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TRADE AND PRODUCTION IN PREMONETARY GREECE

Acquisition and Distribution of Raw Materials and Finished Products

Proceedings of the 6th International Workshop, Athens 1996

edited by
Carole Gillis, Christina Risberg and Birgitta Sjöberg



1. TA-ka 3 @ 2. Hl-kp + P+
2. FAP H' H' A9V9 H' H'
3. V@2? H' H' dlk H' H'
4. PHE H' H' @EH H' H'
5.
6. TEL-k? @ 2
7. (AV?) V@-F1' T28' F'
8.
9. FAP, P+
10. P+V? "KYA" V@2?
11. dlk H'

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Pocket-book 154

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Cover: A plan of the palace at Pylos with a Linear B tablet (Jn 605). This tablet concerns metal distribution to or acquisition from a number of smiths in one of the villages.

Acquisition and Distribution: *ta-ra-si-ja* in the Mycenaean Textile Industry*

Marie Louise Bech Nosch

For a workshop entitled "Acquisition and Distribution", it seems appropriate to examine the Linear B term *ta-ra-si-ja*. *Ta-ra-si-ja* is mostly known from Pylos as a term for the smiths' obligation to work. But the circulation of goods organized by *ta-ra-si-ja* becomes more clear when we examine it in the context of production of textiles where *ta-ra-si-ja* is attested on tablets from Knossos, Pylos and Mycenae. In later classical Greek, *ταλασία* is associated only with textile work.

In this paper I would like to examine some particular questions about the attestations and the extent and importance of *ta-ra-si-ja* in the textile production at Knossos. My aim is to examine the importance of the *ta-ra-si-ja* production target, and especially the 'non-collector' production target, and to suggest that the production defined as *ta-ra-si-ja* is not necessarily as extensive as expected.

I shall concentrate on the series which deals with the target for central Crete and discuss (1) the amounts of cloth in the targets for 'collectors'¹ and for 'non-collector' groups, (2) the composition of the targets, and (3) on what basis these targets are set. Then I shall analyse (4) the extension of *ta-ra-si-ja* in other series and at other sites (Pylos and Mycenae), and (5) the composition of the *ta-ra-si-ja* production. Finally (6) I shall suggest some possible interpretations of the totalling tablets Lc(1) 535 and 536.

The generally accepted and traditional interpretation of Mycenaean *ta-ra-si-ja* is distribution of raw material and requisition of the finished products. The *ta-ra-si-ja* in textile production is not very well attested, but contrary to the smiths' *ta-ra-si-ja*, it is found on three sites, Knossos, Pylos and Mycenae.

The Knossian Lc series registers the target for textile production.² It contains one set of tablets with targets for central Crete, and a second set for western Crete.³ Both Lc sets can be divided into two groups: targets with an entry consisting of a 'collector' name, and targets with an entry consisting of a place-name, an ethnic designation or a profession, the so-called 'non-collector' groups. We do not understand the exact status of these workers apart from the fact that they do not seem to work under the authority of a 'collector'. Apart from these individual targets, there are also two totalling tablets with the target for central Crete. For this reason J.-P. Olivier suggested at an early stage that one of them (Lc[1] 536) totals the cloth in the targets without 'collector' in the Lc(1) series, and that consequently the other (Lc[1] 535) totals the cloth in the 'collector' targets in the Lc(1) series written by scribe 103.⁴ The distinction between 'collectors' and 'non-collectors' is a known phenomenon in the Mycenaean archives: in the Knossian Dn series, Olivier⁵ has shown that scribe 117 separates the

totals of livestock without 'collectors' (70%, listed by place-names) from the totals of livestock with 'collectors' (30%, listed by 'collector' names). The Mycenaean administration also distinguishes geographical areas of production: the sheep in the Da-Dg series are all located in the centre of Crete,⁶ and this area probably provided the wool for *ta-ra-si-ja* in the Lc(1) set.

(1) The amounts of cloth in the *ta-ra-si-ja* targets for 'collectors' and 'non-collector' groups in central Crete

It would be very interesting to know the total size of the *ta-ra-si-ja*. This would give us an idea about the weight of this particular demand. At Knossos, *ta-ra-si-ja* is recorded on two totalling tablets. KN Lc(1) 535 is suggested as the total production target for 'collectors', and Lc(1) 536, the total target that 'non-collector' groups have to produce

Lc(1)	535 + 538		(103)
.A	ta-ra-si-ja	pa-we-a [
.B	ke-ri-mi-ja	tu-na-no [
.C	to-sa /	pe-ko-to [
	.C Trace at right consistent with TELAI.		
Lc(1)	536 [+]	7303 + 7731	(103)
.A] ta-ra-si[-ja']pa-we-a[]TELA ^x 200
.B] 'vest.[']	tu-na-no[]TELA ¹ 48 a-ro-zo 'ki-to' TELA ¹ 1
.C	to]-sa /	pe[-ko-to	TELA ¹ +TE]18 TELA ² +TE 267

On both tablets we find three kinds of textile: *pa-we-a*,⁷ *tu-na-no* and *pe-ko-to*. A sub-category of *tu-na-no* is *a-ro-zo*⁸ 'ki-to' TELA¹: *tu-na-no* cloth, which is *a-ro-zo* for one tunic (χιτών).⁹ The targets are registered in pieces of cloth. However, J. Killen has found the rules for conversion of cloth to wool units:¹⁰

- 1 *pa-we-a* = c. 1.67 units of wool LANA (c. 5 kg), or wool from 6-7 sheep.
- 1 *tu-na-no* = 3 units of wool LANA (= 9 kg), or wool from 12 sheep.
- 1 TELA+TE¹¹ / *te-pa* = 7 units of wool LANA (=21 kg), or wool from 28 sheep.
- 1 *pe-ko-to* = 10 units of wool LANA (=30 kg), or wool from 40 sheep.

This means for example that one piece of *tu-na-no* requires three units of wool, and since one unit of wool is three kilos, one piece of *tu-na-no* weighs nine kilos. One unit of wool requires wool from four sheep, and one would therefore require 12 sheep to make one piece of *tu-na-no*.

The amounts of cloth are preserved on Lc(1) 536. Olivier¹² calculates the wool of the total target of 'non-collectors' to be 2529 units of wool. But what is the size of the rest of the target, the so-called 'collector' target (Lc(1) 535), which is not preserved?

We can try to restore the total 'collector' target with the information given in the individual targets: 'collectors' have individual targets of the cloth types called *tu-na-no*, *pe-ko-to*, *pa-we-a* and TELA+TE.¹³ The three 'collectors', *e-me-si-jo*, *we-we-si-jo* and *ku-wo*, are to produce and deliver at least 366 *pa-we-a*, 14 *tu-na-no*, at least 2 *pe-ko-to*, and at least 14 TELA+TE. This would require 770 units of wool. We have,

however, a preserved receipt, Ld(1) 587, which totals 453 pieces of *pa-we-a* cloth received from 'collectors'¹⁴ and it seems plausible that this delivery of *pa-we-a* is the result of a *ta-ra-si-ja* target. This gives a restored 'collector' target of 915 units of wool or 2745 kg (without calculating *pa-we-a* twice).

However, the total *ta-ra-si-ja* target is still not clear, and we can only make some suggestions about its total size: if we add together the information in all the individual targets of the Lc(1) series, we obtain the following results: targets of 902+¹⁵ pieces of cloth, which require 2913 units of wool or 8739 kg. For such a total production, wool from 11,652 sheep is required. However, these numbers do not take lost tablets into consideration. Another and probably more sure way to reconstruct the entire *ta-ra-si-ja* target is to start with the preserved 'non-collector' target of 2529 units of wool (Lc[1] 536), and add the restored 'collector' target of 915 units of wool. This gives a total *ta-ra-si-ja* target of 1017+ pieces of cloth or 3444 units of wool/10,332 kg or wool from 13,776 sheep. This total is possibly incorrect due to some missing individual 'collector' targets.¹⁶ However, if we assume that many individual 'collector' targets are lost, the proportions between 'collectors' and 'non-collectors' might differ much from those between 'collectors' and 'non-collector' groups in the series concerning sheep ('collectors' ca. 30%, 'non-collectors' ca. 70%). The suggested restored total *ta-ra-si-ja* target confirms Olivier's conclusions in the Da-Dg series where sheep are registered: he calculated that ca. 30% of the sheep are associated with 'collectors'. In the restored total *ta-ra-si-ja* target of cloth, 'collectors' are associated with 26.6% of the total target while 73.4% are connected to 'non-collector' groups.

(2) The composition of the *ta-ra-si-ja* targets in central Crete

In the 'non-collector' target Lc(1) 536, 'non-collector' groups are to produce 200 *pa-we-a*, 48 *tu-na-no*, 1 *ki-to*, 18 *pe-ko-to* and 267 pieces of TELA²+TE: 267 is the sum of 200+48+1+18. Half of the target consists of the heavy TELA+TE, and the other half is made up of various types of cloth, *pa-we-a*, *tu-na-no*, *pe-ko-to*. This strongly suggests that the total target did not merely add up the individual targets, but rather, that the total target was set beforehand and subsequently divided into individual targets for the women in the villages.¹⁷ This bureaucratic method is also found in the assessment of taxes.¹⁸

It is possible that the composition of the 'collector' target differs from that of 'non-collector' groups. As mentioned above, the term 'non-collector groups' designates groups of workers who are not associated to a 'collector' name but identified by a profession, by the name of a village or by an ethnic derived from the name of a village. From the sparse evidence, it seems that *pa-we-a* is mostly produced by 'collectors'.

The two identified Lc(1) 'collectors', *we-we-si-jo* (Lc[1] 7392) and *e-me-si-jo* (Lc[1] 551), and probably Lc(1) 532¹⁹ have targets of 366 *pa-we-a*.

The 'non-collector' work groups produce only 200 pieces of *pa-we-a* despite the fact that they make c. 70% of the total *ta-ra-si-ja* production. The 'collectors' have higher *pa-we-a* targets than the 'non-collector' groups (65% 'collectors' and 35% 'non-collectors').

The importance of the 'collector' *pa-we-a* production seems to be supported by the evidence from Lc(2) which is, as we have seen, the target for textile production in western Crete. This set might have a higher proportion of 'collectors' than central Crete. Out of ten²⁰ Lc(2) targets preserved, four or five²¹ concern 'collectors', one²² concerns surely 'non-collectors', and the rest are not identified. Of course, this could be strictly coincidental. All Lc(2) targets seem to record only *pa-we-a* cloth, in any case, there is no indication of any other kind of textile. Seventy-two of the 138 preserved pieces of *pa-we-a* are associated with 'collectors' (52%). Killen²³ has shown that also in the Ld(1) series, 'collectors' seem to have a more important production of *pa-we-a* than the 'non-collectors' (75% 'collectors' and 25% 'non-collectors').

(3) On what basis are the targets set?

An understanding of the basis for determining the targets would be extremely desirable. Theoretically, one could suggest that the Lc(1) targets were based on the number of sheep which are associated to the place-names from where the ethnics derive. This does not seem to be the case (Fig. 1). It can be seen, however, that the villages had enough wool at their disposal for their targets, a fact which questions the distribution of wool from the palace: to fill their target, the women need wool from less than 50% of the sheep registered in their village, although this seems quite a heavy duty for those villages having *ta-ra-si-ja* obligations.

Killen²⁴ suggested, with reference to the women *da-te-we-ja*, that there would be a correspondence between the number of *pa-we-a* to be produced and the number of women registered in the group (Fig. 2). We actually have several tablets which register the number of women from different villages or in specific professional groups, which were probably prepared for the purpose of ration distribution. Unfortunately their state of preservation is quite bad. Figure 2 shows that there may be a correspondence between the nine *da-te-we-ja* women and their target of nine pieces of *pa-we-a*, and between the 14 *?e-ro-pa-]ke-ja* and their target of 10+ pieces of *pa-we-a*. *e-ro-pa-ke-ja* is a profession, and *da-te-we-ja* may be a profession or a designation derived from the name of a 'collector'. I have furthermore suggested that the targets are set within two orders of magnitude: women with an ethnic designation (*ri-jo-ni-ja*, *da-wi-ja*, etc.) are to satisfy targets of 100-200 units of wool (300-600 kg) while women with a professional designation have much smaller targets (c. 15-30 units of wool).²⁵ It is also difficult to relate the *ta-ra-si-ja* targets with the ration series since we do not know if *ta-ra-si-ja* was the only type of obligation, if it was remunerated or not, and if there was a direct relation between the two economical processes. It is plausible that the total target was first calculated according to the palace's needs and desires and then divided into targets for the groups of workers.

(4) The extension of *ta-ra-si-ja* in other series and on other sites, or how did *ta-ra-si-ja* function on the different production levels

A major problem in understanding the function of *ta-ra-si-ja* in the textile industry is that we have very few attestations of the term. Since *ta-ra-si-ja* is mentioned on the two

totalling tablets for targets for central Crete, it is very plausible that all individual tablets in this particular series are targets and are characterized by the term *ta-ra-si-ja*. In the Knossian textile tablets we also have registrations of wool distribution and receipt of cloth and we would expect such processes to follow after the target was set. However, only one of these registrations is qualified with the term *ta-ra-si-ja*, and it is not a totalling tablet. The question therefore is to what extent we can deduce the presence of *ta-ra-si-ja* in the rest of the Knossian textile industry.

A way to solve this problem is to look for *ta-ra-si-ja* attestations in textile contexts at other sites: at Pylos, we have no attestation of *ta-ra-si-ja* targets but we do have attestation of *ta-ra-si-ja* receipts of cloth. At Mycenae, we have neither target nor receipts but a distribution of wool defined as *ta-ra-si-ja*.

If we hypothesize that the *ta-ra-si-ja* system functioned in the same way on all three sites, we can present the system in five steps:

1) *Targets* are set for women workers identified by a 'collector' name, an ethnic designation or a profession (the Knossian Lc[1] series).

2) *Wool* is perhaps distributed to the workers: some Knossian tablets which register wool (Od[1]) have been found together with the Lc(1) tablets,²⁶ and the same scribe (103) wrote the two sets. But *ta-ra-si-ja* is never mentioned in these wool series - or at least not preserved. These sets will not be discussed in detail here. It should nevertheless be held in mind that the sheep registered in the villages could provide sufficient wool for the targets (see above). Only one tablet from Mycenae registers *ta-ra-si-ja* and wool:

MY Oe 110:
scribe:51 find-spot: House of the Oil Merchant.
.1 re-ka-sa , ta-ra-si-ja LANA 14 [
.2 a-ti-ke-ne-ja LANA 10
reliqua pars sine regulis

re-ka-sa and *a-ti-ke-ne-ja* are probably two women's names. It is not a totalling tablet. Does *ta-ra-si-ja* concern only *re-ka-sa*, or both *re-ka-sa* and *a-ti-ke-ne-ja*, or is *ta-ra-si-ja* valid for other tablets, too?²⁷ In my opinion, there is nothing in MY Oe 110 that indicates that *ta-ra-si-ja* should be extended to other tablets. The small amounts of wool on this tablet suggest that this wool was not provided for the weaving but for the decoration of the cloth. The same argument can be advanced for the small quantity of wool on Knossian tablets. However, we cannot know with certainty if the decoration of the cloth was a part of the Knossian *ta-ra-si-ja* process. [Od(i)]

3) *Receipt of cloth*. On the acquisition level at Knossos, we have one single tablet with *ta-ra-si-ja*, but the tablet is not a totalling one:

Le 642 + 5950 (103)
.1]ra-wo , de-ko-to 't a-ra-si-ja' ne[
.2]ja TELA¹+7E 2 ri-jo-ni-ja TELA¹+7E[
.3]ri-jo TELA¹+7E 6 da-mo-ko[
.4] vacat [

]ra-wo is the subject who has received /de-ko-to,²⁹ in the *ta-ra-si-ja* system, textiles

H target

Fig. I: The relation between Lc(1) ~~professions~~ for ethnics and the number of sheep in the villages from which the ethnics derive.

Lc(1)		Dn-Dg, Dn										
Ethnics or prof. without collector	tabl.	TELA+TE	pekoto	panwa	lutano	sheep required for wool ²	place-name	area	non-collector sheep	collector sheep	Total sheep	% non-collector
paitija	546						paito	I	1509	3120	4629	33%
dawija	526	14	10		3	828	dawo	I	2440	1200	3640	67%
<i>eadem</i>	7549				x							
ekisija	527	1...9...	2		2	636	ekoso	I	2252	950	3202	70%
eraja	528			x	1	1+	era	I	1010	1150	2160+	47%
<i>eadem</i> , epige resi	561	1				28						
da- ² 22bija	7901						da ² 22io	I	1370	1010	2380	58%
rijonija	529	30			x	840+	rijono	II	2000	410	2410	83%
dotija							dotija	II	1200	620	1820+	65%
tunija	547						tunija	II	1226	400	1626+	75%
gamija	543	11			x	308+	qamo	III	446	110	556+	80%
turisija	533	x					turiso	III	600	-	600+	?
setojia, wanakatera	525	40			3	1156	setojia	V	-	200	-	?

H target

¹ Olivier 1988, 266.

² Bennet 1992, 99-100.

Fig. II: Non-collector ethnics and professions attested for Lc(1) ~~professions~~ present in Ak or Ap series.

Ethnics or professions.	Lc (1)				Ak				Ap									
	tabl.	comment	TEL A +TE	pekor o	tunano	tabl.	comment	Adults	kowa mazy mejo	kowa mazy mejo	kowa mazy mejo	kowa mazy mejo	with epithet	count	MU L	MU 3	DE d	
dawija	526		14	10	3	(3)780	rekitate ¹	MUL 2 DE YTR 2	/1	/3								
<i>eadem</i>	7549	prof.			x	(3)7001		MUL 1	/4					639,5	kowa 1, kowa 1	7		
eraja	528																	
<i>eadem</i> , epige resi	561		1															
rijonija	529		30		x	(1)624		MUL de d 3	x/	/1	/3 or /2 ⁵			629	kowo 3	3		
gamija	543		11		x	(2)613		MUL x	/9	x/	3/3 ⁷			639,4		1		
paitija	546					(3)828		MUL de d 3			x/x							
tunija	547					(1)630	wetowekant ⁸	MUL 9 DE d 2			/1			629	ko 1	4	3	
da- ² 22bija	7901					(2)627	anozojo ⁹	MUL 9 DE d 2										
setojia, wanakatera	525		40		3	(1)634		MUL 74 de d 5	/10				5 DE					
Konoso /koj	548	prof.				(1)643												
wanakatera	531	prof.			15	(1)5009	kapure ²											
dawewaja	540	prof. ³			9 ¹⁰	(1)612		MUL 9	/1/1	1/x								

H target

¹ Ak series: set (1) is written by scribe 103. Set (2) by scribe 108 has a high proportion of collectors, while scribe 102, set (3), is mostly occupied with the area *da-wo* and *Phaistos*. Killen 1971, 425-440.

² Scribe 103.

³ Killen 1991, 94 and 1971, 434-439, suggests that the Lu women on Ap 629 are registered as MUL 18 d (see *pa-ri-ja*, *di-da-ke-ri*, older and under instruction) or as MUL d (see *di-da-ja*, perfect participle, having finished their instruction period) in the Ak series. Three groups of women, *ri-jo-wi-ja*, *do-ti-ja* (not preserved in Lc(1) but on Le 641) and *su-wi-ja*, are registered as Lu on Ap 629. If we follow Killen's theory, the four Lu *su-wi-ja* women or the four Lu *do-ti-ja* women could also be registered as 18 d 4 on Ak(1) 614 (entry missing). We would then be able to restore the number of women in *su-wi-ja* or *do-ti-ja* as ca. 30 plus the 4 18 d. Whether Ak(1) 614 talks about *su-wi-ja*, *do-ti-ja* or a third place is impossible to say. ITA 2 could perhaps rather indicate a professional group (cf. Ak(1) 620 and Ak(1) 611).

⁴ The *su-wi-ri-da*, probably the same group that also appears on Lu 1568 together with *o-ze-ti-ri-je* and located at *da-wo*. The same scribe, 102, wrote Ak(3) 780 and Ak(3) 7001.

⁵ See n. 4.

⁶ From Ap 5876.

⁷ Ap 5876 registers *ko-wo* d 2 for *ri-jo-ru*.

⁸ According to Killen 1971, 426, this is a collector. The set and scribe suggest this interpretation, see n. 1.

⁹ See Killen 1983, 78-79 for discussion.

¹⁰ The tablet has TELA 1 31 but arrangement suggests 9.

H from

from different groups (]ja and from the women workers from *ri-jo-no*). *da-mo-ko* could be a man's name (*Damoklos*) or the official *da-mo-ko-ro*. *ne* in the first line has been interpreted as *ne[-wa*, new/from this year³⁰ and would then be the opposite of the *pe-ru-si-nwa ta-ra-si-ja* on SO 4442, though epigraphically this is difficult to restore, since *ta-ra-si-ja* is written above the line.]*ri-jo* could either be the ending of a man's name or a group of men. It is difficult to establish whether Le 642 describes a particular situation in the Le series or if *ta-ra-si-ja* counts for the whole series. There is no totalling Le tablet preserved.

0+1

KN Le 642 should be compared to

Le	641 + fr.	(103)
.1	o-a-po-te, de-ka-sa-to, a-re-i-jo, o-u-qe-pof	
.2	pa-ti-ja, 'pe' TELA+TE 2 ml TELA ¹ +TE 14 da-wi-ja, qe TELA ^x +TE 1 [
.3	do-ti-ja mi TELA+TE 6 qa-mi-ja TELA ¹ +TE 1 [
.4	ko-no-so, / te-pe-ja 'mi' TELA+TE 3 tu-ni-ja TELA ¹ +TE 1 [
.5.6	vacant [] vacant []	

"Thus *Areios* has received from outside (from afar, ἀπὸθεν), and it/he/they is/are not.." or alternatively

"Thus *a-po-te* has received and *Areios* is not.." or alternatively

"Thus *a-po-te*, son of *Ares*(?) has received and it/he/they is/are not..."³⁰

"From the women in the town of Phaistos, 2 pieces of *pe-ko-to* cloth and 14 pieces of *mi* cloth. From the women in the town of *da-wo*, 1+ pieces of *pe-ko-to* cloth. From the women in the town of *do-ti-ja*, 6 pieces of *mi* cloth. From the women in the town of *qa-mo*, 1+ pieces of cloth. At Knossos, from the *te-pe-ja* women, 3 pieces of *mi* cloth. From the women in the town of *tu-ni-ja*, 1 piece of cloth."

The tablet shows a minimum of 28 pieces of cloth, 3+ pieces of *pe-ko-to*, 23 pieces of *mi*, and 2 unspecified pieces of TELA+TE cloth. This production requires at least 205 units of wool. *a-re-i-jo* is a hapax. *a-po-te* figures also on Od(1) 562,3 where he gives (φέπει) 69 units of wool, if it is not a homonym.

As we have seen, Lc(1) 535 and Lc(1) 536 indicate that a target is set for 'collectors' and for 'non-collector' groups, and both are concerned with *ta-ra-si-ja*. On Le 642 cloth is received as a result of both (a) Lc(1) 536 ('non-collector' target) and (b) Lc(1) 535 ('collector' target).³¹ The TELA+TE (that is, *te-pa* cloth) on Le 642 is first received from the women workers with an ethnic designation (line .2) and subsequently the delivery from the men/'collectors' is recorded (line .3) On the other receipt, Le 641, *te-pa* cloth from the women with an ethnic designation is again recorded first (lines .2-.3) and then the women with professional designation, *te-pe-ja*, are recorded. This probably reflects an administrative procedure.

v

A third tablet, this time from Pylos but similar to the Knossian Le series, can be compared to our evidence. Chadwick has restored the text as follows:

PY La 1393:	
scribe: S622-H13(7)	find-spot: SW Area 13
.1	(o-)de-ka-]sa-to, a-ri-wo, ta-ra-[si-ja
.2]TELA+TE 40 [

The structure is quite similar to KN Le 642 and PY Pn 30. Again we find the commodity TELA+TE associated with the term *ta-ra-si-ja*, this time on a Pylian tablet. On PY La 1393, the cloth could either be delivered from individuals or from groups.³²

The registration of KN Le 641 is very similar to KN Le 642 but only the latter mentions *ta-ra-si-ja*. KN Le 642 is similar to PY La 1393 in structure and they both record TELA+TE and *ta-ra-si-ja*. It is plausible that both Le 642 and Le 641 record deliveries from *ta-ra-si-ja* targets. It is tempting to interpret *Areios*] *ra-wo*, *a-ri-wo* as people responsible for the *ta-ra-si-ja* textile production and/or for the receipt in the palace. However, we can only guess about the extent of their function: are they occupied only with TELA+TE? Are they administrators or people participating in the production? Are they controlling how the deliveries correspond to the targets?

4) *Storage*. The only evidence for storage is the Knossian Ld series. Killen suggests that the cloth in this set is the result of the *ta-ra-si-ja* targets. However, we have no trace of the term *ta-ra-si-ja*.

5) *Registration of deliveries due from the previous year*. The Mycenaean administration is annual and if obligations were not completed, they were transferred as a debt to the following year. We have no records of cloth due from the previous year under *ta-ra-si-ja*. However, we do have a Knossian record of wheels due from the previous year under *ta-ra-si-ja*.³³ The kind of cloth called TELA+PU is not a part of the *ta-ra-si-ja* target, but there is something to suggest that a similar productive system exists for the production of TELA+PU, but with other bureaucratic features. The scribe 207 registers TELA+PU deficits from the previous year for the place-names *qa-ra* and *ti-ri-to*. The *o-pe-ro pe-ru-si-nwa* 'missing from last year' level attested for TELA+PU is not attested for TELA+TE but might have existed.

Two mycenologists, Killen and Y. Duhoux, have analysed the *ta-ra-si-ja* system: Killen³⁴ proceeds with a structural analysis of series, sets and scribal hands, and describes the system in these terms: the Lc(1) cloth and wool records deal with the 'targets' for textile production set for groups of women weavers and with the wool required to fulfill this demand. The Od(1) and the Le records in the same scribal hand deal with the later stages in the same production process: the Od(1) with the delivery of the wool to the workers; the Le tablets with the later receipt of the TELA+TE and Ld(1) of *pa-we-a*. Duhoux³⁵ on the other hand, emphasizes the terminology and describes the system in these terms, "Dans une première phase, la laine est apportée (φέρω) aux artisans par des fonctionnaires du palais, tels Αντίφῶμος, *si-da-jo* et *a-po-te*; on la voit ensuite réapparaître sous forme de tissus livrés (ἀπὸδοσις) par des artisans et réceptionnés (δέχομαι) par des fonctionnaires palatiaux, tels, à nouveaux, *a-po-te*, ainsi que]*ra-wo*."

(5) *Composition of the ta-ra-si-ja obligation with evidence from different sites* It seems that the TELA¹+TE (with one fringe on the ideogram) cloth which was received on Le 641, 642 and 5629 was registered on the targets either as TELA¹+TE³⁶ or as TELA²+TE.³⁷ At the moment of the receipt of cloth, did the scribe not care if he

was receiving TELA¹+TE or TELA²+TE? The registration of receipts seems less precise than the targets. The delivery of the cloth type *mi* is sometimes registered with the ideogram TELA+TE (Le 641,3,4) and sometimes with TELA¹+TE (Le 641,2; 5930,2). The quality *mi* is not mentioned in the targets, and it seems to indicate the standard type of *te-pa*. The only possible record of *tu-na-no* deliveries is the label Wb 8711.³⁸

It is worthwhile to notice that the two ethnics delivering *pe-ko-to*, the women at Phaistos and at *da-wo*³⁹ on Le 641, seem to have a geographical and productive connection. We also have an attestation of *pe-ko-to* targets for the women of *da-wo* and *e-ko-so*. The three place-names are probably situated in the southern area of Crete. This economic connection between Phaistos and *da-wo* was already suggested by Killen.⁴⁰

(6) Discussion of KN Lc(1) 535 and 536 (see the tablets in [1])

The two totalling tablets both contain the term *ta-ra-si-ja*. However, they also contain two different terms, *ke-ri-mi-ja* and a word of probably two syllables, which cannot be read anymore and therefore is transcribed as 'vest'. *ke-ri-mi-ja* is written on the tablet which concerns the total target for 'collectors' (Lc[1] 535) and 'vestigia' on that for 'non-collector' groups (Lc[1] 536). What part of the text on the two tablets is qualified as *ta-ra-si-ja*? It seems as if 'ta-ra-si-ja' and 'vestigia' on Lc(1) 536 are registered by the scribe as *nota bene*, and not because of lack of space on the tablet.⁴¹ Therefore we may assume that *ta-ra-si-ja*, *ke-ri-mi-ja* and 'vestigia' are related to the textiles in the same way as *to-sa*, defining or specifying the whole total. In the following paragraphs, I will try to present some of the possible interpretations of these terms.

We can interpret *ke-ri-mi-ja* and 'vestigia' as terms which differentiate the two types of *ta-ra-si-ja*⁴² (*ke-ri-mi-ja* for *ta-ra-si-ja* of 'collectors' and 'vestigia' for *ta-ra-si-ja* of 'non-collectors'?).

However, in my opinion, we could also interpret *ke-ri-mi-ja* and 'vestigia' as alternatives to *ta-ra-si-ja* (*ta-ra-si-ja* would then be carried out by both 'collectors' and 'non-collector' groups, whereas *ke-ri-mi-ja* would be a specific term for another type of 'collector' target and 'vestigia' for another type of 'non-collector' target?).

ke-ri-mi-ja is obscure, even though it figures on PY An 607.⁴³ S. Deger-Jalkotzy suggests that it is the place where female palace slaves worked and lived.⁴⁴ This 'institution' must have been under the supervision of 'collectors'. In that case, the distinction between *ta-ra-si-ja* and *ke-ri-mi-ja* could be interpreted as geographical (*ta-ra-si-ja* being related to ethnics in villages, *ke-ri-mi-ja* to the centre?). Professions are associated with Knossos or Amnisos, or have no place indication (= Knossos?).

We could also see *ta-ra-si-ja* and *ke-ri-mi-ja* as terms for two different social groups (dependent women in the villages *versus* female slaves in workshops?). Mycenologists do not agree on the status of *ta-ra-si-ja* workers - dependent or independent.⁴⁵ If we equate "dependent" with "workers remunerated in kind", we can establish a connection between the *ta-ra-si-ja* attestations (of scribe 103) and the attributions (also scribe 103) of the commodity *120⁴⁶ to groups associated to a place-

name (KNE[2] 668, 669, 670). However, many of the place-names in the E-series are not recorded for a *ta-ra-si-ja* target. Actually, we can only hypothesize about the exact relationship between the remuneration, *ta-ra-si-ja* and the textile industry. The cluster around scribe 103 and Lc(1)/Le/Ak/Ap shows a quite controlled and rigid economic and productive system but when it comes to other types of production (TELA+PU, TELA+KU or *to-mi-ka*), the documentation is so sparse that no conclusions can be made. We also know that barley/wheat is distributed to groups who do not seem to have a *ta-ra-si-ja* target. Consequently, are E(2) 668, 669, 670 monthly rations to fully dependent workers or a remuneration in exchange for a job, and if so, is it remuneration for *ta-ra-si-ja* or for other activities?⁴⁷ In the Pylian Aa and Ab series, we have a very exact documentation for the ration system for women engaged in the textile industry, but absolutely no mention of *ta-ra-si-ja*. Therefore, the disagreement on the status is understandable, since both conclusions (corvée or remunerated activity) can be drawn.⁴⁸

Some types of cloth could be related to the Lc(1) target. This is why we theoretically could interpret *ta-ra-si-ja* and *ke-ri-mi-ja* 'vestigia' as productive/technical terms for cloth types (some kinds of textiles are related to *ta-ra-si-ja* production, others to that of *ke-ri-mi-ja* and 'vestigia'?). Both Le 641 and 642 and the Pylian La 1393 record only deliveries of a special type of cloth, TELA+TE,⁴⁹ which seems to be quite large or heavy. *ta-ra-si-ja* and TELA+TE are connected (KN Le 642 and PY La 1393). Production of TELA+PU and TELA+ZO is not registered on the totals Lc(1) 535 and 536 and the evidence strongly suggests that they should not be included in the *ta-ra-si-ja* target.

Killen⁵⁰ suggests, with reference to Ur III, that TELA+TE was a normal kind of cloth delivered from the villages to the palace and later recorded in the Le series, whereas *pa-we-a*, a more sophisticated kind of cloth, continued its career from the villages to the fullers and finishers in the palace, and was finally recorded in the Ld(1) delivery and store set. One could suggest that the first manufacturing process was called *ta-ra-si-ja*, and the finishing was called *ke-ri-mi-ja* or 'vestigia': this would give a process-oriented sense to the discussed terms which would contrast two steps in the production. *ta-ra-si-ja* is probably distinguished from *o-pa* by the work-process: in a more recent work Killen defined the technical term *o-pa* in this way, "It refers to work on a completed manufactured item or a unit of livestock, and is thus distinct from *ta-ra-si-ja* which always refers to an issue of raw materials (or an object manufactured with the help of such an issue)."⁵¹ Could *ke-ri-mi-ja* and 'vestigia' then be the same as *o-pa*? Or are *ke-ri-mi-ja* and 'vestigia' specific types of *o-pa*, that is, terms for finishing cloth in the *ta-ra-si-ja* system? On the administrative level, scribe 103 records mainly the processing of *ta-ra-si-ja* cloth while the finishing is often recorded by scribe 115. On the targets for western Crete, Lc(2) scribe 113 records the cloth to be produced on the recto of the tablet and on the verso, scribe 115 records the wool for finishing, *to-u-ka/toukhai*.

Finally, one could see *ta-ra-si-ja*, *ke-ri-mi-ja* and 'vestigia' as systems in a historical evolution, perhaps with chronological differences. I think perhaps there is

something to suggest that *ta-ra-si-ja* is an earlier and decentralized system which was later incorporated into the centralized palace system.⁵² The concept of *ta-ra-si-ja* seems decentralized, though the system inherent in the Mycenaean palaces in LHIII B appears quite centralized. The North-Eastern building in Pylos, a building constructed late,⁵³ opposes the *ta-ra-si-ja* concept.

Conclusions

Ta-ra-si-ja defines a part of the textile production and a part of the Mycenaean economy. Regarding textile production, the *ta-ra-si-ja* obligation is partly collective⁵⁴ and partly individual.⁵⁵ The sparse evidence for *ta-ra-si-ja* obligations allows us only to hypothesize: did *ta-ra-si-ja* obligations have a more collective character at Knossos, and an individual character at Mycenae? And at Pylos a mixture of both?⁵⁶ The question of collective obligation *versus* individual obligation brings us to the discussion of the centralized *versus* decentralized character of *ta-ra-si-ja*. The Knossian records of *ta-ra-si-ja* are associated to place-names outside Knossos, whereas at Mycenae people such as *re-ka-sa* and *a-ti-ke-ne-ja* are identified only by their names.⁵⁷ But the question of centralized or decentralized *ta-ra-si-ja* is possibly answered in part by Killen's analysis of the whole textile industry, where Knossos seems more decentralized than Pylos.⁵⁸ It is legitimate to assume the same phenomenon for *ta-ra-si-ja* in the textile industry.

We should not forget that other production systems existed simultaneously, all aimed at acquiring work or products: the tax obligation (PY Ma, KN Mc), the flax production (PY Na, Nn), the work *corvées* (PY Ac), the military and the terms *o-pa* and *o-no*. Only some of them,⁵⁹ for example taxes, have an attested annual nature.

If we list all attestations of *ta-ra-si-ja*, we can suggest a Mycenaean *ta-ra-si-ja* system. This is based on the idea that *ta-ra-si-ja* functions in the same way in Pylos, Knossos and Mycenae, and in the same way in the textile industry, in metalwork and in the fabrication of wheels. *Ta-ra-si-ja* is generally defined as a special production process, where raw material (wool, copper or bronze, wood?) is distributed and finished products (cloth, bronze objects, wheels) are delivered back. Lc(1) 535 and 536 state that this is the total of the *ta-ra-si-ja* production, and this probably means that the rest of the textile industry is not *ta-ra-si-ja*. This non-*ta-ra-si-ja* part of the textile production however seems to function through distribution and acquisition as well. The argument that the raw material (wool) for *ta-ra-si-ja* is distributed from the palace can be questioned: the different amounts of wool in the Od series are possibly intended mainly for finishing activities, and Fig. 2 shows that ethnics could well have taken the necessary wool directly from the flocks which were connected to the place-names from which the ethnics derive. The idea that the distribution of metals to smiths was strictly controlled is now questioned by the archaeologists.⁶⁰ The distribution of raw materials for *ta-ra-si-ja* work can thus be questioned, but the aim of the *ta-ra-si-ja* system was surely to acquire finished items: wheels, metal objects and cloth.

Of thirty-one preserved place-names in the series where sheep are registered, eleven (*da-*22-to*, *da-wo*, *do-ti-ja*, *e-ko-so*, *e-ra*, *pa-i-to*, *qa-mo*, *ri-jo-no*, *se-to-i-ja*

and *tu-ni-ja*, *tu-ri-so*) also figure in the Lc(1) targets/the Le deliveries. *56-*ko-we* can probably be connected to the textile-producing villages as well. The rest of the place-names (*a-ka*, *da-*83-ja*, *da-ra-ko*, *di-ro*, *ku-ta-to*, *ma-no-we*, *pu-na-so*, *pu-so*, *qa-na-no-to*, *qa-ra*, *qa-sa-ro-we*, *ra-ja*, *ra-su-to*, *ra-to*, *ru-ki-to*, *su-ki-ri-ta*, *su-ri-mo*, *ti-ri-to*, *u-ta-no*) are registered for flocks but they do not seem to integrate in the *ta-ra-si-ja* system, and we often lack information about these place-names when it comes to textile production.

I wonder if it would be more appropriate to define *ta-ra-si-ja* as a system for acquisition of special types of cloth (TELA+TE, *pe-ko-to*, *tu-na-no*, *pa-we-a*) for central Crete from professional groups and from women located in villages where flocks also are registered. However, as we have seen, less than half of the villages were integrated in the *ta-ra-si-ja* production. We can only hypothesize to what degree *ta-ra-si-ja* concerns western Crete (Lc[2] set), the other villages or other types of cloth. However, in my opinion, the explicit mention of *ta-ra-si-ja* on Lc(1) 535, Lc(1) 536 and Le 642 probably points to the fact that *ta-ra-si-ja* was not the only production system in the complex textile industry.

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*I have had the pleasure of receiving help and advice for this article from Prof. P. Carlier (Université de Nancy II) and from Françoise Rougemont (EFA, Athens). Any mistakes are my own. For editorial reasons, the Linear B signs which cannot be read with certainty are underlined here instead of having a dot under them. This paper is based on work in my PhD thesis, *The Organization of Work in the Mycenaean Textile Industry*, Universität Salzburg 2000.

¹ For 'collectors', see Bennet 1992, 65-101; Carlier 1992, 159-166; Driessen 1992, 197-214; Godart 1992, 257-283; Killen 1995, 213-225; Rougemont 1999, 431-434.

² By 'target' we understand the registration of a future production which is to be made.

³ Killen 1976, 121.

⁴ Olivier 1967a, 9: "Il semble presque sûr qu'on a affaire à la tablette récapitulative concernant les tissus du set Lc. Lc(1) 535 pourrait être la tablette récapitulative des tablettes Lc avec 'collecteur'".

⁵ Olivier 1967a, 79-83.

⁶ Killen 1985, 251 and note 35. Sheep from the far west are partly listed on the separate Co tablets.

⁷ Φῶροι in Homer (*Od.* 5.258, *Il.* 2.43 and 18.353).

⁸ Probably some kind of verbal form. The individual registration of the *a-ro-zo ki-to* might be L 8503 of scribe 103.

⁹ According to Killen 1979, 151, *ki-to* and the ideogram TELA means cloth due to be made into chitons, whereas *162 represent the finished chiton. Here the material must be wool even though *162 is more often recorded with linen.

¹⁰ Killen 1964, 9; 1966, 105-109; 1974, 82-90; 1979, 157, n.13.

¹¹ TELA+TE is the transcription of an ideogram representing a piece of cloth (TELA) and inside the ideogram is the syllabogram -te-, an abbreviation for *te-pa*. The number above TELA refers to the number of central fringes hanging under the ideogram.

¹² Olivier 1967a, 91-92.

18
15
14
13

¹³ Lc(1) 551 *e-me-si-jo*; Lc(1) 7398 *we-we-si-jo*; Lc(1) 532 *ku-wo*. For *ku-wo*, see below.
¹⁴ Killen (1979, 155-156) suggests that Ld(1) 587 with *pa-we-a ko-u-ra* 453 is the total receipt of the 'collector' (=Lc[1] 535.A). If the 149 pieces of cloth on the verso of Ld(1) 587 are to be added to the total receipt, then the *pa-we-a* production of 'collectors' are even more important.
¹⁵ The figures come from the following tablets: Lc(1) 525-532, 534, 540, 541, 543.A, 551, 553, 558, 561, 582.B, 5746, 7289.B, 7376, 7392.

I propose the addition of the following restored figures:

Lc(1) 552 .A TELA+TE 11] LANA 77
 .B *tu-na-no*]TELA¹ 1 LANA 3
Lc(1) 555 .B *tu-na-no*]TELA¹]2 LANA 6
Lc(1) 557 .A *pa-we-a*] TELA¹ 80 LANA 130
 .B ?*pa-we-a*]TELA¹ 7 LANA 11 [
Lc(1) 582 .A *pa-we-a*] TELA¹ 30 LANA [
Lc(1) 1580 .A TELA+TE 8] LANA 56,
 .B *tu-na-no* TELA¹ 1] LANA 3 {
Lc(1) 5746 .A *pe-ko-to*] TELA¹+TE 4
Lc(1) 7318 .A TELA+TE 2] LANA 14

There are seven (Lc(1) 528.A, 529.B, 533.A, 543.B, 550.A, 560.A, 7549 and, perhaps, L 5660) tablets with descriptions of cloth/ideogram without numbers, but they might belong to the restored tablets above. The same goes for the four tablets, Lc(1) 555, 7285, 7289.A, 7321, which have only the LANA quantity preserved (total LANA 408), since it is difficult to say if they represent parts of other tablets or not.

¹⁶ As an example, Ld(1) 587 indicates more *pa-we-a* than the three Lc(1) 'collectors'.

¹⁷ Nosch, forthcoming.

¹⁸ Shelmerdine 1989, 125-148; Killen 1996, 147-148.

¹⁹ I interpret *ku-wo* as a person with 'collector' function in the Lc(1) set in analogy with the structure of the 'collector' tablet Lc(1) 551, where *e-me-si-jo* is also written with large signs. I think we can exclude a place-name, since the large written place-names in Lc are well-known centers like *se-to-i-ja* (Lc[1] 525), Knossos (Lc[1] 548 and 549) and Amnisos (Lc[1] 550 and 5053).

²⁰ Lc(2) 446; 481; 483; 504; 512; 581; 7319; 7377; 7433; 7438.

²¹ Collector tablets are Lc(2) 446 (*te-ra-po-si-jo*); Lc(2) 7377 (*i-se-]we-ri-jo*); Lc(2) 504 (*ku-ru-so*); Lc(2) 481 (trace of majuscule sign at left, perhaps *jo*), and perhaps Lc(2) 581.

²² Lc(2) 512 (*si-ra-ri-ja*).

²³ Killen 1979, 156. The 'collector' production of *pa-we-a* is 453, the restored 'non-collector' production is 150+ *pa-we-a*.

²⁴ Killen 1984, ns. 10 and 12.

²⁵ Nosch forthcoming.

²⁶ Lc(1) tablets were found in F 10 together with Od(1) 539, 689, and Xe 537. Lc(2) tablets were found in F2, F6 and F7 together with Od 485, 486, 487, 502.

²⁷ Duhoux 1976, 92: "*ta-ra-si-ja* est écrit occasionnellement alors que le terme s'applique à toute la série du scribe 51."

²⁸ δέκτο, athematic radical aorist, alternative Homeric form from δέχομαι.

²⁹ Duhoux 1976, 73.

³⁰ Duhoux 1976, 79.

³¹ From a morphological point of view, *ri-jo* can be restored as a man's name in the nominative form. Perhaps the 'collector' *i-se-we-ri-jo* (Killen 1995, 214) *i-se-we-ri-jo*, has a flock in *qa-ra* L(3) 473, but he is also present in the "far west set" on Lc(2) 7377 with the place-name *ku-do-ni-ja*. *ri-jo* could nevertheless also be restored as *ku-pi-ri-jo* or as another man's name.

³² We could interpret PY La 1393 as a delivery from individuals analogous to *re-ka-sa* and *a-ti-ke-ne-ja* in MY Oe I 10, or to the three men who deliver beds on PY Pn 30, textually very similar:

PY Pn 30
scribe 1 find-spot: room 8

.1 o-de-ka-sa-to , a-ko-so-ta
.2 si-ma-ko *169 23 o 10[
.3 ke-ka-to *169 26 o 9
.4 ru-ko *169 13 o [

However, La 1393 is also very similar to the Knossian Le tablets, especially KN Le 642, where groups of workers deliver cloth to the palace.

So(2) 4442 + fr. (131)
.a] o-pe-ro ,
.b]-ja , / a-mo-te , pe-ru-si-nwa , / ta-ra-si-ja ROTA [[[ZE]] 1
Probably same tablet as Xf 4472 (if so, read: *se-to[-]l-ja*).

³⁴ Killen 1985, 253; 1979, 156.

³⁵ Duhoux 1976, 80.

³⁶ Compare target Lc(1) 543 with delivery Le 641,3.

³⁷ Compare targets Lc(1) 527 and 529 with deliveries Le 5629 and Le 642.

³⁸ Maybe also with the first (and only?) connection with the term *a-pu-do-si*?

³⁹ See Bennet 1985, 247, who suggests identifying *da-wo* with Hagia Triada.

⁴⁰ The women at Phaistos and at *da-wo* are only registered by the scribe 102 in the Ak series. On Dn 1094, *da-wo* and Phaistos appear together. On Og 180 (scribe "124") *da-wi-ja* and *pa-i-ti-ja* are registered together (see Killen 1971, 431).

⁴¹ See photo and drawing in Chadwick et al. 1986, vol.1. Concerning 'vestigia', see Duhoux 1976, 72, "...un mot actuellement illisible mais dont J.-P. Olivier nous signale qu'il pourrait avoir comporté deux ou trois signes et qu'il a chance d'être différent de *ke-ri-mi-ja*."

⁴² Duhoux 1976, 72.

⁴³ Heubeck 1985, 64-65 and note 20, associates *ke-ri-mi-ja* with the activities of the 'collectors' and asks "ob wir etwa **kherrimia*- (-ai Lok.), Ableitung zu einem **kherrimos* / *kherr-mos* "Handwerker" < **khesr*°, sc. *woikia*-lesen dürfen". Killen and Olivier 1968, 115-141, suggest only that the term *ke-ri-mi-ja* has to do with the activities of the 'collectors'.

PY An 607:

scribe:1 find-spot: AC

.1 a -ja
me-ta-pa , ke-ri-mi-ja , do-qe-ja , ki-ri-te-wi-
.2 do-qe-ja , do-e-ro , pa-te , ma-te-de , ku-te-re-u-pl
.3 MUL 6 do-qe-ja , do-e-ra , e-qe-ta-l , e-e-to ,
.4 te-re-te-we MUL 13
.5 do-qe-ja , do-e-ro , pa-te , ma-te-de , di-wi-ja , do-e-ra ,
.6 MUL 3 do-qe-ja , do-e-ra , ma-te , pa-te-de , ka-ke-u
.7 MUL 1 do-qe-ja , do-e-ra ma-te , pa-te-de , ka-ke-u
.8 MUL 3
.9-10 vacant
.11 KA
.12-14 vacant

On An 607, *ke-ri-mi-ja* figures with *ki-ri-te-wi-ja* which could be related to κριθή, to a religious function, or to the profession *ki-ri-se-u*, anointer, on An 298.2. But the tablet establishes perhaps another link between *ke-ri-mi-ja* and 'collectors': the place-name *me-ta-pa* houses one of the most well-known Pylian 'collectors', *a-ke-o* (PY Cc 660).

⁴⁴ Deger-Jalkotzy 1972, 149, "Maybe both in PY An 607 and KN Lc(1) 535 *ke-ri-mi-ja* refers to the palace directly, but not so much as the center of production and administration than as the place where these slaves actually lived and worked. In this sense, *ke-ri-mi-ja*, could well indicate something like the Babylonian *bit asiri*, a camp where the king's slaves were housed, or the Hittite "House of the Seal", the royal storehouses, where the slaves of the king worked." However, since Lc(1) 535 deals with cloth from 'collectors', *ke-ri-mi-ja* must be associated with control or supervision of 'collectors'.

⁴⁵ Duhoux 1976, 115, "...une 'corvée' imposée à des artisans libres et indépendants, corvée consistant en la fabrication d'objets à partir des matières brutes fournies par les palais mycéniens",

Killen 1984, 61, "Much (and in all probability the great majority) of the cloth in which the palace at Knossos and Pylos had an interest was produced under the *ta-ra-si-ja* system. This, as we have seen, involved the palace supplying their working materials to what in all likelihood are *fully dependent workers*, from whom the center would expect in due course to receive an equivalent quantity of finished fabric." My italics.

⁴⁶ Wheat or barley? See the discussion in Palmer 1992, 475-497.

⁴⁷ *ri-jo-no* is not mentioned in the very heterogeneous and fractured series, but this could just be accidental. *se-to-i-ja* seems to be mentioned (E 971) but by an unidentified hand.

⁴⁸ Here I would like to emphasize how important this question is for the understanding of the whole Mycenaean economy. Killen (1984, 52) suggests that upwards of 1000 workers were employed on a full-time basis and were fed all year round. If we use the Pylian monthly ration of T2 *120, the palace would distribute something like 200 units of *120 per month to the women in the textile industry. In addition, male finishers and children also received rations.

⁴⁹ Pure, *pe-ko-to* or *mi*.

⁵⁰ Killen 1979, 157.

⁵¹ Killen 1999, 325-338. See also Melena 1983, 258-286.

⁵² *ta-ra-si-ja* in the Pylian Jn series is geographically organized around more than 20 villages. These villages do not seem to have played any major role in the archives at the moment of destruction, and they could be interpreted as a part of an anterior geographical organization. The *ta-ra-si-ja* production regarding textiles seems connected with TELA+TE, a large and probably simple piece of cloth. The decoration and finishing processes are in the hands of specialists. One could interpret this as the trace of an anterior and more simple production type. (A Pylian parallel could be the non-specialized and decentralized *ka-ke-we* under *ta-ra-si-ja* versus the specialists *ka-si-ko-no* and *pi-ri-e-te-re* located in the center).

⁵³ See latest Shelmerdine 1997, 394.

⁵⁴ The *ri-jo-no* women on KN Le 642, *se-to-i-ja* delivering wheels on KN So 4442.

⁵⁵ Textile production of *re-ka-sa* and *a-ti-ke-ne-ja* at Mycenae, Oe 110.

⁵⁶ The Pylian Jn series has both a collective and individual character. Smiths with *ta-ra-si-ja* or *a-ta-ra-si-jo* are listed individually, but registered under a place-name. An amount of metal is connected with each individual but *to-so-de ka-ko* refers to the sum of metal connected with the place-name.

⁵⁷ Which probably means that they are located either in a well-known place or in Mycenae.

⁵⁸ An interesting comparison between Knossos and Pylos is the location and organization of women: at Pylos, twenty-eight groups of women are recorded in connection with *pu-ro* and six or seven with Leuktron. Thirteen of the groups at Pylos contain over twenty women each, one group at Leuktron even has thirty-seven women, while many of the groups in the subordinate places have less than a dozen adult members (see Killen 1984, 58). At Knossos, on the contrary, Ap 5868 probably records the total of women at Knossos: a total of twenty-six women, six elderly women and an unknown number of women under instruction. The rest of the women are registered under different ethnics and are most probably located outside Knossos.

⁵⁹ Other annual systems: PY Ma series (*pe-ru-si-mu-[wo]* Ma 193, *pe-ru-si-mu-wo* Ma 216, 330, 335, 378, 397; *pe-ru-si-nwa* Ma 126, 225, Ub series, KN So 4442, My Oe 111, Ue 652

⁶⁰ See Gillis 1997, 505-513.

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