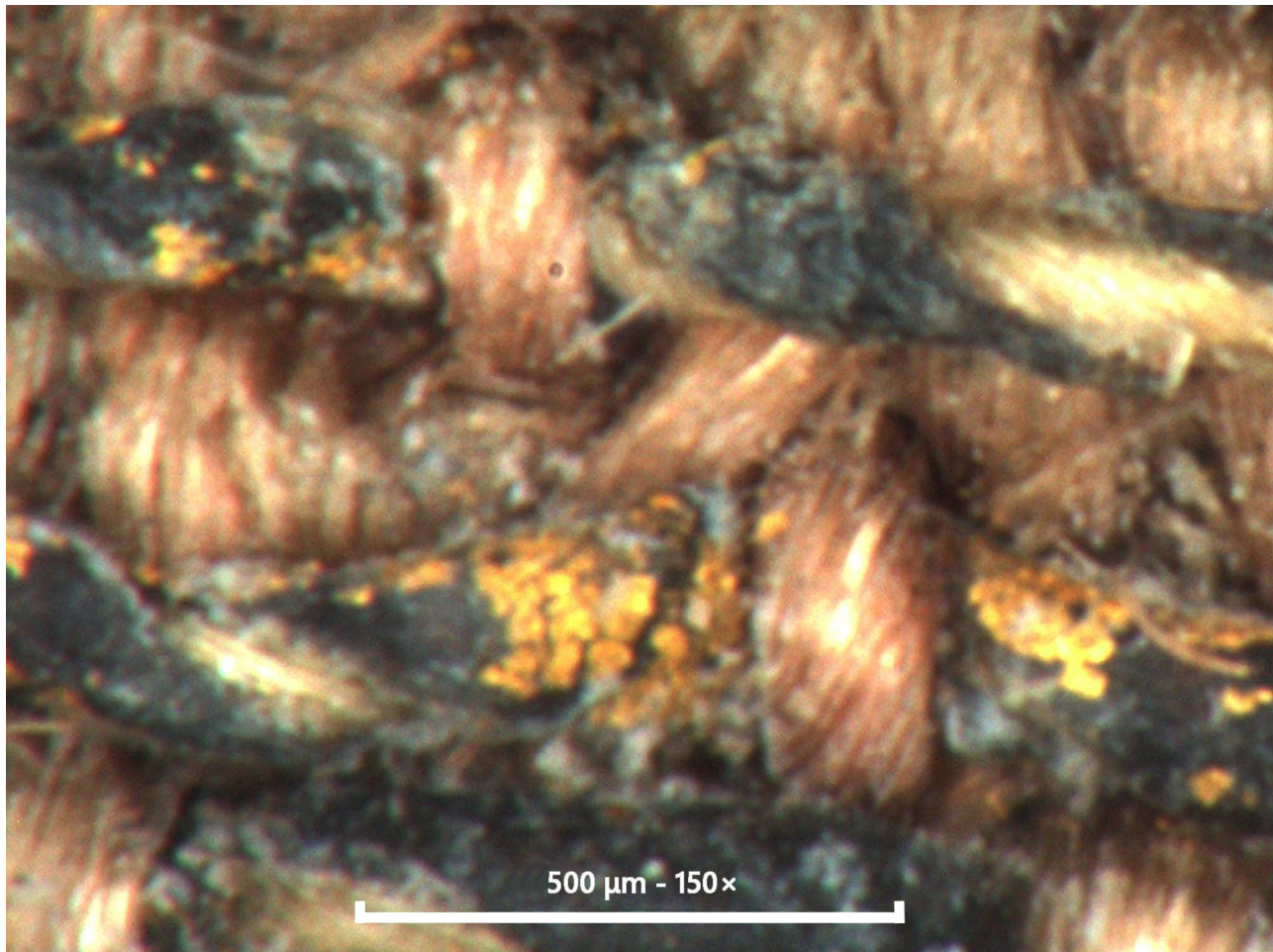74. *Skyl,* Thurn, V, 10, 97, 52; *V. Basilii*, 29.23-26.

Fig. 1. Figured pattern silk woven with gold-wrapped silk yarn photographed at 150× magnification, 1950.2 © Cleveland Museum of Art. Note that much of the gold finish applied to the strips has flaked off of the surface of the yarn. Photo by J. Galliker.

period. The *metaxopratai* regulations in the *BOE* suggest that the silk industry in Constantinople was oriented toward the regional fibre market with importers from a variety of locations. The inference is that as wholesale dealers, the *metaxopratai* were specialists in grading, buying, and selling various types of fibres through market-based transactions.

To prepare silk for weaving, the *katartarioi* performed a number of processing steps based on customer requirements and market demand. Various silk yarn types were produced with different qualitative and performance characteristics. Imitation and fraud were features of the market for silk, demonstrating the need for supervision by the eparch. Unlike some

other types of precious materials, silk is a divisible good that could be used in small quantities for decoration, spun from silk floss, or woven with other fibres. In contrast to the prevailing historical interpretation, silk materials were not confined to elite members of society, but functioned as a relative luxury available to a broader population in Constantinople and elsewhere in the empire.

Despite the visibility of gold in finished products, applied either through weaving or embroidery, there is no mention of trade in metal yarns. Only imperial sources hint at the production of metal yarns and decorations for textiles in the imperial palace workshop. Given the high value and weight associated

with metal yarns, they were presumably manufactured on a local basis or as part of yarn preparation in some workshops.

Terms for textile production and cloth types

Having considered evidence for silk fibre trade and yarn processing, this analysis now turns to an examination of source information for textile production terminology. Chapter 8 of the *BOE* provides valuable information about the work of the *serikarioi*, the producers of silk cloth. The main challenge associated with this chapter is interpretation of specific terms that have few mentions in Byzantine writing. Despite this difficulty, it is evident that the work of the *serikarioi* involved at least three distinct processes: dyeing, weaving, and tailoring garments for sale to the *vestipratioi*, the silk garment merchants. Each of these distinctive processes represented a group of specialist occupations and required training and skill to plan and coordinate work.

Dyers

The occupation of the dyers is among the best documented of the textile trades among the sources considered in the corpus. According to the framework defined by the *BOE*, dyeing of fibre and skeins could have been conducted by the *katartarioi* as part of their processing work. The regulations in Chapter 8 indicate that at least some dyeing was managed by the *serikarioi*. In addition to valuable murex stuffs, a wide variety of other dye materials were traded throughout the region. Chapter 10 of the *BOE* itemised some of the dyestuffs handled by the *myrepsoi*, the dealers in perfumes and unguents, including indigo and yellow wood for dye.[75]

Letters in the Cairo Genizah referred to the sale of dyestuffs to *Rūmī* (Byzantine or European) merchants.[76] In 1085 a Tunisian trader boasted that he made a 150% profit on the sale of brazilwood, a red dye stuff, to a merchant from *Rūm* at a port in Palestine.[77] A letter from Alexandria dated about 1060 reported the strange buying habits of the *Rūm*. These merchants bought indigo and brazilwood at auction for exorbitant prices and did not distinguish between high quality and inferior goods.[78]

In addition to dyestuffs, other chemicals were also involved in colouration processes. Describing the alum deposits mined in Upper Egypt, Ibn Mammātī (d. 1209) explained that the material was taken to Alexandria where it was sold to *Rūmī* merchants:

> "It is a stone which is needed in many things, the most important being dyeing. There is some demand on the part of the *Rūm* for their requirements; for they cannot do without it nor avoid using it."[79]

While we have little information about the actual work involved in professional dye processes, the industry was notable for its noxious smells and hazardous effluents. In Constantinople and other cities, dyers were often grouped together with tanners and castigated for the public hazards of their occupation. In about 1150, Michael Choniates reflected this sentiment, refusing to permit Jewish tanners and dyers to dwell in his diocese.[80]

In Byzantine sources, the high rate of Jewish participation in the dye industry is evident from various texts, in part because the community was subject to restrictions, exclusions, and periodic persecution.[81] Written in the 1160s, Benjamin of Tudela's census is an important source for Jewish occupational participation in the textile industry. He reported that there were

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75. *BOE*, Koder, 10.1.462-464.

76. The Cairo Genizah is a trove of discarded writings recovered from the Ben Ezra Synagogue at Fustat (Old Cairo). References to *Rūm* generally meant Byzantium as the modern name for the Eastern Roman Empire. The term also was used in a vague manner for Christian Europe into the 12th century. See Goitein 1967-1993, I, 43-44.

77. Goitein 1967-1993, I, 45; Bodl. MS Heb. B 3 (Cat. 2806).

78. Goitein 1976, 45-46; BM OR 5542, f. 27, ll. 10-13.

79. *Mammātī*, 23; tr. from Serjeant 1972, 162-163.

80. *Mich Chon*, I, 53; tr. from Starr 1939, 224-225.

81. Starr 1939, 1-10; Holo 2009, 9-23, 163-171.

2,000 Jews (meaning families), mostly skilled artisans in silk and purple cloth, in Thebes and throughout Greece.[82]

Describing the denominational and ethnic division in various occupations, Goitein noted the high rate of Jewish participation in the textile industry throughout the region, especially in silk work and dyeing.[83] A Genizah document described how a Jewish silk dyer fled Byzantium to seek financial support in Egypt after he was accused of spoiling a precious fabric.[84] He was severely punished and his children taken from him until he could reimburse.

Weavers

In contrast to dyers, we have little written information about professional weavers or their work processes during the early and middle Byzantine periods. Wipszycka's extensive study of the late Roman textile industry in Egypt was based on papyrus and ostraca recovered from various sites. The material included numerous details about the work activities and products of professional weavers.[85]

The word *gynaikeion*, which in classical Greek described the part of the house reserved for women, came to mean textile workshop in early Byzantium.[86] The term appeared again in the *Basilika* in a title that must have been enacted in the middle Byzantine period, because it has no parallel in Roman codes.[87] According to the law, a fine would be levied against anyone who corrupted a woman working in a textile factory.[88]

Evidence associated with the administration of the imperial workshop is provided by the woven inscription on the Aachen 'imperial elephant' silk that was taken from the shrine of Charlemagne and is now housed in the Munster Treasury.[89] The inscription reads "in the time of Michael, *primikerios* of the imperial bedchamber and *eidikos* when Peter was the *archon* of Zeuxippos." Michael, the *eidikos*, held the rank of *primikerios* in the imperial bedchamber, one of eight ranks by which palace officials were graded. The second line of text states that Peter was the *archon* (head) of Zeuxippos, which indicates oversight of an imperial function, presumably an imperial silk factory.[90] Unfortunately, the inscription date is no longer visible on the silk.

Additional primary evidence pertaining to the *archontes* of silk workshops comes from seals published by Oikonomides dated to the 7th and 8th centuries.[91] Information pertaining to silk workshop administration is limited to a few textual citations. The *Kletorologion of Philotheos* referred to *meizoteroi ton ergodosion* meaning workshop foremen.[92] The vita of Antony II Kauleas, patriarch of Constantinople (893-901), included a reference to the head of the imperial silk factory.[93]

In an incidental mention, the 10th-century history of Leo the Deacon referred to a manager or supervisor of an imperial weaving establishment.[94] According to this text, the silk factory superintendent was asked to summon a body of workers from the weaving establishment to join the plot to seize the throne.[95]

82. *Be Tud*, 10.

83. Goitein 1967-1993, I, 100.

84. Goitein 1967-1993, I, 50, UCL Or 1081 J 9. For a revised translation, see Jacoby 1991-1992, 482 n. 169.

85. Wipszycka 1965, especially 47-102.

86. Lopez 1945, 6 n. 3.

87. Lopez 1945, 6 n. 3.

88. *Basilika*, 54.16.8-9.

89. Vial 1961; Muthesius 1997, 183.

90. Muthesius 1995b, 65.

91. Oikonomides 1985, 50-52.

92. *Listes*, 123.10 and 317.

93. *V. Kauleas*, 18.25.

94. *Leo Diac,* Hase, 146.91: βασιλικῆς ἱστουργίας ὄντι μελεδωνῷ.

95. *Leo Diac,* Talbot, 191; *Leo Diac,* Hase, 146.90-1 and 147.1-5. According to Dagron 2002, 432, the word *systema* in this text refers to a group or body of workers rather than to the usual translation in the sense of a guild or corporation.

From this passage, we surmise that silk workers were hierarchically organised and had enough male members to comprise a force capable of assisting with the plot.

To maintain a trained and skilled workforce essential to the exacting requirements of silk production in Constantinople, slaves may have comprised a significant source of labour. Some studies have examined slavery and its increased importance in the 9th and 10th centuries.[96] Dagron noted that slaves fell into three categories, essentially mirroring the social hierarchy of free men.[97]

Several sources attest to the use of slaves in imperial workshops.[98] The *Vita Basilii* mentions widow Danielis' gift of one 100 female textile slaves to Emperor Basil I (867-886). Theodore of Stoudios (759-826) wrote about a monk named Arkadios who was condemned for icon veneration during the Second Iconoclastic period (814-842). According to a letter, the monk was forced to work as a slave in an imperial cloth workshop.[99] The *BOE* stated that the slaves of some types of private artisans who broke rules could be made into state slaves.[100] Apparently, a large enough body of imperial slaves existed to warrant the notice of Emperor Leo VI (886-912), who provided them the right to dispose of their property during their lifetime and at death.[101]

Textile types

The textile names that are most easily interpreted today were based on particular descriptive characteristics. The corpus includes some Greek terms that referred to striped cloths including *lorota* and *abdia*, an Arab-style striped cloak.[102]

One of the most frequent ways of referring to fabrics was to name them by their fibre type. Linen textiles were widely cited in a number of sources.[103] Examples included descriptive compound words such as blue linen (*linobenetos*).[104] Specific types of linen textiles included *sabana* as a type of cloth for towels.[105] *Sabana* was also used as a term for the linen broadcloth mantles worn by eunuch *protospatharioi* in the *BOC*.[106] *Linomalotaria* appeared among the widow Danielis' gifts in the *Vita Basilii* and was also mentioned in the *Imperial Expeditions* treatise.[107] The widow's gifts to Basil included fine linen *amalia*, which may have been a cloth without nap.[108] The same term appeared in the *Imperial Expeditions* treatise together with the adjective *rasika* meaning rough.[109] In the *BOC*, *rasikon* referred to cloth used for making sails.[110]

The sources included in the corpus mention *byssos*, an especially fine type of linen made with delicate yarns that may have appeared semi-transparent.[111] Arab accounts included many references to *ḳaṣab*, a highly-prized, fine linen woven with precious metals

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96. For example, see Hadjinicolaou-Marava 1950; Rotman 2004.

97. Dagron 2002, 420-421.

98. See Hadjinicolaou-Marava 1950, 25, 35, 45, 47.

99. *Theod Stoud*, 390.20.

100. *BOE*, Koder, 12.9.

101. *Nov Leo VI*, 150-153.

102. For *abdia*, see *BOC,* Reiske, I: 48, 255, 8; *Imp Exp*, C.241-242, 257-258 and 223 n. (C) 242.

103. For a summary of terms related to linen, see *LBG*, 940-941; for a comprehensive discuss of linen terminology in Byzantine and other Greek sources, see Georgacas 1959, esp. 255-256.

104. *Imp Exp*, C175.524.

105. *BOE*, Koder, 9.7.452; *BOC,* Reiske, I: 41, 215; see *Imp Exp*, 214-215 n. (C) 222.

106. *BOC,* Reiske, I: 17, 100; 49, 255; 67, 301-302; II: 15, 574.

107. *V. Basilii*, 74.31-37; *Imp Exp*, 214 n. (C) 222. The term is variously translated as linen tablecloth, fringed cover and rough blanket.

108. *V. Basilii*, 74.31-37.

109. *Imp Exp*, C124.

110. *BOC,* Reiske, II: 45, 674, 7, 11; 675, 7.

111. For example, see *Skyl,* Thurn, XV, 18, 310, 66; XXIII, 2, 482-483, 87-89; *Attal,* Brunet, 27, 4, 18-19. See also Maeder, this volume.

for luxury use, often as turbans.[112] Although not mentioned by name, Attaleiates' *Diataxis* included two valuable Saracen cloths, one of which was embroidered.[113] At the opposite extreme, Byzantine sources contain several mentions of sackcloth (*sakkon*), referring to a rough material worn for mourning, punishment, or atonement.[114] Usage context suggests that sackcloth was a general category of low quality, coarsely-woven cloth.

A few textile names in Byzantine sources referred to a specific type of weave structure. Reiske translated the word *trimita* in the *Imperial Expeditions* treatise to mean three-coloured or striped.[115] A more likely explanation is that the word retained its historical meaning as a term for twill weave. In literal translation 'three threads' referred to the number of warps comprising a twill unit as compared with two for tabby weave. The term *trimita* appeared in Roman Egyptian sources including a papyrus dated to the year 363.[116] *Trimitarioi* was an occupation identified in the *Edict of Diocletian* as well as a 4th-century tax receipt.[117] The word also appeared on a 2nd-century inscription found in Pessinous.[118]

The word *hexamitos* is of particular interest to this analysis because of its modern use as a term for weft-faced figured weave silks with a twill binding. Writing in the mid-1800s, Michel described transmission of the word from Greek to European languages through a series of terms including *exametum*, *xamitum*, *sciamitum*, *samita*, *sametum* to the present day samitum, samit, or samite.[119] The term is understood to mean a weave unit of six warps comprising three binding and three main warps.[120] The structure is normally associated with sophisticated drawlooms equipped with a figure harness for reproduction of woven patterns.[121] *Hexamitos* was listed in the 11th-century *Typikon of Gregory Pakourianos* as an altar covering.[122] The 11th-century testamentary description of Kale, wife of Symbatios Pakourianos, included a yellow *hexamiton* robe.[123] The *BOE* included a possible related form of the term, *blattia hexalia*, in reference to silks brought for trade by merchants from other nations.[124]

Summary of textile production terms

Summarising textile production evidence, the work of the *serikarioi* in Constantinople included dyeing, weaving, and tailoring silks for sale to garment merchants. Among textile producers, dyers are most visible to us because of the high rate of Jewish participation and the stigma associated with the trade. Production of dyestuffs and chemicals used in the process was a major industry in its own right with an extensive international exchange network.

The work of professional weavers is less well documented, but seems to have included free men as well as slaves. Diverse skills were required with occupations specialised by material and function in a variety of workshop settings. Textile names provide additional details about the production and consumption of silk and other types of cloths in Byzantium. Categories defined in terms of description, material content, and weave structure refer to luxury goods as well as common items.

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112. Serjeant 1972, 249, 37.

113. *Attal,* Gautier, 1782, 1793-1794.

114. *Theoph,* de Boor, 173, 3-6; *An Komn,* Leib, III, 5, 6.

115. *BOC,* Reiske, Comm., 539 A11. Note that Haldon carried over this interpretation in his analysis; see *Imp Exp*, 219-220 n. (C) 229.

116. Wipszycka 1965, 113, *P. Strasb*. 131, 9.

117. Wipszycka 1965, 112 n. 21; 113 n. 22.

118. Broughton 1938, 820.

119. Michel 1852, 106-108; also see Jacoby 2004, 229; Weibel 1935.

120. Becker 1987, 105. In a weave unit of six warps, the structure refers to a 1/2 twill with a 1:1 binding to main warp proportion.

121. CIETA 2006, 15; CIETA 1987, 16-24.

122. *Gre Pak,* Lemerle, 1733-1734.

123. *Iveron*, 364-371.

124. *BOE*, Koder, 9.6.442.

Terms associated with textile decoration

Colour

In middle Byzantine sources, the hierarchical arrangement of the court was communicated through silk fabric characteristics including colour, metal embellishment, and figured pattern woven designs.[125] James' analysis of Byzantine colours showed that perception was not defined solely by hue, but was also influenced by brilliance and saturation.[126] Some literary works conveyed colour intensity to indicate hierarchy. Psellos described the emperor as being garbed in robes of purple as compared with those of the empress in a less intense shade.[127] James traced colour terminology from early Byzantium into the middle period to show the evolution of perception toward a scheme dominated by specific definition of hues, a development particularly evident from the organisation of complex rituals.[128]

The most comprehensive source of colour information for the middle Byzantine period comes from the *BOC*. My analysis of the 217 instances of textile-related colour mentions in this text shows distinctive patterns in the use of terminology. Evidently, colour terms were edited for consistency during the reign of Constantine VII, including those used in chapters originally written in earlier centuries. Significant discrepancies in colour and other characteristics occur only in chapters 96 and 97, which were added to the compilation later, during the reign

of Nikephoros II Phokas (963-969). For example, the colour words *kastorion* and *halourgis* appear in chapters 96 and 97 respectively, but do not occur elsewhere in the text.[129]

Generic references to purple typically applied the word *porphyry*. Particular garments, ranks, and persons were described specifically in terms of murex-based dyes. Each of the 25 references to the purple *sagion* worn by high officials was recorded as *alethinos* for genuine or true purple.[130] Mention of a porphyry *sagion* occurred only once to describe a gold-bordered garment decorated with pearls worn by the emperor.[131] Regular patterns of use are also evident for other murex dye types. The coloured *tablion* applied to the chlamys worn by high officials were described in each of four instances as *oxeon,* a reddish-purple colour.[132] The word *tyrea* appeared only six times in the entire compilation, in each case for the ground colour of a chlamys worn by a patrician.[133] References to white followed a similar pattern. The white chlamys worn by high officials were described as *leukon* in 22 instances, and as *aspron* only once.[134] In each of the three instances that veils were worn by high-ranking women in ceremonies, the colour was *aspron*, not *leukon*.[135]

False purple, *pseudoxea*, was mentioned one time in the *BOC* for the tunics worn by the stewards of the table and again in the *Imperial Expeditions* treatise for belts dispatched to foreigners.[136] While some scholars have interpreted these mentions as evidence of the restriction of murex dyes to high court officials, this

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125. Garments also played a role in the scheme and have been studied by various scholars. See Parani 2003, Dawson 2002, Piltz 1997.

126. James 1996, 79.

127. *Psellos,* Renauld, III, 15, 35; 19, 9; 21, 9; James 1996, 81.

128. James 1996.

129. *BOC,* Reiske, I: 96, 438; 97, 440.

130. *BOC,* Reiske, I: 10, 81-82; 16, 98; 17, 98-100; 17, 104; 18, 109; 30, 167; 30, 169; 45, 231; 46, 236; 47, 241-244; 48, 250-251; 48, 254. II: 7, 539; 11, 549, 15, 575; 15, 587; 15, 590.

131. *BOC,* Reiske, II, 37, 634.

132. *BOC,* Reiske, I, 30, 162; II, 15, 575; II, 41, 641. For the meaning of *oxea*, see *Imp Exp*, 169 (B) 108-109.

133. *BOC,* Reiske, I: 23, 128; 35, 181; 55, 271; 72, 360; II: 41, 641.

134. *BOC,* Reiske, *leukon*: I: 1, 24; 10,71; 11, 86; 12, 89; 15, 96; 19, 115; 27, 148; 29, 161; 30, 162; 32, 171; 47, 241-242; 51, 260; 264, 284; 68, 303; 86, 391; 91, 416-417; 92, 422; II: 15, 579; 15, 590; 51, 699; 51, 701; *aspron*: II: 30, 630.

135. *BOC,* Reiske, I: 50, 258; II: 24, 623-624.

136. *BOC,* Reiske, II: 15, 578; *Imp Exp*, C.244-245.

interpretation is problematic.[137] As textile researchers and conservators can attest, the composition of particular dyestuffs cannot be perceived by visual inspection.[138] Many compounds were used to achieve various colours and even murex-based dyes contained other substances.[139] Consequently, *pseudoxea* may have referred to some perceptual difference in hue or intensity, in addition to possible differences in chemical composition.

Metal and gemstones

Application of gold and other precious metals to textiles was another way to demonstrate hierarchical ordering of the court in the middle Byzantine period. Conspicuous display of precious metals was an obvious way to project wealth and power. James' colour analysis showed the importance attributed to the visual qualities of metal with emphasis on iridescence, shine, and gleam.[140] While her study pertained to mosaics, the same concepts can be applied to textile evidence. Writing about literary and visual representation, Maguire suggested that gold in imperial portraits dematerialised imperial images as a means of associating them with angelic beings and conveying divine qualities.[141] Brubaker noted a similar use of gold in 9th-century manuscript painting to convey light, and by inference, as an expression of divinity.[142] Gold interwoven with silk or applied as embroidery would produce a similar effect.

In his 6th-century ekphrasis of Hagia Sophia, Paul the Silentary blended perception of light with metal and colour in association with silk in his description of a gold-embroidered altar cloth:

> "But by the web, the produce of the foreign worm, changing its coloured threads of many shades. Upon the divine legs is a garment reflecting a golden glow under the rays of rosy-fingered Dawn."[143]

As described in the *BOC*, gold was applied to textiles through a variety of means including: weaving, embroidery, gilding, and applique. The terms *chrysoyphes* (χρυσοῢφής) or *chrysoyphantos* (χρυσοῢφαντος) described gold woven into textiles on the loom.[144] Two different types of gold embroidery were mentioned in the text. *Chrysokentetos* referred to gold yarns embroidered to the cloth surface (couched), while *chrysosolenokentetos* was apparently a method of affixing tiny gold tubes to the cloth surface.[145] The literal translation of *chrysophenges* as bright or shinning gold probably meant application of gold leaf to gild textiles.[146]

Other types of gold decorations were sewn to finished garments. *Chrysoperikleistos* was translated by Reiske as gold-bordered, and by Vogt as edged with gold, but Dawson suggested application of tablet woven gold bands.[147] *Chrysoklabos* referred to woven or applied bands running from shoulder to hem.[148] The related terms *chrysosementos* and *chrysa holosementos* have been interpreted as either appliqué or gold-patterned.[149]

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137. For discussion of the meaning of the term, see Muthesius 1995a, 293; *Imp Exp*, 169 n. (B) 108-109; 224 n. (C) 244; Jacoby 1991-1992, 483.

138. For example, see Verhecken 2007.

139. The literature of historic dye technology is extensive and relies upon chemical analyses to determine chemical components. For a synthesis of historical dye stuffs, see Cardon 1999.

140. James 1996, 115.

141. See Maguire 1989, 228 for panegyric references to the sun and shinning light.

142. Brubaker 1998, 37.

143. *Paul Sil*, Bekker, 767-771; tr. from Mango 1986, 88-89.

144. Dawson 2002, 27.

145. Dawson 2002, 26-27; Woodfin 2012, xxiv-xxvii.

146. Dawson 2002, 29-30.

147. *BOC,* Reiske, Comm. 52; *BOC*, Vogt, Comm. I, 30, Dawson 2002, 28-29.

148. Dawson 2002, 28.

149. *BOC*, Moffatt, 294 n. 2; Dawson 2002, 28.

Terminology for the types of gold decorations in the *BOC* followed the same general pattern as the prestige colours discussed above. General references to gold textiles used the word *chrysos*. Specific terms were used to describe garments in terms of a hierarchically ordered scheme. As we have seen, except for the two chapters added during the reign of Nikephoros II Phokas, the consistent use of terminology suggests that the texts were collectively edited for greater consistency in terminology.

The addition of gemstones or pearls to garments was mentioned in the *BOC* on four occasions.[150] The most elaborate garment was a *kolobin*, which was known by the name *Botrys*, meaning 'bunch of grapes'.[151] The figured pattern silk garment was embroidered with gold thread and decorated with precious stones and pearls. A scholion to the *Imperial Expedition* treatise referred to a special *chiton* worn by the emperor when he entered the city in an imperial triumph. Known by the name 'rose cluster' (ῥοδόβοτρυς), it was described as *chrysoyphantos* suggesting that the design was woven with silk and gold yarns.[152] The garment was "covered in pearls set in a criss-cross pattern, and with perfect pearls along the hems."[153] Several authors including Attaleiates and Choniates mentioned the heavy weight of imperial garments and regalia.[154] Function and practicality limited the extent to which heavy embellishments could be applied to silks, so other means of distinguishing high status textiles had to be devised.

Representation

In addition to colour and precious metals, representational patterns provided a third means of elevating textiles and communicating hierarchy. Textual evidence concerning figured silks shows patterned weaves to be a clear extension of the Byzantine visual sphere in terms of both aesthetic perception and symbolic reference.

Aesthetic Perception

In her study of colour perception in Byzantium, James documented descriptions from various authors demonstrating aesthetic appreciation for compositions involving variegated colours in forms such as mosaics, marble columns and peacock feathers.[155] In an encomium describing the interior of the Nea Church, the *Vita Basilii* integrated visual references for two different media. The text described the floor mosaics as first appearing "to be fully spread with rugs woven of silk or of *sidonian* fabrics."[156]

Several mentions included in the corpus referred to the use of variegated colour, particularly in creating a layered, ambivalent experience. As a visual representation of Christ's dual nature for the feast of the Nativity, high officials wore Tyrian purple and yellow-spangled (μηλινοκάθρυπτα) chlamyses.[157] The costume worn by the emperor for the feast of the Ascension represented a similar mingling of colour and pattern with the prescription of a multi-coloured *skaramagion*.[158]

Sources suggest that the two qualities that were especially prized in Byzantine colour combinations were contrast and association.[159] John Mauropous related his aesthetic appreciation of colour interpolation in an 11th century epigram "beauty is created when two contrasting colours are wonderfully blended together."[160] The medium of figured textiles required patterns to be woven with contrasting colours at a

150. *BOC,* Reiske, I: 10, 80; II: 1, 522; 15, 580; 37, 634.

151. *BOC,* Reiske, I: 10, 80, 86; ὁ βασιλεὺς κολόβιν τριβλάτιον χρυσοσωληνοκέντητον, διὰ λίθων καὶ μαργάρων ἠμφιεσμένον, ὃ καὶ βότρυς καλεῖται.

152. *Imp Exp*, C.750-752, 759.

153. *Imp Exp*, C.750-752.

154. *Attal,* Brunet, 36, 19, 8-9; *Nik Chon,* Dieten, 273.

155. James 1996, 125-127.

156. *V. Basilii*, 84.13.

157. *BOC,* Reiske, I: 23, 128; see *BOC*, Moffatt, 294 n. 2; *LBG*: (μήλινος + καθρύπτης) mit gelben Spiegeln (Pailletten).

158. *BOC,* Reiske, I: 37, 188; τριβλατίων σκαραμαγγίων.

159. James 1996, 122.

160. *Ioan Maur*, Epigram 100, 51-52.

scale appropriate for the intended viewing distance. For the reception of the foreign ambassadors, the *protospatharioi* wore green and pink *skaramangia* while the *spatharokandidatoi* and the *spatharioi* wore other colour combinations.[161]

Symbolism

Interpretation of figured patterns described in historical sources requires critical analysis of source evidence to examine intention. Relying on earlier sources, Theophanes Confessor conveyed Byzantine suzerainty over Lazica by describing the investiture garments worn in 522 by Tzathios which bore embroidered images of Justin I (518-527).[162] The iconoclasm controversy was clearly referenced in Theophanes' description of the donation made by Michael I (811-813) on the investiture of his son, Theophylaktos. Michael renewed a set of four curtains of ancient manufacture "splendidly embroidered in gold and purple and decorated with wonderful sacred images."[163]

Several scholars have investigated patterned silks to explore how textile representation was influenced by iconoclasm.[164] Based on documentary evidence and available technical information about figured silks, Brubaker concluded that the imperial silk workshop remained active during iconoclasm, but that subject matter alone is an insufficient guide for dating.[165] For the middle Byzantine period, Maguire examined the way that costume was used to present the emperor and his court as counterparts to the invisible court of Christ.[166] In his study of liturgical vestments in Byzantium, Woodfin showed the later transformation of Byzantine liturgical dress from its middle Byzantine basis in the imagery and forms of the imperial court.[167]

Figured textiles were visible not only to court officials in imperial ceremonies, but also to the population of Constantinople. Choniates described the imperial triumph declared in 1133 by Emperor John II Komnenos (1118-1143) to mark the capture of Kastamon. For the occasion, the streets were decorated with gold-embroidered purple cloths as well as woven images of Christ and the saints.[168]

Summary of textile decoration terms

The properties of silk made it a highly adaptable medium for expression. The high dye receptivity of the material provided a means to convey rank through colour with the capacity for nuanced presentation of information. Like metal, silk reflects light to display a shimmering, radiant presence. Combining colour with gold intensified the visual display of wealth and divine qualities. While gold was applied to silk garments and furnishings through every available means, representations provided another device to communicate hierarchy. Woven patterns coincided with aesthetic preferences for variegated colours. Use of textiles for symbolic representation in garments provided a powerful means of projecting information with the advantages of portability and intimate association with the wearer.

Terms for woven pattern designs

Imperial restrictions

Chapter 8 of the *BOE* reflected imperial efforts to maintain the exclusivity of imperial silks. The text defined certain goods as *kekolymena*, meaning forbidden or prohibited. The *serikarioi* were permitted to produce certain types of silk for sale to the *vestiopratai*. These restrictions were not applicable when the eparch commissioned silks to be woven for purchase

161. *BOC,* Reiske, I:15, 576.

162. *Theoph,* de Boor, 168, 23-26.

163. *Theoph,* de Boor, 494, 29-31; tr. from *Theoph,* Mango, 678; for re-editing and embellishing earlier iconoclastic sources, see Brubaker & Haldon 2001, 166.

164. See Maguire 1996, 100-106, 137-145; Muthesius 1997, 2, 60, 68-72, 146.

165. Brubaker & Haldon 2011, 338-340.

166. Maguire 1997, 247-258.

167. Woodfin 2012.

168. *Nik Chon,* Dieten, 18, 81-84.

by the state.[169] The implication is that *serikarioi* had the material resources and technical capabilities necessary to produce at least some types of imperial or sub-imperial quality silks when required, but were otherwise prohibited from doing so. The penalty for making prohibited weaves or for selling a slave who knew how to produce such silks to a foreigner was to have a hand cut off.[170] The consequence of delivering silks made abroad to the imperial storeroom (*basilikon kylistareion*) was to be flogged and shaved.

The particulars of prohibited goods are listed in *BOE* paragraphs 8.1, 8.2, and 8.4. These sections are difficult to interpret because the specific terms are not meaningful in literal translation. What is clear is that the regulations referred to categories of attributes. Paragraph 8.4 explicitly prohibited use of murex dyes for particular types of textiles. Paragraphs 8.1 and 8.2 restricted production of high value silks of one or more colours and in certain combinations, including those that gave variegated or multi-coloured effects. Another prohibition pertained either to the size of a finished cloth, or more likely, the scale of a pattern repeat.[171]

A monetary limit was placed on the maximum value of goods produced by the *serikarioi*. Any garment worth more than ten *nomismata* had to be reported to the eparch.[172] The regulation also applied to the guild of the *vestiopratai*.[173] This same market value limit appeared in the *Imperial Expedition* treatise. The *eidikon* was responsible for purchasing various types of garments from the marketplace for values up to ten *nomismata*. Purchased items included Egyptian silks and locally made purple garments. These were intended as gifts for foreigners and for military

officials in the event of a rewards presentation at a military camp (*aplekton*).[174]

References to loom technology and quality of workmanship are evident in chapter 8 of the *BOE*. Paragraph 8.3 required inspection of silk looms and equipment by certain officials, the *mitotes*, under the authority of the eparch, to ensure that imperial quality goods were not being produced. The inference is that inspectors monitored textiles on workshop looms as they were being woven. Finished goods were also examined by the *boullotes* and required the eparch's seal. Paragraph 8.9 defined the consequences of not having seals affixed to bales of finished cloths.

Regulations for the *serikarioi* defined three qualitative categories of silks: high (*megalozela*), medium (*mesozelon*) and lower quality (*leptozelon*).[175] The *Imperial Expedition* treatise used these same terms to describe the qualities of woven silks produced in the imperial workshop.[176] The *BOE* regulations strictly prohibited production of goods in the high and medium categories, but some lower quality items were allowed. While the full set of attributes involved in grading silks are not clear to us, quality references included yarn type, and possibly diameter.

Polychrome pattern weaves

Scholars have long puzzled over the meaning of *triblattion* and *diblattion*, which appeared only in association with imperial or high prestige silks. In the sources included in the corpus, *triblattion* and *diblattion* were specifically named 15 and 16 times respectively. In addition to four mentions in the *BOE*,[177] the terms appeared five times in the *BOC*,[178] 15 in the *Imperial*

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169. Note that spelling of *idikon* is from the text, as compared with *eidikon* elsewhere. *BOE*, Koder, 8.2: ἐχτὸς τῶν ἐχόντων ὁρισθῆναι παρὰ τοῦ ἐπάρχου πρὸς χορηγίαν τοῦ ἰδικοῦ.

170. *BOE*, Koder, 8.11.

171. *BOE*, Koder, 8.1, 378-379: τὰ δὲ βλαττία κατὰ περσικίων ἤ δισπίθαμα χλανίδια ἐμφανιζέσθωσαν τῷ ἐπάρχῳ....

172. *BOE*, Koder, 8.1, 379-380.

173. *BOE*, Koder, 4.2.

174. *Imp Exp*, C.290-293, 510-511.

175. *Imp Exp*, 217-219 n. (C) 226.

176. *Imp Exp*, C.225-242.

177. *BOE*, Koder, 8.1, 8.4.

178. *BOC,* Reiske, I: 10, 80, 11; 37, 188, 21; 48, 255, 7-8; 97, 442, 1-2; II: 15, 581, 2.

Expeditions treatise,[179] five in Attaliates' *Diataxis*,[180] once in the *Typikon of Gregory Pakourianos*.[181]

Considering these sources collectively, the terms were used explicitly in conjunction with colour words in 11 instances and in association with figured patterns in 13 cases. In the *BOC*, *triblattion* was used coincidentally with a description of a chlamys patterned with a plane tree design.[182] This mention was immediately preceded and followed by a number of other descriptions referring to various patterns including griffins, lions, horsemen, and peacocks. The *Imperial Expeditions* treatise included several mentions of *diblattia* decorated with eagles and other imperial symbols in various colour combinations.[183] For the reception of the Saracen ambassadors in the *BOC*, the emperor put on his eagle pattern chlamys to receive the guests.[184] The *Diataxis* included a *diblattion* silk with a yellow griffin design.[185] The text also listed a purple *diblattion* curtain with a design of peacocks in conches.[186] For the feast of the Nativity in the *BOC*, some high officials wore chlamyses that were patterned with a design of peacocks in conches.[187]

In his 17th-century Latin glossary, Du Cange defined *triblattion* as a three-colour cloth and included a description by Peter Damian.[188] Reiske interpreted the term to mean either the number of times a silk was placed in a dye bath or a type of polychrome textile. Although some scholars have adopted the dye bath interpretation, this explanation is inconsistent with colour processing.[189] Submitting a cloth to multiple baths of the same colour would not produce reliably perceivable gradations in colour intensity to support distinct terminology.[190]

Guilland adopted Reiske's second explanation and concluded that *di-* and *triblattion* referred to solid strips of various colours applied to a ground fabric that was usually purple in colour.[191] His analysis did not propose a method of application, nor did he describe the location or physical dimensions of the strips. To explain the coincidence of *triblattion* with pattern descriptions, he suggested that the designs were embroidered onto the applied colour strips.[192] He concluded by suggesting that the number of bands applied to a garment was an indication of hierarchy and might have designated rank in the manner of clavi.[193]

Despite its general acceptance, Guilland's explanation is problematic. Incidence and context indicate that *di-* and *triblattion* occupied a high position in the hierarchy of textiles in imperial use and contributed to the sublime presentation of the emperor and his immediate retinue. Colour banding is among oldest and most common forms of embellishment, in part because it provides a way to recycle used or damaged coloured textiles. In the middle Byzantine period, materials for coloured strips were widely available, required no special processing or skills, and could have been worn by many persons in society. For the purpose of elite differentiation, colour bands would have been inconsistent with use of fine silks, exclusive dyestuffs, and precious metals.

179. *Imp Exp*, C.173, 213, 235, 236, 240, 242, 251, 258, 503, 508, 732, 783.

180. *Attal,* Gautier, 1306, 1779, 1887, 1792.

181. *Gre Pak,* Lemerle, 1728.

182. *BOC,* Reiske, II: 15, 581, 1-2. A plane tree is deciduous variety with a broad canopy.

183. *Imp Exp*, C.240-242, 251-253.

184. *BOC,* Reiske, II: 15, 587, 21.

185. *Attal,* Gautier, 1787-1788.

186. *Attal,* Gautier, 1376-1377.

187. *BOC,* Reiske, I: 23, 128, 14.

188. Du Cange & Carpentier 1733, VI, 1277.

189. This interpretation was carried over in Muthesius 2002, 163. For addition discussion with respect to *blattion* and dyes, see Dawson 2002, 22-26.

190. See Edmonds 2000 for an explanation of murex dye bath preparation and use.

191. Guilland 1949, 339-348.

192. Guilland 1949, 347.

193. Guilland 1949, 348. Several scholars including Haldon have adopted Guilland's interpretation; See *Imp Exp*, 205-207 n. (C) 173.

As Guilland pointed out, several different kinds of garments were made from *di-* and *triblattion* such as: chlamys, *skaramagia, kolobia, divetesia,* and tunics. Furnishings included cushion covers, curtains, altar cloths, hangings, and untailored lengths of cloth. Affixing coloured bands to a variety of different garments would have created a disparate appearance in the otherwise formalised and coherent system of vesture, particularly for items embellished with clavi. A ranking system for furnishings based on coloured bands is difficult to imagine. The idea of affixing coloured strips to unsewn lengths of cloth seems especially questionable since they might later have been made into tailored items. The corpus contains various references to the use of stripes for decoration on some garments, but only occasionally in association with high officials or the emperor in a ceremonial context.[194] Moreover, no written work included in the corpus attached symbolic or aesthetic importance to the use of colour bands.

A telling reference comes from the *Book of Gifts and Rarities*.[195] Included among the elaborate gifts sent by Emperor Romanos I Lekapenos (920-944) to Caliph al-Radi bi-Allah (934-940) in 938 were several brocade cloths:

> "One with a design of eagles in two colours, another with a floral [design] in three colours, another also with three-coloured stripes, a red one with coloured foliate design, the design of yet another [represents] trees on a white ground, two with a design [representing] a hunter set in a roundel on a white ground, two with crouching lions on a yellow ground, two eagles in roundels…."[196]

The conclusion from the discussion above is that *diblattion* and *triblattion* were the middle Byzantine terms for imperial quality weft-faced compound weave figured silks. This explanation is consistent with descriptions of aesthetic and symbolic preferences as related through a variety of written sources. This analysis also agrees with accounts of pattern use and colour terminology.[197] Examples of two colour *diblattia* type cloths are shown in Figs. 2 a-c.; Figs. 3 a-c provide examples of three colour *triblattia* silks.

Scholars including Guilland have questioned why only one or two colours at most were named in conjunction with *triblattion* and *diblattion*.[198] In the prescriptive sources that included these terms, the purpose of recording information was for identification rather than comprehensive description. For a bi-colour *diblattion*, either the pattern or the ground was named. Polychrome silks with three or more colours would have had a dominant pattern colour and a ground. Reference to other colours would have been cumbersome and unnecessary. For example, a cloth described as *oxea leukotriblatton* would have had a white dominant pattern colour on a red-purple ground.[199]

As noted by Guilland and others, there were clear status distinctions between *triblattion* and *diblattion*. Each of the seven instances of multi-coloured patterned silks worn by the emperor was *triblattion*. Only the cushions provided for the emperor to recline while on campaign were *diblattion*. *Triblattion* silks were awarded only to the *strategos* of important themes. All other senior officials received various qualities of *diblattion* with different imperial symbols according to rank. The implication is that the privilege of wearing variegated colours in a polychrome

194. For a possible exception, see *Imp Exp*, C.241-242; 257-258.

195. The *Book of Gifts and Rarities* comes from an Arabic manuscript dating from the Ottoman period and covers the 7th to 11th centuries for the Islamic world. The text conveys extensive details about textiles and other valuable and exotic items involved in court exchanges. Recently, Christys examined the text as a historical resource. Her analysis of the purported embassy of Queen Bertha to Baghdad in 906 demonstrates some of the ways the text was altered to meet the needs and tastes of court writers. See Christys 2010, 160-161.

196. *Gifts*, 99-101.73.

197. Dawson 2002, 25-26 concluded that *tri-* and *diblattion* filled a terminology gap in the *BOC* as a technical term for figured pattern weaves.

198. Guilland 1949, 342.

199. *Attal,* Gautier, 1790-1792.

a.)

b.)

c.)

Figures 2a-c. Examples of *'diblattia'* weft-faced compound weave figured silks, photos by J. Galliker. a.) AN34973001 © Trustees of the British Museum. b.) 11.90 © Museum of Fine Arts, Boston. c.) 33.648 © Museum of Fine Arts, Boston.

a.)

b.)

c.)

Figures 3a-c. Examples of *'triblattia'* weft-faced compound weave figured silks, photos by J. Galliker. a.) 1902.1.221 © Cooper Hewitt, Smithsonian Design Museum. b.) BZ.1927.1 © Dumbarton Oaks, Byzantine Collection, Washington, DC. c.) 1902.1.222 © Cooper Hewitt, Smithsonian Design Museum.

weave was a prerogative reserved for the emperor and the most senior officials. Patterns for lesser officials were available only in bi-colour silks. The wearing of patterns and particular colours to designate rank was clearly defined by the *BOC*:

> "Note that on the actual day of the reception, all those mentioned previously, from the *protospatharioi* down to the lowest ranking person wearing *skaramangion*, stood each according to the colour and pattern of his *skaramangion*, that is, those wearing the pink and green eagles to either side, those wearing the owls and the many-circled eagles, likewise those wearing the wave pattern, and likewise those wearing the white lions." [200]

Monochrome pattern weaves

An important type of patterned weave comparable to *tri- and diblattion* in complexity and importance has barely been noticed in the secondary literature.[201] In the *BOC* and the *Imperial Expedition* texts, monochrome pattern silks were identified by the combination of a colour name with the prefix *di-*. Translated literally, *diaspron* meant two whites, a reference to tone-on-tone patterning effect.[202] The *Diataxis* used a similar term, *blattion diphoton,* to describe a silk pectoral garment.[203] With the literal meaning of two shades or tones, the use of *diphoton* to describe a silk cloth suggests a monochrome patterning effect.[204] The designs in monochrome weaves were formed either by incised lines or by the textural contrast of a pattern against a ground. In either case, the effect would have

been subtle and elegant. Both structures were forerunners of true damask, a modern term which itself alludes to its historical production centre, Damascus.[205]

Additional interpretational evidence is provided by the incidence of colours attested. The 16 mentions of the weave included: six white, four pink or rose, three yellow, and three blue. Monochrome patterns were often woven in white or light colours because textural contrasts are more easily perceived. The same paragraph of the *BOE* that prohibited the *serikarioi* from weaving *triblattion* and *diblattion* included a third term, *dimoiroxea*, which is conventionally translated as two-thirds purple.[206] Given the naming conventions for monochrome patterns in other sources, the term *dimoiroxea* may have referred to imperial quality 'damask' figured silks.[207]

In the *BOC*, usage context shows that monochrome patterned silks were part of the hierarchical ordering of textiles when all attendants wore white garments. For the most holy festivals – Easter Sunday, Eve of the Epiphany and the Wednesday of mid-Pentecost – only the emperor wore *diaspron* garments. The weave was also used to indicate seniority during the reign of Nikephoros II Phokas. As described in chapter 96, the president of the senate wore a pink 'damask' (*dirodinon*) *chiton* on appointment, and a pink 'damask' *sagion* shot with gold on feast days.[208]

By analogy to the hierarchical distinction between *triblattion* and *diblattion*, monochrome patterned weaves may have been ranked according to the quality of light. One-colour patterns in the brightest hues seemed to occupy the most superior position in the hierarchy associated with the weave. Coloured 'damasks' were included among the goods prepared for the expedition against Crete in 911 as

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200. *BOC,* Reiske, II: 577-578, tr. from *BOC*, Moffatt, 577-578.

201. For a brief discussion of the term, but without reference to particular sources, see Muthesius 1995a, 296. For the word *diprosopon*, see Koukoules 1948-1952, 2.2, 33. For a discussion monochrome weave structures: Muthesius 1997, 85-93. For explanation of monochrome patterning methods, see Becker 1987, 118-129.

202. The meaning of *diaspra* was interpreted by Haldon as either a warp and weft of different colours or multiple dye baths. See *Imp Exp*, 217 n. (C) 225.

203. *Attal,* Gautier, 1798.

204. *Attal*, Talbot, 371 n. 48.

205. CIETA 2006, 12.

206. *BOE*, Koder, 8.4; *BOE,* Freshfield, 8.4.

207. For the sake of brevity, the term used here for monochrome pattern weaves is 'damask' to designate the category of such structures.

208. *BOC,* Reiske, I: 97, 440, 443.

gifts for senior officials.[209] In the *Kletorologion of Philotheos*, doctors wore blue 'damask' *skaramagia*.[210] As with polychrome figured silks, monochrome patterned weaves were used for furnishings as well as garments. Sets of pink 'damask' curtains were hung in the Hippodrome festival held for the Saracen ambassadors.[211]

Among the various characteristics that contributed to the hierarchical ordering of silks, quality is the most difficult to interpret from written sources. In addition to dividing textiles into high, middle, and low categories, the *Imperial Expeditions* treatise referred to subcategories for some items comprising first, second, and third grades. Haldon noted that use of tripartite grading systems was longstanding, with similar references in the *Edict of Diocletian*.[212] Both the *BOC* and the *Imperial Expedition* texts indicate that the qualitative hierarchy of textile gifts was visible and understood by the giver and receiver as well as the broader community of observers.[213] The limitation of textual evidence is that we do not know the specific textile characteristics that distinguished imperial and non-imperial categories of goods, nor do we understand the basis for ranking within each category. Nevertheless, we can surmise that this 'qualitative hierarchy' resulted in tangible differences in workshop practices by textile type.

Summary of woven pattern terms

Pattern weaving technology provided a means of differentiating imperial silks given the long-standing problem of imitative colour and metal use. By the middle Byzantine period, textile prerogative was defined by a combination of elements that were modulated according to need. Information was conveyed through the interaction of components including garment type, material composition, precious metals, applied embellishments, and colour combinations.

Description of particular prohibitions provides the best available definition of the properties that constituted imperial quality silks. As interpreted in this section, these included particular dyestuffs, colour combinations, pattern scale, yarn size, quality attributes, and monetary value. Critical analysis clarifies the long-debated meaning of *di-* and *triblattion* as bi-colour and polychrome weft-faced compound weave figured pattern silks. Although they had less apparent visual impact, the use of *diaspron* pattern weaves was a means of designating rank on occasions when the ceremonial rite called for one-colour garments.

Conclusion

This analysis provides a synthesis of 57 terms from Byzantine sources pertaining to or used in association with silk. Considered collectively, silk terminology provides a body of evidence to examine the role and social importance of silk in the material culture of the middle Byzantine period. In contrast to the lingering perception that silk was an imperial monopoly, the material appears to have been widely available in Constantinople as well as in provincial towns. Silk fibre trade and processing terms suggest a highly developed international industry.

As compared to other fibres, silk was considered to be relatively luxurious, but was only one factor contributing to the value of a particular textile. While silk remained a luxury fibre on a comparative basis, not all luxury items contained silk and not all silk-based textiles were high value goods. Terminology analysis indicates that various types of low quality silk products were produced in response to consumer demand.

The extensive lexicon associated with textile decoration demonstrates the adaptability of silk as a medium of expression. It also demonstrates that the desire for elite differentiation spurred development of new materials and methods. Production of complex figured silks woven on specialised looms in the imperial silk workshop provided a means of limiting

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209. *BOC,* Reiske, II: 44, 661.

210. *Listes*, 183.20.

211. *BOC,* Reiske, I: 15, 589.

212. *Imp Exp*, 224 n. (C) 243-244.

213. For example *BOC,* Reiske, I: 44, 227-230; II: 18, 607; *Imp Exp*, C.503-511.

imitative products. *Triblattion*, *diblattion* and high quality 'damask' weaves were technical and institutional adaptations to elevate precious silks as an imperial resource.

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