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THOUGHTS ON A POSSIBLE LINK BETWEEN THE PY Ea SERIES AND A MYCENAEAN TANNING OPERATION

Introduction

Tanning is the process whereby raw animal skins/hides, naturally susceptible to decomposition, are treated and transformed into durable leather.¹ It is generally thought that smoking was the most common leather-processing technique employed in prehistoric Europe,² but vegetable tanning was certainly known in Egypt at an early date,³ and it is possible that various tanning methods were used in the Bronze Age Aegean, with differing degrees of success.⁴ Irrespective of the particular method used, traditional leather-processing involves three main stages: (1) preparing the skin/hide — drying and salting would preserve it for travel to the tanner, who would then soak it in water, urine, dung or other solutions in order to soften it before removing its inner and outer layer, as well as the hair from the surface of the latter, leaving behind the middle layer or derma; (2) tanning — using one or more methods to turn the derma into long-lasting leather; and (3) finishing — e.g., smearing or ‘feeding’ the leather with animal fat, olive oil, etc. to make it supple, and stretching, dyeing, drying, etc. to render it suitable for its end-use.⁵

¹ The term ‘tanning’ is derived from vegetable tanning, in which the raw material is soaked in solutions of tannin, obtained from certain barks (e.g., oak), leaves, woods or nuts. However, the term is often used to refer to any of the various methods by which skins/hides may be processed into leather: e.g., smoking (exposure to formaldehyde and other chemicals in the smoke given off from a fire), vegetable tanning (soaking in tannin baths), tawing (soaking in mineral [e.g., alum] baths), etc. It is in this general sense that it is used here. For details, see R. J. FORBES, Studies in Ancient Technology. Vol. V. (2nd ed), Leiden 1966, p. 5-9; also OED s.v. tanning. The terms ‘skin’ and ‘hide’ are largely interchangeable, referring to the same part of an animal’s carcass (R. J. FORBES, p. 1): the former is often used for smaller animals (e.g., calves, goats, sheep, pigs, reptiles, fish) and the latter for larger ones (e.g., bulls, cows).

² W. GROENMAN-VAN WAATERINGE, M. KILIAN, H. VAN-LONDEN, “The curing of hides and skins in European prehistory”, Antiquity 73 (1999), p. 884-890. The chemical processes involved in smoking are largely reversible, which may account for the lack of preserved leather finds in Europe during the prehistoric period. The introduction of vegetable tanning, whose chemical processes are largely irreversible, is thought to explain the preservation of leather from the Classical period onwards (p. 886, 889-890).

³ Vegetable tanning was practised at the Predynastic tannery discovered at Gebelein, which included finds of finished leather, tools and tanning material of acacia pods. R. J. FORBES, Studies, cit. (n. 1), p. 23. For the early use of mineral (alum) tanning in Egypt and the Near East, see R. J. FORBES, Studies, cit. (n. 1), p. 7, 26, 41.

⁴ R. J. FORBES, Studies, cit. (n. 1), p. 20-21. Note also that traces of leather have been found in prehistoric Aegean contexts: e.g., alongside the Dendra panoply, dated by accompanying pottery to the LH IIIB-IIIA1 period: P. ÅSTRÖM et alii, The Cuirass Tomb and other Finds at Dendra. Part I: The Chamber Tombs, Göteborg 1977, p. 7-25.

The Linear B evidence demonstrates that leather products were in use at late Bronze Age Pylos. For instance, animal skins and leather items are recorded on the Ub tablets found in Room 99 of the Northeastern Building: tablets Ub 1316 and 1317 seem to record the delivery of deerskins owing from last year’s tax assessment; Ub 1318 records animal skins of deer, lamb, goat, pig and ox being distributed to five individuals, and thereby responsible for the working of these materials into the items listed, such as sandals, laces for sandals, saddlebags, straps and basket-like containers; Ub 1315 records finished leather goods, including reins with stitching work, headbands and halters, and red-coloured hides. Tablet An 1282, also from Room 99, records men assigned to work on chariot and horse equipment, while chariot wheels (Sa series) and corslets and helmets (Sh series) feature in tablets which were probably written in the same building before being transferred to the Archives Complex. The uses of leather support these textual associations between animal hides, chariot equipment and military attire: the red-coloured hides of Ub 1315 could have served as coverings for the sides of chariots, strips of leather would have been used to bind the spokes to the circular rims of chariot wheels, as well as to strap together bronze pieces of body armour, and so on. Pointing in part to the spatial constraints of the Northeastern Building, Flouda and Bendall have convincingly argued that while the tablets found in it relating to leather and military equipment reflect administrative activity and the movement and storage of raw materials and finished products, they do not constitute evidence that the actual production of these items took place in the Northeastern Building. The final assembly of chariot parts may have occurred

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7 The man named *au-ke-i-ja-te-u (Ub 1318), for example, appears on An 1281 along with others to whom one or two individuals are allocated (presumably for work assignments). See C. W. Shelmerdine, “Industrial Activity at Pylos” in Tractata Mycenaea, p. 333-342 (p. 340).


9 Leather was also used to line boar’s tusk helmets, shields and body armour. It was used to make reins, saddles, footwear, clothing, containers (including skins to hold cheeses and wine), tents, and many other military and domestic items, e.g., R. J. Forbes, Studies, cit. (n. 1), p. 31-34, 46-47; Docs p. 520; K. Zarkia, Preindustrial Tanning, cit. (n. 5), p. 6, 36; G. S. Flouda, “Inscribed Pylian Nodules”, cit. (n. 6), p. 229; J. T. Killen, “The Commodities on the Pylos Ma Tablets”, in Colloquium Romanum, p. 431-447 (p. 440-441).


here, likewise some final working of leather products, but the bulk of the work was probably carried out elsewhere.

Is there any textual evidence, then, for a location where the processing of leather, specifically the arduous task of tanning, might have occurred? This paper represents a preliminary attempt to explore the possibility that (some of) the individuals recorded in the Ea series from Pylos may have been involved in a tanning venture in the territory with which the Ea texts are concerned. It should be noted that the people of the Ea series are usually viewed, instead, as landholders registered in a non-occupational context.  

The Ea series

The Ea series is a landholding register. Written by a different scribe (S28 H43) from those responsible for the pa-ki-ja-ni-ja Eo/Eb (H41) and En/Ep (H1) texts, it concerns a different group of people and presumably a different locality. L. Palmer viewed two landholders, ke-re-te-u and du-ni-jo of Ea 59 to be identical with ke-re-te-u-ti-no of Na 565 and du-ni-jo ti-ni-ja-ta of Fn 79.3 (ti-ni-ja-ta being a toponymic related to *ti-ni-ja 'region of ti-no'), and therefore proposed that the Ea tablets concern landholdings at a place called ti-no.  

The 62 tablets comprising the Ea series were found in Rooms 7 and 8 of the Archives Complex and consist almost exclusively of preliminary single entry drafts.

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15 L. R. PALMER, Interpretation, cit. (n. 14), p. 220; C. J. RUIJGH, Études sur la grammaire et le vocabulaire du grec mycénien, Amsterdam 1967, p. 196; P. DE FIDIO, “Palais et communautés de village dans le royaume mycénien de Pylos”, in Tractata Mycenaea, P. Ilievski, L. Crepajac (ed.), Skopje 1987, p. 129-149. The adjacent entries of ti-no and pa-ki-ja-si on PY An 18.9-.11, separated only by a vacant line, may allude to the relative proximity of the two locations. L. R. PALMER (p. 220) further suggested that the En/Ep texts recorded the wanaks’ estate in which the goddess Potnia was worshipped, while the Ea series dealt with the ra-va-ke-ta’s estate, featuring the god Hippos. As will be seen below, however, a secular function is preferred here for the single horse appearing in the Ea series (Ea 59.5 recto). The only (clear) exception in terms of individuals appearing in both land registers is that of o-pe-te-re-u who holds land in one series ‘on account of manslaughter’ e-ne-ka a-no-qa-si-ja (Ea 805) and is described in the other as ge-ja-me-no ‘having been paid/compensated (as part of a religious fine/penalty)’ (Eb 294, Ep 704.1). The overlap might therefore be the result of a special situation in which land could be appropriated as compensation for manslaughter or homicide, perhaps as a substitute for blood vengeance. See e.g., H. J. TRESTON, Poine. A Study in Ancient Greek Blood-Vengeance, London 1923; W. F. HUTTON, “The Meaning of ge-te-o in Linear B”, Minos 25-26 (1990-1991 [1993]), p. 105-131 (p. 124-125 for ge-ja-me-no); J. T. KILLEN, “Observations on the Thebes Sealing”, in Mykenaika, p. 365-380 (p. 379-380); J. L. GARCÍA RAMÓN, “Mykenisch ge-ja-me-no und e-ne-ka a-no-qa-si-ja, alph.-gr. τείχεσμος und ἀνάδοκταια 'Mord' und der PN Τσισφόνος” in Στέφανος Αριστείος, F. Lang, C. Reinholdt, J. Weilhartner (ed.), Vienna 2007, p. 113-123.
16 M. LEJEUNE, “Analyse”, cit. (n. 14), p. 84 n. 5. The Ea finds appear in two groups, one in Room 7 and one in Room 8, but their shared Hand and common content suggest that they belonged to “a single unified
The lack of cross-checking opportunities such as those afforded by the comprehensive \textit{paki-ja-ni-ja} (Eo/Eb) drafts and (En/Ep) redactions makes it extremely difficult to unravel the tenancies recorded on the \textit{Ea} tablets. This poses serious obstacles to interpretation. For example, compare the straightforward texts \textit{Ea 824} and \textit{Ea 825} with the more opaque \textit{Ea 822}:

\textbf{PY Ea 824}  
\begin{tabular}{l}
\textit{ko-do}, eke, o-na-to, pa-ro, da-mo GRA T 4  
\textit{shepherd (nom.)}  
\textit{ko-do holds a lease from the da-mo}  
\end{tabular}  

\textbf{PY Ea 825}  
\begin{tabular}{l}
\textit{ta-ra-ma-ta}, e-ke, o-na-to, pa-ro, \textit{ko-do} GRA T 1  
\textit{shepherd (dat.)}  
\textit{ta-ra-ma-ta holds a lease from ko-do}  
\end{tabular}  

\textbf{PY Ea 822}  
\begin{tabular}{l}
\textit{ra-wa-ke-si-jo}  
\textit{e-u-m-e-ne e-ke, o-na-to, pa-ro su-qo-ta GRA T 5}  
\textit{lqwge(r)sian (nom. or dat.?)}  
\textit{e-u-me-ne holds a lease from the swineherd}\end{tabular}  

On \textit{Ea 824} and \textit{825}, the shepherd in question is named \textit{ko-do} (nominative \textit{po-me} and dative \textit{po-me-ne}). On \textit{Ea 822}, the adjectival form \textit{ra-wa-ke-si-jo} could be either nominative (modifying the individual named \textit{e-u-me-ne}) or dative (modifying the \textit{su-qo-ta} 'swineherd'). Lejeune prefers the latter.

\textbf{PY Ea 59.4}  
\begin{tabular}{l}
\textit{ke-re-te-u}, e-ke, o-na-to ... pa-ro, ra-wa-ke-si-jo, \$\varepsilon\$-\[ \textit{ke-re-te-u holds a lease ... from lqwge(r)sian \varepsilon}\] GRA 2  
\end{tabular}  

\textbf{PY Ea 808}  
\begin{tabular}{l}
\textit{ka-ra-pi}, e-te-do-mo, e-ke, o-na-to, GRA 1  
\textit{ka-ra-pi, the armourer, holds a lease from the da-mo} GRA 1  
\end{tabular}  

series that entered the Archives Complex at a different time.” K. PLUTA, “A Reconstruction of the Archives Complex at Pylos. A Preliminary Report”, \textit{Minos} 31-31 (1996-1997 [1998]), p. 231-250 (p. 249). Often a personal name appears on tablets found in both Rooms 7 and 8 in connection with landholdings of various types (i.e., there is no clear pattern of distribution of \textit{Ea} texts). For a succinct and currently accurate overview of the \textit{Ea} series, see M. DEL FREO, \textit{I censimenti di terreni nei testi in lineare B}, Rome 2005, p. 71-84.

\textbf{17} Tablets \textit{Ea 59} and \textit{Ea 481}, both from Room 8, form the exceptions, each with more than a single entry.
The existence of *ra-wa-ke-si-jo e-[ on *Ea 59.4 and the otherwise complete absence in the series of a ‘lāwāge(r)si-an’ su-go-ta (other references to an unnamed su-go-ta do exist) might be seen as favouring a nominative case for *ra-wa-ke-si-jo on *Ea 822 above, modifying the personal name *e-u-me-ne. Lejeune’s reconstruction of *ra-wa-ke-si-jo e-[ (Ea 59.4), however, involves the e-te-do-mo ‘armourer’ who appears (without the adjective) on *Ea 808. 18 One could argue that *e-u-me-ne is more likely for *Ea 59.4 since the norm appears to be for the adjective *ra-wa-ke-si-jo to modify either an occupational term without a personal name (e.g., *a-mo-te-u: *Ea 421 and *Ea 809) or a personal name without an occupational term (e.g., ru-ko-ro: *Ea 782) but not both (and the e-te-do-mo’s name is stated on *Ea 808 to be ka-ra-pi). But this state of affairs may be misleading, given the preliminary character of these records. 19

Another problem concerns the possible incompleteness of the series. On *Ea 59 verso, a total amount of GRA 137 was entered (for the whole series). Lejeune’s approximation of GRA 100 for all the extant *Ea texts, including those lacking GRA figures, falls short of the recorded total, suggesting that perhaps only about 75% of the *Ea corpus is preserved. 20

It is also often difficult to determine the types of landholdings involved in each case. For instance, several individuals have both ki-ti-me-na and ke-ke-me-na lands so the type of land allocated to their sublessees could theoretically be of either type. Often the sublease is described rather generically as ‘o-na-to’ or ‘o-na-to of X’s ko-to-na’ without being clearly specified. Ka-ma land also existed (e.g., *Ea 28) and the formulaic pa-ro da-mo (e.g., *Ea 52, 59.4, 136, 208, 259, 773, 778, 808, 816, 824) points to a land-administering body similar to that of the pa-ki-ja-ni-ja records. Still, the landholding details are far from clear. 21

18 M. LEJEUNE, “Analyse”, cit. (n. 14), p. 92 n. 10. This is based on Lejeune’s observation that Hand 43 usually places the adjective *ra-wa-ke-si-jo after personal names but before occupational terms (e.g., *Ea 132: ru-ko-ro ra-wa-ke-si-jo ‘ru-ko-ro, the lāwāge(r)si-an’ versus *Ea 809: ra-wa-ke-si-jo a-mo-te-wo ‘of the lāwāge(r)si-an wheelwright’). This does not happen, however, on *Ea 421 in the only other existing reference to this wheelwright, where the adjectival ra-wa-ke-si-jo-jo was added after a-mo-te-wo.

19 M. DEL FREO (I censimenti, cit. (n. 16), p. 77-78, 79 n. 56) explains that, on the basis of the extant *Ea tablets, the adjective on *Ea 59.4 could designate either the occupational term e-te-do-mo or any of the personal names attested in the series starting with e- and followed by three or four signs as required to fill the number of spaces estimated to be missing (e.g., e-u-me-ne, e-ri-qi-jo, e-ro-go, e-u-me-de).


21 A complete list of the formulaic vocabulary is provided by M. DEL FREO, I censimenti, cit. (n. 16), p. 80-81; S. DEGER-JALKOTZY, “Noch Einmal zur Ea-serie von Pylos”, in Texts, Tablets and Scribes, J.-P. Olivier, T. G. Palaima (ed.), Salamanca 1988, p. 97-122. Also see Lejeune’s detailed but tentative Table of landholders, their sublessees and types of plots in M. LEJEUNE, “Analyse”, cit. (n. 14), p. 106-110. For the most part, his classifications seem valid. On *Ea 481, for instance, line 1 records ra-pa-do’s (unspecified) holding from the me-ri-te-u ‘honey-man’ and line 2 his (unspecified) holding from the su-go-ta ‘swineherd’. Since the extant corpus has no record of ki-ti-me-na belonging to either man, and since the only other tablet containing more than a single entry appears to record like-items (i.e., ke-ke-me-na holdings on *Ea 59), it is likely that ra-pa-do’s subleases from the honey-man and the swineherd on *Ea 481 also relate to like-items, i.e., in both cases to ke-ke-me-na (ibid., p. 85). Due to the nature of the evidence, not all his assumptions are as fully substantiated (which he himself recognises).
In terms of size, the land parcels seem to be generally larger in the Ea series than in the En/Ep records. For example, in the En records, whole ki-ti-me-na usually range between GRA 1-3 in size, whereas in the Ea series, they range between GRA 1-6. Could an Ea location removed from a densely inhabited centre and therefore free from the accompanying pressures of land availability help to explain the generally larger size of the Ea landholdings?

The individuals of the Ea series

In general, the approximately 36 individuals recorded in the Ea series lack the associations with the religious sphere and with the wanaks that are typical of those found in the En/Ep documents. In the Ea series, there are no te-o-jo do-e-ro/-ra ‘slaves/servants of the god(dess)’, no wa-na-ka-te-ro personnel, and no individuals explicitly designated te-re-ta. There are also no women. Where occupational designations are provided, they suggest that the men concerned could have participated, directly or indirectly, in various stages of a tanning operation (see Table 1). Four such men deal with livestock: two po-me-ne ‘shepherds’ (named mo-ro-qa-ro and ko-do); one *go-go-ta ‘oxherd’ (named pe-re-qa-ro); and an unnamed su-go-ta ‘swineherd’. Specialist craftsmen include three ra-pte-re ‘sewing men’ or ‘leather-stitchers’ (named ti-ri-da-ro, er-o-qa-ro, and ze-pu-qa-ro) and an e-epi-westrio ‘garment-worker’ (named

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22 Tablets PY En 609, 74, 659, 467; Ea 71, 756, 781, 817, 821. Consider, for instance, the ki-ti-me-na holdings on Ea 817 (over GRA 3) and Ea 821 (over GRA 5). Note also Lejeune’s observation (“Analyse”, cit. [n. 14], p. 111) that, overall, there seems to be less fragmentation of land in the Ea series than in the pa-ki-ja-ni-ja records.

23 M. LEJEUNE, “Analyse”, cit. (n. 14), p. 92; Cf. M. DEL FREO, I censimenti , cit. (n. 16), p. 76-78 (33 or fewer personal names) and p. 79-80 (designations of unnamed individuals).

24 In comparison, the En/Ep pa-ki-ja-ni-ja records deal with about 82 individuals and land totalling about GRA 102 T 4 (PY Ed 411): cf. M. DEL FREO, I censimenti, cit. (n. 16), p. 106, 113 (En), 137-139 (Ep); M. LEJEUNE, “Analyse”, cit. (n. 14), p. 94 (85 individuals).

25 The term te-re-ta is absent from the Ea series, but M. LEJEUNE (“Analyse”, cit. [n. 14], p. 84) considers the holders of ki-ti-me-na to be telestai (as in the final pa-ki-ja-ni-ja documents).

26 The sole feminine name in the Ea series, i-ma-di-ja (Ea 816), is probably a scribal error, given the existence of masculine i-ma-di-jo (Ea 29). M. DEL FREO, I censimenti , cit. (n. 16), p. 77; M. LEJEUNE, “Analyse”, cit. (n. 14), p. 92. In the pa-ki-ja-ni-ja series, about a third of the surviving names belonged to women involved in the religious sphere. M. LEJEUNE, ibid., p. 94.

27 Following Lejeune, the form go-u-ko-ro ‘oxherd’ (βουξόλας) is taken here as a personal name ‘Oxherd’ (e.g., Ea 781) whereas the alternative form *go-go-ta, probably dissimilated from go-u-qa-ta (βουξόνας), is used in the Ea series to denote the occupation ‘oxherd’ (e.g., Ea 270). M. LEJEUNE, “Analyse”, cit. (n. 14), p. 91 n. 9; Docs2 p. 577.

28 J. T. KILLEN, “Conscription and Corvée at Mycenaean Pylos”, in Fiscality in Mycenaean and Near Eastern Archives, M. Perna (ed.), Naples 2006, p. 73-87 (p. 78 “ra-pte-re ... probably ‘leather-sewers, saddlers’”). As M. LINDGREN, People , cit. (n. 13), II p. 134 also notes: “the women who sew are dealing with clothes, etc.; the men are concerned with leather work (armour, horse equipment, etc.).” See DMic. s.v. ra-pet.

29 epiwestrios ‘one whose craft deals with outerwear, perhaps cloaks’ (cf. ἐφοστρῖς ‘upper garment/outerwear’ e.g., wrapper, cloak, robe). C. J. RUUGH, Études , cit. (n. 15), p. 116-117; M. LINDGREN,
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The a-re-po-zo-o ‘unguent boiler’ named e-u-me-de is considered to be the same individual mentioned by name as a recipient of olive oil on tablet PY Fr 1184. Given that olive oil is often rubbed into leather in the finishing stage to make it supple and durable, one wonders whether he might have supplied this product, or whether he was involved in melting/boiling it or other ingredients used in the process. Similarly, the *me-ri-te-u ‘honey-man’/perhaps beekeeper of the Ea series (named *ku-ru-no) may have supplied beeswax, often used in waterproofing leather. The di-<pte->ra-po-ro ‘hide-bearing’ (named o-ke-u), whose title clearly connects him to animal hides, may have served a religious or secular purpose, or a combination of both. An unnamed di-pte-ra-

People, cit. (n. 13), II p. 44. In Works and Days 543-545, Hesiod offers advice about stitching together goatskins with the tendons of oxen to make leather capes to put on one’s back for protection during winter: could such capes or similar wrapping materials have been the specialty of the e-pi-we-ti-ri-jo?

Phonetic variant of a-re-pa-zo-o *aA.e<tpa6°'; from aAwpap ‘unguent/ointment’ (cf. aAi::icpco ‘anoint the skin with oil; polish’) and sEco ‘boil’. C. J. RUIJGH, Etudes, cit. (n. 15), p. 260 n. 131, 379-380; DMic. s.v. a-re-pa-zo-o.

K. ZARKIA, Preindustrial Tanning, cit. (n. 5), p. 27-28. Other oils and fatty materials, including the hide’s own fats, could be used for the same purpose: R. J. FORBES, Studies, cit. (n. 1), p. 20, 48; Iliad 17. 389-393.

32 Shelmerdine effectively demonstrates that e-u-me-de’s receipt of OLE+WE 18 on the transaction tablet PY Fr 1184 was linked to his role in the palace’s perfume industry: C. W. SHELMERDINE, The Perfume Industry of Mycenaean Pylos, Göteborg 1985, p. 24, 41, 110. Another tablet, PY Fr 1223, records a disbursement of oil described as ‘sage-scented and rose-scented, for anointing’ to the site of ti-no:

PY Fr 1223
.1 ]tì-no-de , e-ra-wö pa-ko-we , we-a-re-pe OLE+Als 2
.2 Jwo-do-we-qe we-a-re-pe OLE+Als 2

OLE+A seems to be a treated oil product, with adjunct A standing for a-ro-pa (cf. Homeric ἀλωψια ‘anything which can be anointed or smeared’). OLE+A, sometimes indicated by the ideogram ἈΡΕΠΑ ἀλωψια, is considered a liquid, perhaps oil which has been thickened for use as an ointment, e.g., for clothing: C. W. SHELMERDINE, Perfume, ibid., p. 17 n. 26, 34, 82, 92-93. For we-a-re-pe, derived from the noun a-ro-pa, see also C. J. RUIGH, Études, cit. (n. 15), p. 379-380. If ]ti-no on this tablet represents ti-no and if this was the name of the locality of the Ea series (see above), it is not impossible that Eumedes was also responsible for the specialised use of this oil product there, especially if it was intended for professional use. In this respect it is important to note the well-attested connection between perfumery and tanning. This is evident, for example, in the evolution of the seventeenth century French rural city of Grasse from a site known for its high quality perfumed leather output to a wealthy centre of perfume production. It managed to hold a monopoly on the trade by keeping its specialist perfumery art a secret. The link between perfumery and tanning is also clear in the practices of Spanish artisans of the same century who would steep their animal skins in perfumed oils. For both points, see R. A. MILLER, I. MILLER, The Magical and Ritual Use of Perfumes, Vermont 1990, p. 56-57.

33 E.g., J. T. Killen, “The Commodities on the Pylos Ma Tablets”, cit. (n. 9), p. 441. (Liquifying the substance leads to better penetration into the leather.)

34 Olivier advances an appealing case for the di-pte-ra-po-ro as *διωθερασφόρος, a religious official clothed in animal hide during ritual ceremonies, pointing to the LM IIIA Haghia Triada sarcophagus for iconographic support. See J.-P. Olivier, “Étude d’un nom de métier mycénien: di-pte-ra-po-ro”, L’Antiquité Classique 28 (1959), p. 165-185. He rejects the notion that the term refers to a hide-seller (*διωθερασφαλίς, cf. Classical διώθερασφάλης ‘leather-seller’), arguing that the -po-ro element is not known to denote ‘seller’ in the Mycenaean period. This element is contained in the Linear B term ka-ra-wi-po-ro, unanimously interpreted as ‘key-bearer’ and very likely belonging to the religious sphere, where it could reflect the
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**po-ro**, possibly **o-ke-u** of the **Ea** series, appears elsewhere as a recipient of commodities **RA** and **O** on **PY Un 219.6** and of **HORD** on **Fn 50.6**. It is possible that the **i-je-re-u** ‘priest’ of the **Ea** series, named **sa-ke-re-u**, was associated with the fire-altar of Dionysos (**Ea 102** – see below), while the **a-ke-ro** ‘messenger’ **(Ea 59.4)** may have provided an efficient courier service, along with the single horse recorded in the series (**Ea 102**), between the palace and this site.

The occupational designations of these men provide internal evidence to suggest that at least some of the **Ea** individuals may have been directly or indirectly associated with the processing of animal hides. The messy and smelly work of tanning, in which offensive odours of decaying animal flesh are often compounded by the use of urine and dung, has traditionally been established outside village centres, away from concentrated human habitation, and close to (a) a constant supply of water (needed to soak the skins/hides during the preparation and actual tanning stages) and (b) a thriving stock-breeding sector to ensure the procurement of skins: fine - from sheep and goats, semi-fine - from pigs and calves, and thick - from cattle. It would appear that the shepherds, the swineherd and the oxherd of the **Ea** series would be in a position to provide precisely the raw materials required. The presence of the leather-stickers would allow for the possibility that some working of the finished leather occurred on site (discussed further below). It is also worth noting that the often back-breaking work of tanning heavy hides action of either ‘wearing’ or ‘carrying’. In fact, taking into account both the Classical Greek **kanephoroi** ‘basket-carriers (during ritual processions)’ and the Linear B **to-pa-po-ro** on **TH Av 101.6** (taken here to reflect ‘basket-carriers’ [cf. **to-pa** gen. of **tārṇη** ‘large basket’ on **PY Ub 1318.3**, **Docs** p. 587], but alternatively interpreted as ‘light/torch-bearers’ [**AGS** 2001, p. 169-172] and ‘rope-bearers’ [see A. BERNABÉ, this volume]), the possibility arises that ‘carrying’, rather than Olivier’s ‘wearing’, might lie behind the term **di-pte-ra-po-ro**. If the designation refers to a cultic official, the coexistence of the clearly religious title **i-je-re-u** ‘priest’ (e.g., **Ea 756**) would argue at least for a differentiation in function. Sacconi suggests that the **di-pte-ra-po-ro** was a sanctuary official who received the hides of sacrificed animals. See A. SACCONI, “Ideogrammi di pelle e cuoio”, **SMEA** 3 (1967), p. 97-134 (cf. Classical period: W. BURKERT, **Greek Religion**, Cambridge, MA 1985, p. 57, 96-97). Perhaps, instead, the **di-pte-ra-po-ro** was the figure responsible for transporting (‘carrying’) and ensuring the safe arrival of the processed hides (**di-pte-ra** properly refers to **treated** hides) from the leather-processing area(s) to the palace, or elsewhere, for distribution or further working. Whether or not this would have constituted a strictly religious role is unknown.

**35** An occupational title, possibly **ἀγγέλος** ‘messenger/herald’. **DMic. s.v. a-ke-ro**.

**36** In pre-industrial tanneries in Greece, tanning materials were ground in horse-driven mills (K. ZARKIA, **Preindustrial Tanning**, cit. (n. 5), p. 42), but there is no clear evidence at present to argue that the horse of the **Ea** series was used in a similar way.

**37** K. ZARKIA, **Preindustrial Tanning**, cit. (n. 5), p. 6, 11. Finer skins could be used for clothing and thicker ones for harnesses and saddle equipment.

**38** For a similar idea about the herdsmen recorded in the **Ea** series possibly providing the raw material for leather to be worked by the ‘sewing men’ see S. DEGER-JALKOTZY, “Noch Einmal zur Ea-serie”, cit. (n. 21), p. 121. Furthermore, if **ti-no** was indeed the name of the territory recorded in the **Ea** series, then the large number of oxherds recorded at **ti-no** on **PY An 18** (90 of them, presumably working for the palace) would further support the area’s livestock-producing capabilities.
has traditionally been a male occupation. Could the lack of women in the Ea series be explained in part as the result of a link between it and a gender-specific work activity?

The Ea series also features a handful of men described as ra-wa-ke-si-jo, perhaps four or five in number depending on how one interprets the evidence: (1) *a-mo-te-u a ‘wheelwright’ or ‘fitter/joiner’, (2) e-[te-do-mo?] ‘armourer’ named ka-ra-pi, (3) e-u-me-ne, (4) ru-ko-ro and (5) ku-ro. Their adjectival designation, ra-wa-ke-si-jo, connects these men to the office of the ra-wa-ke-ta. Traditionally interpreted as the military commander of the Mycenaean polity, the ra-wa-ke-ta /lawage(r)tas/ may have played a significant role in mobilizing human labour for state-wide projects. Why were these men designated ra-wa-ke-si-jo? Were they under the ra-wa-ke-ta’s exclusive control or were they his ‘associates’? Clear-cut answers are not forthcoming, but the ra-wa-ke-si-jo men accompanied by occupational titles bring to mind the wa-na-ka-te-ro personnel of the pa-ki-ja-ni-ja texts. It is possible that, as specialist craftsmen experienced in the use of leather, the lawage(r)sian *a-mo-te-u ‘fitter’ and possibly e-[te-do-mo ‘armourer’, and perhaps the other three lawage(r)sian men of the Ea series as well, were members of one or more workgroups dealing with leather-processing. Given the registered professional expertise in the use of leather of at least one or two of these men (*a-mo-te-u, e-[te-do-mo – as noted earlier, leather was used in the production of wheels and body armour), it is not impossible that they were supervisors of such workgroups.

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40 Attested as a-mo-te-wo (gen.). (a) Taking the Mycenaean word a-mo to refer to a chariot’s undercarriage (wheels) and the vehicle as a whole, L. R. PALMER (Interpretation, cit. [n. 14], p. 219-220, 320-321, 341) interpreted the *a-mo-te-u as the ra-wa-ke-ta’s ‘charioteer’. (b) Taking a-mo as the Mycenaean word for ‘wheel’, *a-mo-te-u was interpreted as ‘wheelwright’ in Docs2 (p. 371, 531). (c) Since a-mo ‘wheel’ is derived from the stem *ar- of the verb ἀπαράγειν ‘fit together, join’, *a-mo-te-u may be translated as ‘joiner’ or ‘fitter’ (e.g., of wheels), quite applicable to the context of chariot-making and repairing. See C. J RUDIG, Études, cit. (n. 15), p. 129 n. 150. Options (b) and (c) are favoured here.
42 Five individuals if (2) and (3) are viewed as distinct; four if (2) in fact reflects e-u-me-ne. In contrast, Lejeune’s ra-wa-ke-si-jo men include the *a-mo-te-u, the e-[te-do-mo?, ru-ko-ro, ku-ro] and, on Ea 822, the unnamed swineherd, not e-u-me-ne (as discussed earlier). Given the fluctuation between Hand 43’s inclusion and omission of the term in question, M. LEJEUNE, “Analyse”, cit. (n. 14), suspects that others may have been ra-wa-ke-si-jo men even if not specifically designated as such in the extant texts.
45 Note that each of the three men designated wa-na-ka-te-ro in the PY E-series were specialist craftsmen, though this need not necessarily imply that all ra-wa-ke-si-jo men were such as well. Nevertheless, e-u-me-ne is recorded as a bronzesmith on PY Jn 725.15 and such skills would be of use to the armourer’s work. The other two ra-wa-ke-si-jo men, namely ru-ko-ro and ku-ro, do not appear outside the Ea series (although Lejeune’s tentative restoration might identify ru-ko-ro as a craftsman on An 1281.13 – see Table 2).
In this respect, it is relevant to note that the associated feminine singular form ra-wa-ke-<si->ja appears in what may qualify as another work-related context on Knossos tablet As 1516. It refers to a collective of 31 men who may have been specialist craftsmen recruited from the local community to carry out a work assignment for the palace. At Pylos, the term ra-wa-ke-si-jo appears once outside of the Ea series seemingly qualifying another group of male specialists, though the precise meaning of the term ma-ra-te-we on PY Na 245 is debated.

Hand 43

Another clue is provided by the tablet-writer responsible for the Ea series. This is Hand 43, who drew up only two other tablets in the surviving corpus of texts from Pylos. Tablet An 207 records specific numbers of male workers such as gold-workers, sewing-men/leather-stitchers, sword-makers, potters and others, while An 261 includes a list of 18 men, belonging to four separate ke-ro-si-ja, who have been interpreted as bronzerworkers called to carry out specialised work at the palace. Hand 43’s associations with skilled workers and workgroups is therefore suggestive with respect to the nature of the Ea series; specifically the possible occupational context surrounding its compilation. Furthermore, given the ra-wa-ke-ta’s connection with the military sphere, it would not be surprising if craftsmen connected to his office were skilled in working with, producing and/or overseeing the production of leather, a great deal of which would have been used in the manufacture of the state’s varied military equipment. Additionally, if the ra-wa-ke-ta’s identification as *we-da-ne-u, one of the ‘collectors’ at Pylos (Cn series) is correct, his experience as a ‘collector’ in the sphere of livestock management would assist him in overseeing, or perhaps instead collaborating with, the...
four herdsmen in the Ea series and in the acquisition of animal hides thought to be associated with the series.

The setting

From an archaeological perspective, it is unclear if the tanning thought to be associated with the Ea series would have taken place in a built workshop or outdoors. The soaking of hides in water required at different stages of the process could have been carried out in pits or stone vats indoors or outside, or even in makeshift tanks built of stones set up in the shallow waters of springs, rivers or coastal sites. Wooden tables could be set up to facilitate other aspects of the work. Following the idea pursued in this study, namely that the personnel recorded together in the Ea series interacted with each other in the context of work, the mention of three leather-stitchers would suggest that some working of the finished leather occurred on site. The ra-pte-ri-ja a-ni-ja ‘reins with stitching work’ noted on PY Ub 1315.2 might be the kind of items produced by these men. The recording of an armourer and a fitter might point, more specifically, to a portion of armour- and chariot-manufacture, both of which would have utilised leather, taking place in the same area. Perhaps tanning was carried out in an ‘industrial area’ characterised by a variety of workshops specialising in the manufacture and repair of military equipment, including armour and chariot parts.

A unique feature of the Ea series is the mention of a ‘fire-altar of Dionysos’:

PY Ea 102

di-wo-nu-so-jo, e-ka-ra GRA 2 T 6

52 R. J. FORBES, Studies, cit. (n. 1), p. 8, 19 (pits); K. ZARKIA, Preindustrial Tanning, cit. (n. 5), p. 11, 19 (by the water’s edge). It is interesting to note that speculations about the toponym reflected by ti-no have included Greek θης, θος (sandy) beach, shore’, although the later Greek declension of the word argues against it. DMic s.v. ti-no. Regardless of the particular method used, water would have been required for the cleaning/washing and preparation of the hides (Stage 1), e.g., R. J. FORBES, Studies, cit. (n. 1), p. 18-19. Vegetable tanning would have required additional water for the repeated immersions in solutions of increasing intensity (Stages 1 and 2).

53 The allative form a-no-te-jo-na-de (PY Vn 10) ‘to the fitter’s/chariot workshop’ (see L. M. BENDALL, “A Reconsideration”, cit. (n. 6), p. 220 n. 209, with references) might refer to such a workshop, though not necessarily the one thought to be alluded to in the Ea series. It is unclear at present if, or how precisely, the single reference in the Pylian corpus to a fitter’s/chariot workshop whose location is not specified (Vn 10) and the single reference to a fitter (*a-no-te-u in the Ea series only) are to be connected. S. LUPACK, “The Northeast Building of Pylos and An 1281”, in Colloquium Romanum, p. 467-484, argues that the workshop of Vn 10 was located at ja-ke-si (PY An 1281.9) generally restored as the locative of the toponym po-ti-ja-ke-e (p. 481-482). In fact, there may have been a number of such industrial establishments, including tanning sites, scattered throughout the kingdom. Ethnographic evidence certainly suggests that this would have been the case. As K. ZARKIA, Preindustrial Tanning, cit. (n. 5) notes, up until the mid-20th century, in pre-industrial Greece: “In most places, tanneries attracted those who practised similar occupations: ropemakers, cobblers, saddlers, shoe-makers…” (p. 6). Also, according to her figures from the early 1900s, the town of Ermoupoli (on Syros) and the island of Chios hosted about a dozen tanneries each (p. 42, 44).
The word e-ka-ra (ἐκχάρα) denotes portable braziers on PY Ta 709. Melena interprets the e-ka-ra on Ea 102 as an altar for burnt offerings, perhaps hollowed out in the ground, noting that the word is used in later Greek, especially when accompanied by the name of a divinity, to mean ‘sacrificial hearth.’

It is tempting to consider whether this source of fire could have played a role in the hypothesised tanning operation. As noted earlier, processing animal skins/hides into leather by smoking was common in the prehistoric period. It is at least possible, then, that the smoke issuing from the di-wo-nu-so-jo e-ka-ra was used in such a process. Perhaps once a certain number of skins/hides had been collected and prepared, they were treated together, using the smoke from Dionysos’ fire-altar. Whether or not smoking was actually the method used, the presence of Dionysos’ altar could reflect the well-known Bronze Age Aegean connections between the religious sphere and craft production. Still, the reason for the contribution expected in relation to this altar remains unclear.

The landholdings

Indeed, any interpretation of the Ea series must also take into account that it is fundamentally a series of landholding documents. How might the inherent issue of the contribution expected in connection with this land (presumably to be worked out by the palace authorities on the basis of the amount of seed grain GRA recorded against each parcel of land) be reconciled with the notion of a tanning operation? A number of

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55 I sincerely thank Eric Methven for his answers to my queries about the possible use of fire in the production of leather (email communication, 20 September 2009): the chemicals in the smoke generated by a fire ensure that the leather remains soft even after getting wet. See also notes 1-2 above.

56 If the di-wo-nu-so-jo e-ka-ra constituted an indoor hearth, such as the one found in the Room with the Fresco at the Cult Centre at Mycenae, hides might be hung on a wooden frame above the altar for smoking or moved back and forth over a fire lit in a sunken smoke-pit (cf. Amerindian practices in W. Groenman-Van Waateringe, M. Kilian, H. Van-Londen, “The curing of hides and skins”, cit. (n. 2), p. 887; R. J. Forbes, Studies, cit. (n. 1), p. 19-20). If outdoors, like the open air altar terrace at the site of Apollo Maleatas at Epidaurus, makeshift enclosures might be set up around it to reduce windy draughts. For an overview of representative indoor and outdoor Mycenaean cult areas, see C. W. Shelmerdine, “Review of Aegean Prehistory VI: The Palatial Bronze Age of the Southern and Central Greek Mainland”, AJA 101 (1997), p. 537-585 (p. 570-576); S. Lupack, “The Northeast Building”, cit. (n. 53), p. 477-479. The sacrificial offering (animal or other) associated with altars might have preceded the treatment of the hides.

57 E.g., L. R. Palmer, Interpretation, cit. (n. 14), p. 230; I. Tegyey, “The Northeast Workshop”, cit. (n. 8), p. 77-78. One could further speculate that a source of fire such as this could have been used in tanning to liquify beeswax or thickened oil (cf. oil in the perfume industry, C. W. Shelmerdine, Perfume, cit. [n. 32], p. 38-39).

58 I thank Maurizio Del Freo, Dimitri Nakassis and Ruth Palmer for discussing this issue with me. I hope to explore this complicated matter in detail in future work. For the problems associated with determining
possibilities exist, each with additional questions to be addressed. At least two are worth noting at this stage. (1) First, it might be possible to view the two issues as separate: that is, (a) the land of the Ea series was allocated to individuals and therefore, as seems to be usual for land recorded in the palace’s archives, incurred a levy, and (b) some of the men holding Ea plots were involved in tanning, whether or not this tanning operation was directly sponsored or supervised by the palatial administration. (2) Second, the contribution presumably expected by the palace for the use of the land registered in the Ea series may have been sought specifically in return for the opportunity afforded to these individuals to take part in what may have been a potentially lucrative enterprise for them. They may have been able to keep for themselves a portion of the leather or finished goods, after they had helped to supervise the making of leather and supply the central authorities with an essential component of palace production. It might be relevant in this respect that a-pi-a₂-ro, a landholder in the Ea series (see Table 2), appears in a prominent position on PY On 300.2 as the recipient of six hides (ideogram *154), potentially as payment for services rendered to the state, whereas most other palatial officials on this text receive only two or three hides each. A supervisory role or other important function in the hypothesised tanning venture may have entitled a-pi-a₂-ro to a greater number of hides.

Given the textual evidence suggesting that some land was granted by the Mycenaean authorities in return for goods or services (e.g., rowing, bronze-working, flax-growing, etc.), the idea that the work in question - argued in this case to be tanning - might occasionally be carried out on that very land is not an entirely radical proposition. And, as noted earlier, some of the occupations recorded in the Ea series might suggest that further processing was also taking place here (e.g., leather-stitchers, garment-worker, fitter, armourer).

Discerning clear and meaningful patterns of leasing arrangements is extremely difficult given the characteristics of the tablet entries stressed at the outset, and most individuals in the Ea series seem to lease land from others as well as to others. Nevertheless, it may be significant that the four men clearly identified as overseeing, if not owning, animals, namely the oxherd, the swineherd and the two shepherds, do not themselves hold land from anyone else, apart from the da-mo (pa-ro da-mo). The lands leased out to others by these herdsmen are either explicitly stated to be of ke-ke-me-na

whether land was owned by the palace or not and whether land-related contributions to the palace constituted rent or tax, see R. PALMER, “Models in Linear B Landholding: An Analysis of Methodology”, in Studies Killen, p. 223-250 (esp. p. 240).

59 Compare I. TEGYEY’s suggestion (“The Northeast Workshop”, cit. (n. 8), p. 71) that some contributors of animals may have expected to receive a share of the finished leather products manufactured from the hides of the animals that they supplied to the palace.

60 E.g., D. NAKASSIS, “Reevaluating Staple and Wealth Finance at Mycenaean Pylos”, in Political Economies of the Aegean Bronze Age, D. J. Pullen (ed.), Oxford 2010, p. 127-148 (p. 132). S. DEGER-JALKOTZY (“Noch Einmal zur Ea-serie”, cit. [n. 21], p. 118) considers a-pi-a₂-ro to be a functionary, possibly of the rank of ko-re-te or du-ma, which are titles of other men on PY On 300.

type, and therefore probably damos-related, or otherwise more vaguely recorded in each case as an o-na-to of individual X’s ko-to-na (Ea 439, 800, 822, 825) or an o-na-to pa-ro individual X (Ea 109, 270, 481). Could these ‘herdsmen’ be locals, or locally influential men, who assist in making these landholdings available to the tanners, supervisors and associated personnel, including perhaps lower-level general labourers (who might be invisible in the texts), during a short stay in the Ea locality, or for a longer period of time, as land on which to live, grow food, tend animals, produce and work leather, or all of the above, depending on the time of year? 62

The three largest landholders in the Ea series are ke-re-te-u, sa-ke-re-u and ta-ra-ma-ta: 63 ke-re-te-u holds a variety of lands, including one plot e-ne-ka i-go-jo ‘on account of the horse’ (Ea 59.5), perhaps as pasture for the animal – whether he supplied the horse or he was merely responsible for its maintenance is unclear; 64 the priest sa-ke-re-u is listed as a Potnian bronzesmith on Jn 431.17; and ta-ra-ma-ta has animals being watched over by shepherds in the Ae texts (see Table 2). Such men, whose larger holdings might reflect an elevated position, 65 may have had key responsibilities in connection with the Ea series. Two herdsmen, the ‘shepherds’ mo-ro-go-ro and ko-do, also had relatively extensive total landholdings. 66 Moreover, the ‘oxherd’ named pe-re-go-no, may have been the father of an e-qa-ta identified as pe-re-go-ni-jo a-re-i-jo on o-ka tablet An 656.6. 67 So a high status for these herdsmen cannot be ruled out. Still, the relative independence of such men with respect to the central administration remains unclear, as does the ultimate ownership of the animals under their supervision whose hides are thought to have ended up in the hypothesised tanning operation. 68

62 Traditionally, the best animal skins were acquired by tanners between August and November, before the arrival of ticks and other parasites during the autumn rains. K. Zarkia, Preindustrial Tanning, cit. (n. 5), p. 17. Since the hides could be preserved temporarily (by salting and drying) and stored until they were worked into leather, it is impossible to know for certain at what time of the year Mycenaean tanning occurred. Whether it was a year-long activity or a seasonal occupation lasting only several months at a time is also unknown. Methods such as vegetable or mineral tanning (the use of which is possible but as yet not clearly confirmed as widespread for the Mycenaean period), which involve the repeated soaking of hides in solutions to achieve the required result, might take months, even a year. R. J. Forbes, Studies, cit. (n. 1), p. 8. Smoking would have required less time: the actual smoking over a fire might range from half a day to a week. W. Groenman-Van Waateringe, M. Kilian, H. Van-Londen, “The curing of hides and skins”, cit. (n. 2), p. 887.

63 Overall, ke-re-te-u is the largest landholder recorded in the Ea series (with over GRA 15 in total), followed by sa-ke-re-u, the priest, and ta-ra-ma-ta, each with over GRA 6. M. Lejeune, “Analyse”, cit. (n. 14), p. 111.


68 S. Deger-Jalkotzy, “Noch Einmal zur Ea-serie”, cit. (n. 21), p. 119, follows Lejeune in taking the adjective ra-wa-ke-si-jo on Ea 822 to refer to the swineherd. This enables her to link the swineherd directly to the palace and to suggest, more generally, that the herdsmen (pl.) of the Ea series were managers of palatial herds. In the present study, the designation ra-wa-ke-si-jo is not seen to describe any of these four
Questions and Concluding Remarks

A fresh study of the precise types and amounts of land and leasing arrangements recorded in the Ea series might help to shed more light on the situation, despite the obstacles noted above. Another unresolved issue concerns the connection, if any, between the production and working of leather arguably associated with the Ea series and the leather items clearly mentioned on texts such as PY Ub 1315 and 1318, as well as the collection of animal hides recorded in the Ma taxation series.69 Given the expertise required for high quality tanning, it is possible that while some animal hides arrived at the palace as fully processed leather, others may have arrived dry-salted so that full processing and quality control could be executed by choice tanners appointed by the palace. The overall number of leather-processing establishments, skilled tanners and leather-workers around Pylos and their relative independence from the palace is also unclear: e.g., was there a separation between palace-run operations and local ones and, if so, in which category would the Ea tanning operation belong? The earlier point about a-pi-a2-ro receiving a larger number of hides (PY On 300) perhaps as a result of his service (Ea series) might suggest that it was a palace-supervised initiative. On the other hand, it is possible that locally influential men, who were not necessarily members of the palatial bureaucracy, controlled the operation, from which the palace benefitted. At present, the contextual associations of a-pi-a2-ro, and other strong palatial links provided by both the ra-wa-ke-si-jo men (their designation is directly tied to a palatial official’s title) and e-u-me-de, the unguent-boiler, who is elsewhere active in the palace-controlled perfumed oil industry, not to mention the palace’s clear (archived) interest in the land, at least, of the Ea series, would seem to argue in favour of a high level of involvement, but not necessarily absolute control, of the palace.70 The type of work that the producers and workers of leather may have undertaken in relation to the palace (e.g., ta-ra-si-ja ‘working of raw materials into objects’ and o-pa ‘finishing’ or refurbishment work carried out on previously manufactured items71) and the extent of that work (full-time, part-time, etc.) are also issues to be explored.

69 For instance, were the same incoming oxhides (ideogram *152) of the Ma series destined to be tanned in the work believed to be associated with the Ea series (if they were not already tanned) and also used in the manufacture of some of the items listed on Ub 1315 and 1318? While this is possible, the processing of hides could have followed any number of trajectories, the individual stages of which may not always be neatly reflected in the extant tablets.


71 For the distinction between the two systems, see J. T. Killen, “Mycenaean o-pa”, in Floreant, p. 325-341 (esp. 331, 336, 338). See also M.-L. Nosch, “More Thoughts on the Mycenaean ta-ra-si-ja System”,
For now, it is hoped that this paper has demonstrated that (1) the occupational designations in the Ea series plausibly associated, directly or indirectly, with the process of tanning and the leather produced by it (e.g., various herdsmen, an unguent-boiler, a hide-bearer, a wheelwright/fitter, etc.), (2) the regular involvement of men associated with the ra-wa-ke-ta in specialised work activities (e.g., KN As 1516, PY Ea ra-wa-ke-si-jo men, etc.), (3) the apparent preoccupation of Hand 43, the scribe of the Ea series, with skilled male crafts personnel (PY An 207, An 261 and Ea texts), and (4) the likelihood that the Ea precinct was situated beyond the immediate vicinity of the settlement at Pylos, which would reflect the standard practice of carrying out tanning at a reasonable distance from densely inhabited centres, all make a possible link between the Ea series and leather production a hypothesis worthy of further investigation.

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_Fiscality in Mycenaean and Near Eastern Archives_, M. Perna (ed.), Naples 2006, p. 161-182. The overall Linear B corpus furnishes evidence of the ta-ra-si-ja production system in relation to some bronzework, cloth production and chariot wheel manufacture. The o-pa system is represented in the ‘fattening’ of animals and in connection with cloth, chariots, wheels, weapons (javelins) and armour (corslets). _DMic._ s.v. ta-ra-si-ja, o-pa. Such systems may have operated in relation to leather production as well, but clear evidence of the relevant technical vocabulary in texts dealing specifically with leather products is currently lacking.
Table 1. Occupational designations recorded in the Ea series

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number</th>
<th>Designation</th>
<th>Name(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herdsmen</td>
<td>2</td>
<td>sing. po-me</td>
<td>named mo-ro-go-ro, ko-do</td>
</tr>
<tr>
<td>1 oxherd</td>
<td></td>
<td>*qo-qo-ta</td>
<td>named pe-re-qo-no</td>
</tr>
<tr>
<td>1 swineherd</td>
<td></td>
<td>su-qo-ta</td>
<td>(unnamed)</td>
</tr>
<tr>
<td>Specialised craftsmen or personnel</td>
<td>3</td>
<td>sing. ra-pte</td>
<td>named ti-ri-da-ro, e-ro₂-qo₀, ze-pu₁₂₀</td>
</tr>
<tr>
<td>1 garment-worker</td>
<td>1</td>
<td>e-pi-we-ti-ri-jo</td>
<td>named wi-ri-ja-no</td>
</tr>
<tr>
<td>1 unguent-boiler</td>
<td>1</td>
<td>a-re-po-zo-o</td>
<td>named e-u-me-de</td>
</tr>
<tr>
<td>1 ‘hide-bearer’</td>
<td>1</td>
<td>di-&lt;pte-&gt;ra-po-ro</td>
<td>named o-ke-u</td>
</tr>
<tr>
<td>1 ‘messenger’</td>
<td>1</td>
<td>e-ke-ro</td>
<td>(named wa-tu-o-ko)</td>
</tr>
<tr>
<td>1 priest</td>
<td>1</td>
<td>i-je-re-u</td>
<td>named sa-ke-re-u</td>
</tr>
<tr>
<td>Men designated ra-wa-ke-si-jo</td>
<td>1</td>
<td>‘wheelwright’ or ‘fitter/joiner’</td>
<td>*a-mo-te-u (unnamed)</td>
</tr>
<tr>
<td>(? ) 1 ‘armourer’</td>
<td>1</td>
<td>e-[te-do-mo</td>
<td>(named ka-ra-pi)</td>
</tr>
<tr>
<td>1 man (named e-u-me-ne)</td>
<td>1</td>
<td>ru-ko-ro</td>
<td>(named ku-ro₂)</td>
</tr>
<tr>
<td>1 man (named ku-ro₂)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Shepherds and oxherds occur elsewhere in the Pylian corpus, but the term ‘swineherd’ appears only in the Ea series. The craft-related terms also occur elsewhere, except for e-pi-we-ti-ri-jo ‘garment-worker’ and me-ri-te-u ‘honey-man’. Another e-te-do-mo, named a-tu-ko and described as wa-na-ka-te-ro, exists at Pylos (En 609.5/Eo 211.2, Ep 301.5), but the designation ra-wa-ke-si-jo occurs only in the Ea texts and tablet Na 245, and the term *a-mo-te-u ‘wheelwright/fitter’ is unique to the Ea series.
Table 2. Names attested in the **Ea** series and elsewhere in the Pylian corpus

<table>
<thead>
<tr>
<th>Name</th>
<th><strong>Ea</strong> series</th>
<th>Other texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>o-pe-te-re-u</td>
<td>Ea 805</td>
<td><strong>Eb</strong> 294, <strong>Ep</strong> 704.1</td>
</tr>
<tr>
<td>ti-ri-da-ro</td>
<td><em>Ea 28, 460, 754</em></td>
<td>leather-stitcher</td>
</tr>
<tr>
<td>e-ro₂-qo</td>
<td><em>Ea 29, 325, 813</em></td>
<td>leather-stitcher</td>
</tr>
<tr>
<td>ze-pu₂-ro</td>
<td><em>Ea 56</em></td>
<td>leather-stitcher</td>
</tr>
<tr>
<td>wi-ri-ja-no</td>
<td><em>Ea 52</em></td>
<td>garment-worker</td>
</tr>
<tr>
<td><em>wa-tu-o-ko</em></td>
<td><em>Ea 136</em></td>
<td>messenger(?)</td>
</tr>
<tr>
<td>o-ke-u</td>
<td><em>Ea 259, 814</em></td>
<td>‘hide-bearer’</td>
</tr>
<tr>
<td>e-u-me-de</td>
<td><em>Ea 773, 812, 820</em></td>
<td>unguent boiler</td>
</tr>
<tr>
<td>ka-ra-pi</td>
<td><em>Ea 808</em></td>
<td>armourer</td>
</tr>
<tr>
<td>ku-ro₂</td>
<td><em>Ea 814</em></td>
<td></td>
</tr>
<tr>
<td>ru-ko-ro</td>
<td><em>Ea 132, 782, 799, 823, 882, 1424</em></td>
<td></td>
</tr>
<tr>
<td>e-u-me-ne</td>
<td><em>Ea 757, 822</em></td>
<td>Jn 725.15</td>
</tr>
<tr>
<td>ke-re-te-u</td>
<td><em>Ea 59, 304, 305 771, 800, 806, 809, 827</em></td>
<td>Na 565(?)</td>
</tr>
<tr>
<td>sa-ke-re-u</td>
<td><em>Ea 56, 304, 756, 776</em></td>
<td>priest</td>
</tr>
<tr>
<td>pe-re-qo-no</td>
<td><em>Ea 270</em></td>
<td>oxherd</td>
</tr>
<tr>
<td>i-ma-di-jo</td>
<td><em>Ea 29, (816), (827)</em></td>
<td></td>
</tr>
<tr>
<td>a-pi-a₂-ro</td>
<td><em>Ea 109, 270, 922</em></td>
<td>An 192.1; On 300.2; Qa 1297</td>
</tr>
<tr>
<td>du-ni-jo</td>
<td><em>Ea 59.7, 811</em></td>
<td>Ae 8, 72, 264; An 192.3, 75; Eb 169, Ep 705.3; On 300.6; Fn 79.3(?); Un 138.1</td>
</tr>
<tr>
<td>ta-ra-ma-ta</td>
<td><em>Ea 336, 778, 821, 825</em></td>
<td>Ae108, 134, 489; Vn 851.3</td>
</tr>
<tr>
<td>ko-do</td>
<td><em>Ea 71, 754, 803, 824, 825</em></td>
<td>shepherd</td>
</tr>
<tr>
<td>mo-ro-qo-ro</td>
<td><em>Ea 439, 782, 800, 817</em></td>
<td>shepherd</td>
</tr>
</tbody>
</table>

Note: texts in boldface are believed to record the same individual as in the **Ea** series. See also Lejeune’s list (M. LEJEUNE, “Analyse du dossier pylien Ea”, *Minos* 15 (1974 [1976]), p. 93) which includes a tentative restoration of *ru-ko-ro* on one tablet outside of the **Ea** series (An 1281.13).