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Domestic Textile Production in the Dakhla Oasis in the Fourth Century AD

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Kellis: A Treasure Trove for Textile Studies

Ancient Kellis, modern Ismant el-Kharab is located in the Dakhleh Oasis in Egypt's western desert. The main occupation of the village was from the early to late Roman period (late 1st century to the beginning of the 5th century AD). Excavated as part of the Dakhleh Oasis Project, the site has revealed textual and archaeological evidence from which a detailed picture of life can be painted. To date, the main publications of the village's finds have focussed on the textual remains, of literary and documentary texts in Coptic, Greek, and Syriac.[1] A comparable publication of the archaeological evidence from the site is still pending, but the context of the surviving evidence is clear.[2] Many of the documents were found in House 3, left there after the abandonment of the village around the turn of the 5th century, and reflect the concerns of several generations of its residents.[3] One reason for the abundance of textual sources is the volume of written communication between individuals in Kellis and others in the Nile Valley, mostly members of the community who had travelled there for a variety of reasons. This Oasis–Valley duality is fundamental to understanding many of the documents, as well as the realities of life for Kellites. The distinction is made clear through reference to the Oasis (ⲟⲩⲁϩⲉ) and the Valley ("Egypt", ⲕⲏⲙⲉ) and the importance of location will be raised at several points in the following discussion.

The Manichaean nature of the community, for which the texts are the primary evidence, has received the greatest amount of scholarly attention to date.[4] Yet, there is vast potential for

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[1] To date, eight volumes of texts from Kellis have been published: *O.Kellis* (Greek ostraca), *P.Kellis* I (Greek documentary papyri), *P.Kellis* II (Coptic, Greek, and Syriac literary texts), *P.Kellis* III (the Kellis Isocrates Codex), *P.Kellis* IV (the Kellis Agricultural Account Book), *P.Kellis* V (Coptic documentary texts), *P.Kellis* VI (Coptic, Greek, and Syriac literary texts), and *P.Kellis* VII (Coptic documentary texts). Throughout this article, I use these sigla, as included in the *Checklist of Editions of Greek, Latin, Demotic, and Coptic Papyri, Ostraca and Tablets*, updated online at papyri.info/docs/checklist. It should be stressed that many studies on the Kellis material use other sigla, *e.g.*, P.Kell.Copt., as included in the original editions. However, the *Checklist* represents the disciplinary standard and should be used for all discussions of the textual corpus. Note that the translations used in this article are primarily those of the original editors, with only minor modifications. Concerning the date of the texts from the site, while some Greek documents date to the end of the 3rd century, the majority of the relevant material dates to the 4th century. The nature of the sources, which predominantly consists of letters, means that individual texts can rarely be dated more precisely than this. As a result of the differential ability to date the sources, I have not provided dates for individual items.

[2] Field reports are scattered throughout journals and publications of the Dakhleh Oasis Conference and are too numerous to list here. For philologists, a convenient introduction to the site itself is the substantial overview at the beginning of *P.Kellis* V (the archaeology and numismatic evidence are presented in addition to the contents of the Coptic documents); see also Bowen 2015 and Hope 2015. The recently completed doctoral thesis of Håkon Teigen 2018 and the soon-to-be completed thesis of Mattias Brand, 'The Manichaeans of Kellis: Religion, Community, and Everyday Life' (Leiden University) represent significant contributions to the study of life in the village.

[3] A plan of Houses 1–3 and their immediate neighbourhood is available in *P.Kellis* V fig. 1 and online at http://artsonline.monash.edu.au/ancient-kellis/map/.

[4] For example, Dubois 2009 and 2013 and Mirecki 2012; the opening line of Dubois 2009, p. 203 is especially illuminative in this respect: "La fouille manichéenne de l'oasis de Dakhlah, l'antique Kellis, a profondément modifié notre perception de l'histoire des manichéens en Égypte". At the very least, Manichaeism is typically highlighted as a key feature of documents from the village.

the examination of a range of topics, especially in conjunction with the surviving material remains.[5] Examination of the domestic textile industry in Kellis holds particular promise. Possible routes of research include: the use of raw material, equipment (including matching the physical with the textual evidence), production techniques, organisation of work, gendered divisions in labour,[6] the economic value and impact of textiles, local and national networks, and the religious use and role of textiles. Given the restricted scope of the current study, my intention is to provide a snap shot into the world of Kellis textiles and to demonstrate the potential for a complete study of textiles at the village. In order to do so, I look at three different areas:

1) The lexical study of textiles, both in Greek and Coptic. Concerning the latter, the Kellis material makes an important contribution in two respects: it significantly expands the chronologic and geographic range of our Coptic evidence, being among our earliest corpora of Coptic documents and located far from the Nile Valley.
2) The procurement of raw materials. Wool is used as a case study to highlight the range of evidence available and the different areas of life in the Oasis upon which light is shed.
3) The economy of textiles and textile production.

LEXICAL GOLDMINE

Within the Coptic texts, both autochthonous and foreign, *i.e.*, Greek words, occur—no Coptic words occur as loans within the Greek texts. All attestations of different terms are collected in the appendix at the end of this article. In general, only native words are used for terms connected with the production of textiles and professional matters, while materials and finished products are mostly named using native lexemes. The majority of the lexicon for the textile industry at Kellis, therefore, is Coptic, making the corpus an important addition to the existing body of evidence.

One of the principal problems affecting a clear understanding of the meaning of Coptic terms for textile production, especially garment types, is the nature of the written sources themselves. As Anne Boud'hors and Maximilien Durand noted almost two decades ago:

> "la documentation couvre en effet plusieurs siècles et l'on est toujours incapable d'évaluer une quelconque évolution des modes pour cette période ; les textes témoignent de niveaux de langue très divers, qu'il s'agisse d'œuvres littéraires, homilétiques ou martyrologiques, ou d'extraits de correspondance, de comptabilités, d'actes juridiques ou d'inventaires de biens ; dans de nombreux cas, par ailleurs, on est en peine de dire si les termes employés appartiennent au vocabulaire des tisserands et présentent donc un caractère technique, s'ils relèvent plus de celui des commerçants et abordent les tissus d'un point de vue qualitatif, ou encore s'ils correspondent à une terminologie plus quotidienne et désignent la pièce en fonction de son usage."[7]

Issues exist regarding the scattered nature of the textual sources, chronologically and in terms of textual genre (to which one should also note the geographic component, as there may be no terminological consistency between such distant regions as the Fayum and western Thebes), and whether terms were part of the common vernacular or of the specialist language of different

[5] The respective doctoral research of Brand and Teigen (see n. 2) demonstrates the amount of substance that can be extracted from the available material.
[6] This topic has received some attention, see Franzmann 2007.
[7] Boud'hors and Durand 2002, p. 105.

groups involved with textiles, whether producers or traders, for example. Connected to the genre and geographic spread of our sources, another dimension can also be added: whether the evidence derives from secular or monastic communities.[8] The same issues also concern the Greek textual sources. The Kellis corpus mitigates many of these problems:

- The chronology of the documents is restricted. While none of the Coptic documents provide dates, several Greek documents do, mentioning both emperors and consuls, starting at least with the reign of Diocletian (*P.Kellis* I 1 dates to 293/294).[9] These dates correspond with the numismatic evidence from House 3, which provides dates from the final decade of the third century to 394 at the latest.[10]
- The provenance of the documents is certain. The majority of the texts were written by members of the community, whether they were located at the time of writing in the Oasis or the Valley.
- The same individuals who wrote the letters were also involved in textile production, and so technical terms and garment names are standard between all writers of the letters.
- Connected with the above two points, the documents derive from the same context. Even items made for religious purposes were produced in the same place and by the same people as the other textiles mentioned in the sources.[11]

This clearly delineated temporal and spatial body of evidence therefore provides an opportunity to study the workings of the domestic textile industry in detail in a single time and place. Additionally, the wealth of the written sources, in both Coptic and Greek, is a veritable goldmine for: materials (raw material, dye, thread, fabric), production (dyeing, spinning, setting up looms, weaving), equipment (looms, tools), products (garments and furnishings), and professional matters (costs, wages, trades). The appendix below collects the attestations of these terms, divided into these five categories.[12]

It is beyond the scope of this article to provide discussions of all the terms found in the corpus, and so a few examples are highlighted here to show the contribution that Kellis can make to the 4th century textile lexicon. Before beginning, one particular issue pertaining to Coptic texts should be noted that is as prevalent in these sources as it is with all Coptic texts that mention textiles: the use of the generic term ϩⲁⲉⲓⲧⲉ. Unless accompanied by further specifications – or a very clear context –, the term simply means "garment".[13] It is possible that the term refers to a simple and common garment (*i.e.*, a tunic), but it may refer to anything, the nature of which is well-known to the parties in the correspondence. At the other extreme, many

[8] For an overview of the monastic evidence (archaeological, artistic, and textual) for clothing in Egyptian monasteries, see Mossakowska-Gaubert 2015. One could also add the use-context in terms of clothing produced to be worn during life and textiles produced specifically for funerary purposes. For example, sheets and bandages discussed in texts from monastic circles in western Thebes appear to have been produced specifically for burials (Cromwell 2017), in contrast to the variety of textiles found with the body of a woman, 'Tgol', in Antinoupolis (Fluck 2014).

[9] *P.Kellis* I 62 is perhaps earlier, possibly dating either to the reign of Probus or Aurelian (and so 273/4 or 279/80); for the issues in dating this document, see the commentary to line 1 of the text.

[10] For the numismatic evidence, see *P.Kellis* V p. 111–115.

[11] An example of an item made specifically for religious purposes (and which is not otherwise mentioned in this article) is a decorated cushion produced for a Manichaean book (*P.Kellis* 21.24–25: ⲧ̅ⲛ̅ⲛⲁⲩ ⲡϣⲁⲧ ⲛⲏⲓ̈ ⲛ̅ϫⲏϭⲉ ⲙ̅ⲡϫⲱⲙⲉ, "Send me the dyed cushion for the book"). This point is discussed by Mattias Brand in Chapter 4 of his doctoral thesis (see n. 2).

[12] Another category that could be included is descriptions, principally of colour and quality/condition, *e.g.*: καλόχρωμος, "nicely coloured" (*P.Kellis* I 72.36); ⲛⲁⲛϩ, "good" (*e.g.*, *P.Kellis* VII 58.15); ϣⲙⲁⲧ, "fine" (*e.g.*, *P.Kellis* VII 58.16,18); ϩⲁⲩ, "bad" (*P.Kellis* VII 76.24).

[13] In the 5th century texts written by the abbot of the White Monastery, Shenoute, the term seems to refer to the main monastic tunic, as discussed in Cromwell forthcoming.

words occur just once in the Kellis record and are either significant additions to a small body of attestations from Egypt or entirely new contributions to the lexicon.

Δελματίκιον, τό; *'Dalmatian' robe*
In *P.Kellis* I 7.11, the writer Harpokration requests the recipient, Gena son of Pataias, to send him his 'Dalmatian' tunic. No extra information or details about this specific garment are provided.[14] This garment-type also occurs in other 4th century documents, including *P.Oxy*. LI 3626.17 (δαλμ<ατ>ικ(ῶν)) and *P.Oxy*. LIV 3776 (δαλματικ(ῶν)), both of which are declarations of prices by guilds in Oxyrhynchus.[15] In each document, three different grades of large-size women's Dalmatian tunic (δαλματικῶν γυναικείων ταρσικῶν μεγάλου μέτρου) are listed, but prices are only included in the second document. However, it should be noted that these prices do not represent the fixed market retail price of the garments, but either the prices paid by the trader or guild or the value of the items in stock at the end of the reporting period.[16] To the best of my knowledge, the term does not occur in any Coptic document and it is tempting to credit its occurrence in this Greek letter to the status of the writer, Harpokration: the only other attestation of an individual with this name is *P.Kellis* I 23, in which he is identified as a former magistrate of Mothis (Mut) in the Oasis.

Θώραξ, ὁ (ϑωρⲁϫ); *jerkin/scarf?*
This garment appears once in the Kellis texts, in *P.Kellis* VII 58.23, a business letter that primarily concerns the production of a range of garments. While the address is lost, it is attributed to Orion, who wrote a similar letter to Tehat (*P.Kellis* V 18). The sender refers to fabrics belonging to one Saren (who is also mentioned in *P.Kellis* V 18), who wants fabrics to make some θώραξ (ϥⲟⲩⲱϣ ⲛ̅ϩⲏⲛⲉ ⲁⲥⲙⲛ̅ⲧⲟⲩ ⲛ̅ϩⲛ̅ϑⲱⲣⲁϫ). The editors of the text translate the term as "jerkin", *i.e.*, a sleeveless jacket, due to its etymological meaning connected with chest. Rosanne Livingstone's work on the textile remains from Kellis raises the possibility that the term in this context instead refers to a heavy scarf (see the editors' commentary to line 23). As this attestation is the only occurrence of this word in papyri from Egypt in reference to textiles, it is difficult to corroborate such an identification, although any item that covers the chest in some capacity would make sense.

Καμίσιον, τό (ⲕⲁⲙ̣ⲟⲥ̣ⲟ̣ⲛ̅); *shirt*
Fifteen ⲕⲁⲙ̣ⲟⲥ̣ⲟ̣ⲛ̅ are mentioned in the business account *P.Kellis* V 44.17, in which they are used as partial payment of freight charges. Despite the poor orthography, the editors are surely correct in identifying the term as καμίσιον, "shirt", which is well-attested in Coptic texts of the 7th and 8th centuries.[17] The Greek evidence also post-dates the 4th century, where dates are ascertainable.[18] *P.Kellis* V 44 therefore provides one of the earliest attestations for this garment type in Egypt, and certainly the earliest occurrence in a Coptic document.

Στιχάριον, τό (ⲥⲧⲓⲭⲁ; ⲥⲧⲓⲭⲁⲣⲓⲟⲛ; ⲥϯⲭⲁⲣⲓⲟⲛ); (*variegated) tunic*

[14] For the 'Dalmatian' robe more generally, see Mossakowska-Gaubert 2017, p. 323–324.
[15] See the discussion in the introduction to *P.Oxy*. LI 3624–3626.
[16] On this point, see Bowman 2008, p. 32–33.
[17] See the attestations collected in Förster 2002, p. 373; see also Boud'hors 1997, p. 24–25.
[18] According to a search in the papyrological database papyri.info. See further the dates of the evidence collected in Mossakowska-Gaubert 2017, p. 325–327: while the term may appear in the 2nd–3rd century document *SB* XXIV 15922 (from Hermopolis), the term is here heavily reconstructed. All the other textual sources that Mossakowska-Gaubert provides are from the 5th–8th centuries.

This type of tunic is one of the most common garments found in the Coptic documents from Kellis, but does not occur in the Greek texts.[19] The editors of the Coptic texts do not translate the term, but leave it in transcription.[20] I use here "tunic" (rather than "variegated tunic" as in the LSJ), although it could instead be referred to as a long-sleeved tunic.[21] The term otherwise is found, in Coptic, only in a late 6th century list of inherited goods from Elephantine, *O.CrumST* 116.19, from the archive of Flavius Patermouthis son of Menas.[22] Damage to that papyrus at the beginning of the relevant entry (… ⲥⲧⲓⲭⲁ[ⲣ]ⲓⲛ) means that any further information about the garment is lost. The Kellis material therefore provides an important addition to the existing corpus.

In two Kellis documents, damage has resulted in the loss of any details concerning the garment – whether quality, size, use, *etc*.: *P.Kellis* V 28.37 and *P.Kellis* VII 96.18–19. In two other documents, the tunic is mentioned in passing: *P.Kellis* V 18.5 and 34.16. The remaining texts provide information regarding the material and cost of the tunics. Where the material itself is mentioned, it is always wool:[23]

- *P.Kellis* V 26.15: a query regarding wool dyed the appropriate colour for the writer's black tunic: "If you know that Louitoni has wool good for the colour of my black tunic, take some for me" (ⲉϣⲱⲡⲉ ⲉⲕⲥⲁⲩⲛⲉ ϫⲉ ⲟⲩⲛ ⲥⲁⲣⲧ ⲛ̄ⲧⲟⲧϥ ⲛ̄ⲗⲟⲩⲓ̈ⲧⲱⲛⲓ ⲉⲛⲁⲛⲟⲩϥ ⲙ̄ⲡⲉⲟⲩⲉⲛ ⲛ̄ⲧⲁⲥⲧⲓⲭⲁ ⲛ̄ⲕⲁⲙⲏ ϥⲓ ⲟⲩⲉⲓⲉ ⲛⲏⲓ).
- *P.Kellis* V 44.24: a business account, in which a tunic is mentioned within a longer entry concerning quantities of wool: "5 minus (a) share for the wool of the tunic" (ϯⲟⲩ ϣⲁⲧⲛ̄ ϯⲉ ϩⲁ ⲧⲥⲁⲣⲧ ⲛ̄ⲛ̄ⲥⲧⲓⲭⲁ). From the Kellis evidence, 1 *mna* equates to 323 gm (*P.Kellis* IV p. 51 n. 68), and so 5 *mna* was 1.615 kg.
- *P.Kellis* VII 75.14–15 and 41: a letter from Pegosh (in the Valley) to his wife Parthene (in Kellis), with an addendum from Kapitou to his wife Tagoshe. Both men mention wool and request their wives to make a tunic from it, as Kapitou writes: "The small quantity of wool that I sent you: Cut it for a tunic" (ⲡⲓϣⲏⲙ ⲛ̄ⲥⲁⲣⲧ ⲧϩⲓⲧⲛⲛⲁⲩϥ ⲛⲉ ⲟⲩⲁϫⲉϥ ⲛ̄ⲥⲧⲓⲭⲁ).
- *P.Kellis* VII 78.45: a letter from Pegosh (here Pekysis) to his father Hor (here Horos). Despite an area of damage, the tunic is mentioned after a discussion of wool: "(Let) Tagoshe settle (with) Lammon for his 10 *mna* …[24] and you cut them for me (into) a good tunic" (ⲧⲁϭⲟϣⲉ ⲛⲉⲡⲗ̄ϭ̄ ⲗⲁⲙⲙⲱⲛ ⲁⲃⲁⲗ ⲙ̄ⲡ̄ϥ̄ⲙⲏⲧ ⲛ̄ⲙⲙⲛⲁ ⲡⲙⲁⲗⲓⲙⲙⲉ ⲧⲉⲧⲛ̄ⲟⲩⲁϫⲟⲩ ⲛⲏⲓ̈ <ⲛ̄>ⲥⲧⲓⲭⲁ ⲉϥⲣ̄ϣⲉⲩ).

The instructions to cut the wool for the tunic suggests that the entire item is made from this material. However, note that Kaptiou refers to only a "small quantity" of wool. Without any further qualification, it is unclear if this means just enough material to produce a single garment

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[19] Hence, the Kellis material is not mentioned in the discussion of this garment type in Mossakowska-Gauber 2017, p. 332–324.

[20] This practice is common, given the difficulties in identifying different garment types; a fact explicitly stated, *e.g.*, by Layton 2014, p. 97 (n. 4) in his translation of the rules of Shenoute, the fifth-century abbot of the White Monastery: "Because the exact distinctions among Coptic garment names are uncertain, these words have mostly been left untranslated".

[21] As Mossakowska-Gauber 2017, p. 332–334 demonstrates, the *sticharion* was a tunic with long, tight sleeves.

[22] This document is not included with the Coptic texts in Porten 1996; for its attribution to this archive, see Clackson 1995, p. 98 (which also provides an introduction to the archive, for further bibliography, see the entry in the Trimegistos Archives database: TM Arch id:37 [www.trismegistos.org.arch/index]). Förster 2002, p. 751 incorrectly lists the document as unprovenanced.

[23] Mossakowska-Gaubert 2017, p. 334 notes that the garment can be produced from linen or wool or a mixture of both. It is not possible to conclude that all garments that do not mention wool are made from linen.

[24] The word here (ⲡⲙⲁⲗⲓⲙⲙⲉ) is unknown to the editors, who suggest it is some kind of aside concerning Tagoshe's debt.

or if the wool is intended only for decorative elements.[25] I understand it as meaning the former. Perhaps, in contrast to the LSJ translation of "variegated tunic", in Kellis the term *sticharion* is best understood as a woollen – rather a linen – tunic.[26]

Only one document refers to the price of such a tunic. *P.Kellis* V 26.15 is a letter from Matthias in Hermopolis (el-Ashmunein) to his mother Maria in the village. He refers to a tunic that Pamour sold for 5,000 *talents*, noting that he did not see it and had no idea of its quality, whether it was good or bad (ⲧⲥⲧⲓⲭⲁⲣⲓⲟⲛ ⲁⲛ [ⲁⲡ]ⲁⲙⲟⲩⲣ ⲧⲉⲓⲧⲥ̄ ⲁⲃⲁⲗ ϩⲁ ⲧ[ⲉⲓⲟ]ⲩ ⲛ̄ϣⲉ ⲛ̄ϭⲓⲛϭⲱⲣ ⲙ̄ⲡⲓ[ⲛⲟ ⲙ]ⲉⲛⲧⲟⲓ ⲅⲉ ⲁⲣⲁⲥ ϫⲉ ⲛⲁⲛ[ⲟⲩⲥ] ⲏ ϫⲉ ⲥϩⲁⲩ). There are two problems concerning the evaluation of this price and comparing its relative value in the Oasis and the Valley. Other documents from Kellis suggest that there was a difference in prices between the two regions: in *P.Kellis* VII 81, Philammon – writing from the Valley – refers to an unspecified quantity of dye that cost 30,000 "at Egyptian price" (ⲁⲓϯ ϣⲁⲙⲛⲧⲃⲁ ⲛⲉϥ ⲛ̄ⲧⲓⲙⲏ ⲛ̄ⲕⲏⲙⲉ ⲛ̄ϫⲏϭⲉ). No document, however, provides any indication of the conversion rate for prices (and there is no indication that Pamour sold at the local Egyptian price or if the 5,000 *talents* refers to the equivalent price in Kellis). As such, comparison with tunics in documents from the Valley is pointless. The second problem concerns the nature of the evidence for prices. In the above discussion of the Dalmatian robe, *P.Oxy*. LIV 3776 was mentioned, which provides prices for different grades of garments, but these are not retail prices. Therefore, the price given in this document for a pair of "third grade tunics" – 133 *talents* 500 *denarii* – does not reflect how much it would actually cost to buy such a tunic (lines 24–27: σ[τ]ιχαρίων ὁ[μ]οίως· … γ εἰδέας ζ(εύγους) α τάλ(αντα) ρλγ (δηνάρια) φ).[27] Furthermore, as Matthias was not sure of the quality of the tunic sold for 5,000 *talents*, it is also not a question of comparing like-for-like.

While it is only possible here to discuss a very limited number of garments, the above selection highlights the scope for future, detailed analysis of the Kellis corpus. While all four terms discussed here are of Greek origin, three occur only in Coptic texts and are either new additions to the body of loan words or demonstrate different applications of the terms in comparison to the previously known body of Coptic documents. Moving forward, it will be interesting to investigate the use of indigenous terms and whether their use in 4th century Kellis is the same or different from sites in the rest of Egypt in later centuries.

CASE STUDY: WOOL

Wool is mentioned in over a dozen texts, as ἔριον and ἐριδίον in the Greek texts and ⲥⲁⲣⲧ in the Coptic texts. In addition, fleece is mentioned in a small number of documents. Analysis of the material remains of wool from the site shows that it derives from sheep, not goats.[28] This material, rather than linen or cotton,[29] has been selected as a case study not only to discuss the nature of the evidence regarding it, but because its use in the Oasis reflects other aspects of life there, including animal husbandry and trade with the Valley.

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[25] A mixed-material tunic is possible; see n. 23.

[26] The editors of the Coptic texts state that "It seems to be a shirt or linen tunic", but in none of the Kellis documents is it described as such and, as demonstrated, it is only mentioned in connection with wool.

[27] Note that in the discussion in *P.Kellis* V p. 62, the editors mistakenly cite *P.Oxy*. LIX not LIV.

[28] Coombs *et al*. 2002, p. 117 and 119.

[29] Cotton, ἐρεόξυλον, is mentioned in one Greek letter (*P.Kellis* I 61.6) and several times in *P.Kellis* IV 96, the Agricultural Account Book (sometimes referred to in the scholarly literature as the KAB); of note is that neither wool, linen, nor dye occur in the account book, which typically instead focusses on finished products – cotton is one of the few exceptions. For a brief overview of cotton in Roman Egypt, see Wild *et al*. 2007. The importance of cotton within the oasis economy is also discussed in Mattias Brand's thesis (n. 2).

As a starting point for the discussion of wool is Gillian Bowen's statement concerning sheep-rearing in Kellis: "The herding of sheep along with goats is likely … and a letter addressed to Pamouris, an occupant of House 3, from a certain Pekysis, living elsewhere, does imply that sheep were reared in Kellis for their wool."[30] This letter is *P.Kellis* I 72, in which Pekysis berates Pamouris for not sending him "even one fleece"; Pekysis also asks Pamouris in the letter to purchase wool (note that the men appear in the Coptic texts as Pegosh and Pamour respectively, as already seen above). Bowen's statement raises an important point that needs to be borne in mind when reading letters from Kellis: the location of the writer. In fact, both men – brothers – were residents of House 3, but based on the entire corpus of letters it is more likely that both men were in the Valley when they wrote to each other, with Pegosh in Aphrodito (Kom Ishqaw).[31] There is therefore no evidence that the fleece was procured from sheep in Kellis or anywhere else in the Oasis.

This textual evidence allies well with the zooarchaeological record from the site, which has supplied only one record of sheep (*Ovis aries*). Even this example may be intrusive and not contemporary to the late antique community.[32] This absence of sheep is true of the Dakhleh Oasis since the Neolithic.[33] Without secure textual and archaeological evidence for sheep husbandry in the village, it can be concluded that all wool was imported to Kellis.[34] The necessity to trade and transport the commodity accounts for the relatively high frequency with which it is mentioned in the surviving textual record. In the following letters, the writer seems to be located in the Valley and sends wool to Kellis, or promises to do so at a later point:

- *P.Kellis* VII 71.34: Pamour writes to Partheni in Kellis and states that when he has need to send goods back to the Oasis, he will include wool: "When I have cause to send out, I will make them <bring> you the portion of wool" (ⲡⲛⲉⲩ ⲛ̅ⲧⲣⲓϫⲁⲩ ⲁⲃⲁⲗ ϯⲛⲁⲧⲣⲟⲩ<ⲛ̅> ⲧⲗⲉⲡⲥⲉ ⲛⲉ ⲛ̅ⲥⲁⲣⲧ).
- *P.Kellis* VII 75.9,41: Pegosh writes to Parthene in Kellis, largely with directions concerning textiles, with an addendum from Kapitou to his wife Tagoshe. Pegosh tells Parthene to: "Take these six *mna* of wool and sixteen coils. Take them from Pane, cut it (*i.e.* the wool) for a good tunic; and send it to me. I have paid him for its freight" (ϫⲓ ⲡⲓⲥⲁⲩ ⲛ̅ⲙ̅ⲙⲛⲁ ⲛ̅ⲥⲁⲣⲧ ⲙ̅ⲛ̅ ⲙⲏⲧⲉ ⲥⲉ ⲛ̅ⲡⲗⲉⲧⲓ ϫⲓⲧⲟⲩ ⲧⲟⲧϥ ⲙ̅ⲡⲁⲛⲉ ⲟⲩⲁϫϥ ⲛ̅ⲥⲧⲓϫⲁ ⲉⲛⲁⲛⲟⲩϥ ⲧⲉⲧⲛ̅ⲛⲁⲩϥ ⲛⲏⲓ ⲁⲓⲙⲁϩϥ ⲛ̅ⲧⲉϥϩⲏⲙⲉ).

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[30] Bowen 2002, p. 89.

[31] *P.Kellis* VII 64–72 are written by Pamour, *P.Kellis* VII 73–79 by Pegosh to various individuals (including each other); their locations are discussed by the editors in the introductions to the respective texts. See, *e.g.*, the introduction to *P.Kellis* VII 66: "A possible context for this piece … is that Pegosh is in Aprhodito, and Pamour and Maria have written to him there from elsewhere in the Nile Valley where they are doubtless engaged in trade. In this case, the letter has been transferred to Kellis at a later date …" (the commentary to the document contains further support for this argument). As the editors state in their introduction to *P.Kellis* VII 75, "The remarkable number of letters found at House 3 can in good part be understood against this background of absence, trade and transport requests."

[32] Churcher 2002, p. 106.

[33] Churcher *et al*. 2008, p. 17.

[34] In general, there is a lack of reference to animal husbandry in Kellis, even though animals were certainly reared there, as the faunal remains demonstrate (see Churcher 2002). In connection with transport – a fundamental aspect of life in the Oasis – camel drivers are mentioned (ⲃⲁⲣⲱϩ in Coptic; καμηλίτης in Greek), but camels are only explicitly mentioned in *P.Kellis* V 50 (*e.g.*, line 11: "Take care of the camel!", ϥⲓ [ⲡ]ⲣⲟⲟⲩϣ ⲛ̅ⲡϭⲁⲙⲟⲩⲗ). Note that, while *P.Kellis* I 27 mentions the presentation of camel and cattle, the document was sent to Trimithis not Kellis. This is not to say that animal husbandry did not occur in Kellis, but that (1) it is absent from the textual record – it may have been so commonplace that it did not warrant written communication; and (2) the point remains that there is no evidence for sheep rearing.

- *P.Kellis* VII 78.41–42: Pegosh writes to Hor, telling him to take wool from Andreas son of Tone, whom Pegosh presumably hired to transport goods back to Kellis while he was in the Valley. See also *P.Kellis* VII 96 below.
- *P.Kellis* VII 79.33–38: Pegosh writes to Pshai, who has written to him before to acknowledge receipt of wool and to request another two *mna* of wool for warp. Wherever Pegosh is at the time of writing, he is not able to find wool unless he sends further south for it.
- *P.Kellis* VII 96.33: much of this letter is broken, but Andreas (who may be the same individual named in *P.Kellis* VII 78) delivers wool and the writer states that he has "cleared the freight charge" (ⲁⲓⲙⲁϩ ⲛ̄ⲑⲏ[ⲙⲉ]).

Wool was important in textile production in Kellis, but it was not produced locally and so its acquisition was an element in the economy of the village and formed part of the trade between the Oasis and the Valley.

In the discussion of the *sticharion*-tunic above, it is noted that they seem to be made from wool (or at least that they had substantial woollen components). The other item with which wool regularly occurs is dye. Dyed wool, both unspun and spun (as part of decorative elements of garments) is attested in the archaeological record.[35] Greek texts refer to purple dye, πορφύρα (*P.Kellis* I 61, 72–74), while Coptic uses the term ϫⲏϭⲉ, which can refer to purple but is the general noun for dye or possibly even dyed goods. As a case in point, in *P.Kellis* VII 103 ϫⲏϭⲉ is qualified by antimony, ⲥⲧⲏⲙ: "Know that they have brought the necessary other *mna* of antimony–dye, which is excellent quality. I did not send it now, because I have put it aside to be spun here" (ⲙ̄ⲙⲉ ϫⲉ ϩⲁⲩⲛ̄ ⲧⲕⲉⲙ̄ⲛⲁ ⲛ̄ϫⲏϭⲉ ⲛ̄ⲥⲧⲏⲙ ⲛⲏⲓ̈ ⲛ̄ⲁⲛⲁⲅⲕⲁⲓⲟⲛ ⲉⲛⲁⲛⲟⲩϥ ⲧⲟⲛⲟⲩ ⲉⲣⲉⲙ̄ⲡⲓⲧⲛ̄ⲛⲁⲩⲥ ϯⲛⲟⲩ ϫⲉ ⲛ̄ⲧⲁⲓ̈ⲕⲁⲥ ⲁϩⲉⲥⲧⲥ ⲛ̄ⲛⲓⲙⲁ).[36] Dye, especially purple, as with wool was also transported to Kellis. Both *P.Kellis* I 72 and 74 are in part requests for purple. The second of these texts in particular implies that it was not available locally, as work had to be halted until they received the dye, which was to be used for two female garments (ἀξιωθεὶς κατὰ τὴν συνταγὴν πέμψον μοι τὸ ὀλίγον πορφύρας εἰς χιτώνιον τῆς μητρός μου καὶ τῆς ἀδελφῆς μου, ἐπεὶ χρεία ἐστὶν καὶ κεῖται τὰ σύνεργα ἕως πέμψῃς ταχέως τὴν πορφύραν). A letter, *P.Kellis* VII 81, from Philammon in the Valley to Theognostos also mentions dye: he will send it back to Kellis, so that garments can be produced and returned to him.

This seeming scarcity of purple stands in contrast to its role in *P.Kellis* I 61, an account of "arrears of money in purple" (ἔχθεσ(ις) ἀργυ(ρίου) ἐν πορφ(ύρᾳ)), which seems to indicate that purple was a more stable commodity.[37] *P.Kellis* I 61 is problematic, in that the various commodities that are listed do not have corresponding quantities of purple, and so how much purple was involved is unknown. However, if purple was not common in the Oasis, this could account for its use as a stable commodity used in favour of instable silver. Its rare nature would also account for the use of cheaper alternatives: it is perhaps not coincidental that the dye analysed to date shows purple to actually be a mix of red and blue dyes.[38] However, the absence of physical evidence of purple may be because garments with purple dye were not left in the village when it was abandoned. Consequently, the lack of purple in the archaeological record may not reflect its actual use in Kellis.

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[35] See the figures throughout Bowen 2002; as she notes, all the woven wool found on site is in fact dyed.

[36] This passage is somewhat problematic, as the *mna* of antimony-dye (literally "dye of antimony") may actually refer to dyed but unspun wool, as the writer (perhaps here Pamour) immediately states that it is currently set aside to be spun. Such references may mean that there are actually more occurrences of wool in the letters, but it is referred to obliquely.

[37] See, similarly, *P.Giss*. 103 from Hibis, also in the western desert.

[38] Coombes *et al*. 2002.

ECONOMICS

Wool and dye, especially purple, provide a window into the economics of the textile industry, including the importance of trade with the Valley and the implied cost of transport across the western desert, as has already been discussed.[39] Textiles formed one part of trade within wider economic strategies that included a range of commodities, and trade was bidirectional, with materials sent to the Oasis and finished garments sent back to the Valley (in contrast to the unidirectional trade of other commodities, *i.e.*, food items[40]). In addition to the economic contribution made by trade, several documents provide direct evidence for the cost for different aspects of textile production within the village, whether the cost of raw materials, the price of finished goods, or wages paid to various individuals involved in the process. As detailed economic analysis is required of commodities in Kellis and the Oasis across the 4th century, I have selected just two examples to highlight the type of information available.

The cost of cowls

The cowl, Coptic ⲕⲗⲉϥⲧ, appears five times across two of the Kellis documents: a business account, *P.Kellis* V 46, and a letter, *P.Kellis* VII 58. In the former, the cowls, which are not qualified by any descriptors (*e.g.*, concerning quality or shape[41]), are given prices in kind: each costs 10 *maje* of wheat.[42] The second document opens with a discussion over the cost of "good cowls" (ⲛⲕⲗⲉϥⲧ ⲉⲛⲁⲛⲟⲩ[43]). The recipient of the letter and maker of the garment, which may be the woman Tehat, requested 1,300 *talents* for the cowl, but the writer is aggrieved.[44] On one hand, he had assumed it was given as a gift, but also mentions that he could have acquired one – if he has to pay – from the weaver Lauti for 1,200 *talents*. The volume of economic data from the Oasis, especially as a result of the account book *P.Kellis* IV 96, means that the practical value of goods can be compared, *i.e.*, in respect of the actual cost of living. The more expensive cowl could buy the following goods:

- 2.15 *lithos* of cotton (600 *talents* per *lithos*)
- 3.25 *maje* of honey (400 *talents* per *maje*)
- 4–5 chickens (between 240–300 *talents* each)
- 5.5 *artabai* of dates (250 *talents* per *artabai*)
- 5.5 *artabai* of sesame (250 *talents* per *artabai*)
- 5–6 *keramion* of wine (45–54 litres; 200–250 *talents* per *keramion*)
- 8.5 *maje* of jujubes (150 *talents* per *maje*)

As the information given for wheat in the account book is not given in *talents*, it is not so straight forward to give an equivalence. However, in lines 460–461 and 1021–1022, 15 *mation*

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[39] Two sites in particular occur in terms of trade with the Valley: Hermopolis (see above in conjunction with *P.Kellis* V 26; see also *P.Kellis* I 66) and Aphrodito (see n. 27; see also *P.Kellis* I 32, written to Psais son of Pamour in Aphrodito). The size of Hermopolis and its markets (for which see Alston 1998) would make it a particularly attractive location for trade.

[40] The Oasis specialised in the production of several commodities, including olives and olive oil. Olives were a stable commodity in Kellis and was produced on a sufficiently large scale to create a surplus; see, *e.g.*, *P.Kellis* V 45 in which 45 litres of oil are used to repay a debt, and *P.Kellis* V 65, in which the money collected for rents on olive groves compensates for losses incurred elsewhere.

[41] These factors cannot therefore be used to explain price differences. Conversely, garment prices cannot be used as an indication of the type of cowl involved. For the archaeological record for cowls and the range of known types, see Linscheid 2011, p. 128–154.

[42] On the capacity of the *maje* (ⲙⲁϫⲉ; Greek μάτιον) in Dakhleh Oasis, expressed in terms of the *artaba*, see *P.Kellis* IV p. 47–48.

[43] The editors translate the phrase in the singular, but the plural ending ⲟⲩ indicates several are intended.

[44] On Tehat and her role in the textile industry at Kellis, see Franzmann 2007.

(*i.e.*, *maje*) of wheat equates to five chickens. Therefore, one chicken equals 5 *maje* of wheat, and thus 5 *maje* of wheat = 240–300 *talents*, and thus 1 *maje* = c. 50–60 *talents*. If this price is mapped onto the cowls in *P.Kellis* V 46, the 10 *maje* items would have a value of between 500 and 600 *talents*, less than half that of the cowl Tehat produced for which she wanted 1,300 *talents*. However, commodity prices fluctuated significantly: the above equivalence of chickens and wheat are from the 5th and 6th indiction years respectively. Line 459, also from the 5th indiction year, has an equivalence of two chickens for 8 *maje*, meaning that one chicken was cheaper, costing 4 *maje* of wheat. If this equivalence was used as the standard, all prices would change. Cross-comparison of commodity prices can be useful, but must be treated with caution.[45]

Wages

Another element essential in the discussion of cost-of-living is how high salaries were in Kellis. *P.Kellis* V 44, 46, 48 and *P.Kellis* VII 58 and 81 mention wages for different textile-related activities (ϐⲉⲕⲉ and ϐⲉⲕⲉ-ⲥⲱϩⲉ, which is explicitly connected to weaving).[46] Activities for which payment was received include production of weft and warp, the cutting of pieces, and weaving.

- *P.Kellis* V 44: a business account. Four entries mention wages: (1) for production of 3 *mna* of weft (almost 1 kg) the writer receives a wage of 1,200 *talents* (the equivalent of one of the cowls discussed in the previous section); (2) cutting a cowl receives 200 *talents* and 2 *maje* of wheat (c. 100 *talents*); (3) production of an unspecified quantity of wool for a blanket and provision of warp receives 0.5 *maje* of sesame and 0.5 *maje* of black cumin; (4) production of 3 *mna* for weft and 2 *mna* for warp receives 1,200 *talents* each, demonstrating that production of warp was a more expensive task; the salary for weaving this quantity of yarn was 1,616 *nummi*. According to the monetary reforms of 301, this equates to 27 *talents*, but it is doubtful that Diocletian's reforms had much relevance in Egypt, let alone the Oasis.
- *P.Kellis* V 46: a business account. Cutting a garment – the generic term ϩⲁⲓⲧⲉ is used, preventing an identification of the specific type in question – receives a wage of 13 *maje* (the commodity is not mentioned, but presumably it is wheat). This wage is therefore higher than the price of the three cowls mentioned in *P.Kellis* V 44.
- *P.Kellis* V 48: a business account. Unfortunately, the area of the papyrus that mentions wages is damaged, causing loss of the actual amounts involved. What does survive is the final summation, that for thirteen days of weaving, excluding one day of preparation, the two weavers received 800 *talents*(?). The rest of the account includes various other payments and costs, the brief nature of which makes it difficult to follow what money is going to whom and for what purpose.
- *P.Kellis* VII 58: letter, possibly from Orion to Tehat. Weaving-wages are mentioned, involving cutting and spinning, but lacunae also result in the loss of prices, if any were written.
- *P.Kellis* VII 81: a letter from Philammon to Theognostos. Philammon launches into a series of grievances, including the cost of dye (mentioned above) and other significant

[45] An additional factor that may have affected the price, which probably cannot be determined from the available evidence, is whether goods were produced for local consumption or trade with the Valley, *i.e.*, the latter would presumably also cover the cost of transportation (mentioned, *e.g.*, in *P.Kellis* V 44, 50, 58, 78, and 79, albeit without mentioning any costs).

[46] Comparative analysis with wages from the Valley is possible (see, *e.g.*, wages recorded for the 3rd century Appianus estate in the Fayum, discussed in Rathbone 2007, p. 106–116), but the same issues discussed above concerning the attempted comparisons of prices are relevant here, as well.

financial problems. If the interpretation of the text is correct, the source of Philammon's complaints wants to charge Philammon 2,500 *talents* as wages for a tunic (ϣⲧⲏⲛ). This high price reflects the high sums of money that occur throughout this letter, and one wonders if a level of exaggeration is added for rhetorical effect.

Returning to the cost of goods, the total value of items would involve the cost of the materials plus wages. However, we only receive snippets of the costs involved and indications of various aspects that would contribute to the overall price are lacking: the number of garments cut from the quantities of woven material produced (*e.g.*, how many garments could be made from the 3 *mna* of weft and 2 *mna* of warp mentioned in *P.Kellis* V 44?); the additional freight costs on traded goods (and the cost of transport would be distributed over the total number of commodities per shipment); and any added taxes. As a result, even with knowing some prices – raw materials, wages, and retail prices – it is probably not possible to calculate how much profit was made per garment.[47]

SUMMARY

By necessity, the current study has had to be restrictive in its examination of the Kellis material. Yet, the above selected analyses emphasise that the combined written and material sources are a real treasure trove for the study of textiles in a village community. What more, a community with a restricted period of occupation, a strong demographic record, and documentation for a wide range of commodities that provides evidence for different aspects of day-to-day life. Consequently, the use of textiles – whether social, economic, or religious – can be situated within a broader context, as one cog in a bigger machine that offers a rare opportunity to examine in detail life in Roman Egypt.

APPENDIX: THE VOCABULARY OF THE TEXTILE INDUSTRY AT KELLIS

Note that, as a result of the level of orthographic variation of Greek words within Coptic documents, the "standard" Greek spelling is given in the following tables. The Coptic words are written here in the dialect of Kellis.

Table 1: Garments

Term	Translation	Attestation
δελματίκιον	'Dalmatian' robe	*P.Kellis* I 7.11
δέρμα	Skin	*P.Kellis* I 66.17–19
θώραξ	Jerkin / scarf	*P.Kellis* VII 58.23
ἱμάτιον	Outer garment	*P.Kellis* I 71.46; *P.Kellis* IV 96.83,619,753,762, 765,777,784,789,822,1258,1271,1278,1284,1322, 1325
καμίσιον	Shirt	*P.Kellis* V 44.17

[47] Teigen 2018 attempts to calculate an annual profit, based on the information for costs. Apart from highlighting the difficulties involved in doing so, it should be stressed that Teigen's study is based on the assumption that the domestic textile industry at Kellis was on a scale large enough to be making profit. He does not discuss the possibility that textile production was supplemental to other trade, for example, with the individuals producing textiles also involved in the production of other commodities. It should be stressed that many of the garments mentioned in letters are produced for use by one of the parties themselves; see, *e.g.*, *P.Kellis* V 71, 75, 95.

ⲕⲗⲉϥⲧ	Cowl	*P.Kellis* V 18.7,21; 27.15; 44.4; 46.5,8,9,12; VII 58.1,21
κολόβιον	Sleeveless tunic	*P.Kellis* V 18.4,7
λῶδιξ	Coverlet	*P.Kellis* V 47.21
μαφόρ(τ)ιον	Cape?	*P.Kellis* I 65.32; V 46.6
πάλλιον	Over garment	*P.Kellis* V 21.13
παρακρεμάσιον	Hanging	*P.Kellis* I 71.49
ⲡⲁⲣⲕ	Pallium	*P.Kellis* V 19.26
ⲡⲣⲏϣ	Blanket	*P.Kellis* V 19.25; 33.10; 44.25; VII 76.52; 79.28; 105.39
ⲣϣⲱⲛ	Cloak	*P.Kellis* V 18.14; 19.24; VII 58.24,25; 94.25
ⲥⲁϊϣ	Set	*P.Kellis* VII 78.47; 81.31,40
σάκκον	Sack	*P.Kellis* I 72.32
στιχάριον	Variegated tunic	*P.Kellis* V 18.5; 26.15; 28.37; 34.16; 37.31; 44.24; VII 75.14–15,41; 78.45; 96.18–19
στρῶμα	Mat, blanket	*P.Kellis* IV 96.145,1519,1524; V 19.26; 26.20; 44.6,33; 52.10
ⲧⲁⲙⲓ	Meaning unknown	*P.Kellis* V 19.36,45
ⲧⲟⲟⲩⲉ	Sandal	*P.Kellis* V 19.24; 20.58
φουκάριον	Head cloth	*P.Kellis* V 41.10; 47.6; 48.13,24,44
χιτώνιον	Tunic	*P.Kellis* I 65.33; 66.4,24,25; 74.10
ϣⲁⲧ	Cushion	*P.Kellis* V 19.25; 20.35; 21.24; 22.12; 24.3,7; VII 79.42; 92.28; 103.17; 116.8
ϣⲁϣⲁⲧⲉ	Cushion	*P.Kellis* VII 82.18
ϣⲏⲧⲉ	Belt, collar	*P.Kellis* V 24.45,46
ϣⲧⲏⲛ	Tunic	*P.Kellis* VII 81.43; 105.18
ϩⲃⲁⲥ	Cloth(es)	*P.Kellis* V 19.34; 22.76; VII 75.30; 81.22,31,40; 82.22; 125.1
ϩⲙⲁⲥ	Clothes	*P.Kellis* VII 78.48
ϩⲁⲉⲓⲧⲉ	Garment, robe	*P.Kellis* V 12.9; 19.23,29,33,36,45; 20.33; 46.3; 52.13; VII 58.35; 71.32; 79.29; 94.34; 97.34; 109.32–33
ϫⲗⲥⲉ	Cloth bag	*P.Kellis* V 12.13; 15.20; 17.28; 26.14,59; 40.8; 44.18,21; VII 66.30; 76.44; 77.19; 79.19
ϯⲕⲙⲁ	Sample	*P.Kellis* VII 58.16
ⲥⲁⲥⲉ[ⲧⲱⲛ]	Linen garment(?)	*P.Kellis* V 27.9

Table 2. Materials

Term	Translation	Attestation
ⲃⲏⲕⲉ	Weft	*P.Kellis* V 18.13,17; 44.1,26,28; 47.4,5; 48.13,16,36
ἔριον	Wool	*P.Kellis* I 71.46
ἐριδίον	Wool	*P.Kellis* I 66.10; 72.38; 73.30
ἐρεόξυλον	Cotton	*P.Kellis* I 61.6; IV 96.547,556,558,720,1484
κλωστήρ	Thread, yarn	*P.Kellis* VII 111.36
λάσιον	Rough cloth	*P.Kellis* VII 103.23
ὀθόνια	Fine linen	*P.Kellis* I 51.5

πλεκτή	Hank?	*P.Kellis* VII 75.11
ποκάριον (πόκος)	Fleece	*P.Kellis* I 71.20
πορφύρα	Purple	*P.Kellis* I 61.1; 72.31; 73.29; 74.10,23
σαβάνιον	Linen cloth	*P.Kellis* I 72.34
ⲧⲱϭⲥ	Dye	*P.Kellis* VII 58.30
ⲥⲁⲣⲧ	Wool	*P.Kellis* V 44.23; 48.41; VII 58.17,20; 71.34; 75.9,41; 76.21,23,26; 78.41,42; 79.31,33,38; 96.33; 105.28
ⲥⲁⲣⲧ ⲛⲣⲱϥ	Fleece	*P.Kellis* VII 109.31
ⲥⲧⲏⲙ	Antimony	*P.Kellis* VII 103.8
ⲱϯⲧ / ⲱⲧⲓⲧ	Warp	*P.Kellis* V 18.6; 32.32; 33.10; 44.6,29; 47.5,7; 48.35; O.C. 1.3; VII 58.25; 79.32; 109.33; 111.26
ϩⲏⲛⲉ	Fabric	*P.Kellis* VII 58.15,21,23; 66.31
ϩⲱⲥ	Thread	*P.Kellis* V 21.20
ϫⲏϭⲉ	Purple	*P.Kellis* V 19.40; 47.1ff.; VII 66.15,24(?); 77.18; 79.43; 81.18,47; 103.8,24,35,45; 108.37
ϭⲁⲣϭⲣ	Camel wool?	*P.Kellis* V 19.25; 47.25

Table 3. Equipment

Term	Translation	Attestation
ἠλακάτη	Distaff	*P.Kellis* VII 58.27
ἱστός	Loom	*P.Kellis* I 72.12
κρίκος	Ring	*P.Kellis* I 71.50 (τὸ σιδηροῦν)
ⲛⲉⲧ	Loom	*P.Kellis* V 19.31
στατήρ	Loom-weight (‘stater’)	*P.Kellis* I 71.48

Table 4. Production

Term	Translation	Attestation
ⲙⲟⲩϫⲧ	to mix	*P.Kellis* V 32.32; VII 95.11; 110.18,29
ⲡⲁϫⲡϫ	to tread, full (?)	*P.Kellis* V 44.28; 48.3,4,14
ⲥⲱϩⲉ	to weave	*P.Kellis* V 18.21; 28.37; 44.5
ⲧⲉⲗⲟ	to set up on loom	*P.Kellis* V 33.14; VII 103.28
ⲟⲩⲁϫⲉ	to cut	*P.Kellis* V 19.23; 44.4; 46.3,7; 47.7; 48.17; 52.10,17; VII 58.24,26; 75.14,41; 76.29,37; 78.45; 96.20; 103.16,20,29; 111.38
ⲱⲧϩ	to fix, weave	*P.Kellis* V 17.49
ϩⲱⲣⲡ	to wet, moisten	*P.Kellis* V 48.3,5,14
ϩⲓⲥⲉ	to spin	*P.Kellis* V 44.29; 48.35,36; O.C. 1.3,4; VII 58.18,27; 103.11,19,28
ϫⲱϭⲉ	to dye, stain	*P.Kellis* V 47.2

Table 5. Profession

Term	Translation	Attestation
ϩⲉⲕⲉ	wage	*P.Kellis* V 46.4; VII 81.42
ϩⲉⲕⲉ-ⲥⲱϩⲉ	weaving wage	*P.Kellis* V 44.30; 48.15,18,23,25,26,33,40, 44; VII 58.27
γερδιακῆς τέχνης	weaver's trade	*P.Kellis* I 19a.11 one
λινουφικός	pertaining to linen-weaving	*P.Kellis* I 12.19
ⲛⲁⲥⲉ	costs	*P.Kellis* VII 81.41
ὑφανυ(είῳ?) ἱματ(ίων)	clothes-weaving shop(?)	*P.Kellis* IV 96.1266

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