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a₂-geš-gar-ra during the Ur III period: an early example of *ta-ra-si-ja*

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Introduction

In outline, Mycenaean *ta-ra-si-ja* was a managed system where the Centre issued quantities of materials to their workforce, who in turn were required to use those materials to manufacture and provide the Centre with finished goods. The clearest example is the textile industry of Knossos, where weighed quantities of wool were issued for the production of specified textiles.¹

John Killen drew attention to the similarities between *ta-ra-si-ja* and the Near Eastern system of *iškāru*. More recently, this was discussed at some length in connection with the wheel and chariot records of Nuzi by Françoise Rougemont.²

During the Ur III period (2112-2004 BC), the bureaucratic language used was Sumerian, and from lexical lists (CT 19, pl. 27, K 2061) the Akkadian *iškāru* can be identified with the Sumerian term *a₂-geš-gar-ra*.³

The *a₂-geš-gar-ra* system was prevalent during the Ur III period for a number of occupations, but it is most frequently found in the textile industry. This paper gives a brief survey of the range of tasks that used *a₂-geš-gar-ra* and then goes on to give a more detailed discussion of its use in the Ur III textile industry of Girsu. In addition, there are examples of materials which are provided, and of finished products which are supplied,

¹ KILLEN 2001; NOSCH 2006.

² KILLEN 1999; ROUGEMONT 2015.

³ Infrequently *a₂-geš-ga₂-ra*. The variant *eš₂-gar₃* was used at Nippur.

but which are not labelled in the texts as *a₂-geš-gar-ra*, indicating that *a₂-geš-gar-ra* had a more specific meaning. Finally, there is a comparison between the conclusions drawn from this paper on *a₂-geš-gar-ra* and those of Killen in his extended discussion of Mycenaean *ta-ra-si-ja*.⁴

Definition and usage

This section considers the definition and scope of *a₂-geš-gar-ra* in the Ur III period. According to the Sumerian Dictionary, this word can be understood in terms of the issuing of working materials and assessment of the work performed.⁵ There is a third interpretation associated with the delivery of a quota, usually of birds or fish. This last example is not directly relevant to the current study, but nevertheless carries a similar implication of obligation to provide the Centre with the fruits of labour.

In the CDLI database, there are currently over 170 texts that include the term *a₂-geš-gar-ra*, and a further 16 using *eš₂-gar₃* (mostly from Nipur).⁶

Over a hundred of these deal with the issuing of wool or flax for making textiles. Much smaller numbers of texts concern the issuing of oils and plants for dyeing to craftsmen. There is also a single tablet from Ur issuing stones to stone-workers, and another issuing goat hair to rope-makers.

There are 13 tablets concerning the weighing of textiles that have been made under the *a₂-geš-gar-ra* system.⁷ In addition, there are a small number of tablets concerning work in the fields.

There is no evidence of the term *a₂-geš-gar-ra* being used in the Lagash II period, immediately preceding Ur III. However, there are a number of examples of the term *eš₂-gar₃* being used during the earlier Old Akkadian period.

⁴ KILLEN 2001.

⁵ SJÖBERG 1994, part AII, 67-68.

⁶ Cuneiform Digital Library Initiative (<https://cdli.ucla.edu>). References to texts use the standard CDLI abbreviations.

⁷ Strictly, the Sumerian Dictionary suggests that this is “work to be performed”. However, the precision used for the weights of textiles (given to the nearest gin, i.e. 8 grams) suggests that they are almost certainly the weights of actual textiles rather than target weights for textiles still to be woven.

a₂-geš-gar-ra in the textile industry

Attention will be concentrated here on the textile industry of the city of Girsu. Although this reduces the number of texts to about eighty, these represent almost half of the total of a₂-geš-gar-ra texts and form a coherent set.

The Girsu a₂-geš-gar-ra tablets fall into two groups: those recording the disbursement of the wool; and those recording the weight of the textiles that have been produced.

There are relatively large numbers of tablets for each of the years Amar-Suen 7 & 8,⁸ recording the disbursement of wool to men, who are presumably the overseers of the weaving workshops, although this is not made explicit.⁹ An example is given below.

Nisaba 18, 7

| | | |
|-----|--|---|
| 1. | 40 ma-na siki tug ₂ šar ₃ | 20 kg wool (for) 1st quality textiles |
| 2. | 17 ma-na siki tug ₂ us ₂ šar ₃ | 8½ kg wool (for) 2 nd quality textiles |
| 3. | 10 gu ₂ 20 ma-na la ₂ 10 gin ₂ siki tug ₂ 3-kam us ₂ | 310 kg, less 83g, wool (for) 3rd quality textiles |
| 4. | 4 gu ₂ 10½ ma-na siki tug ₂ 4-kam us ₂ | 125¼ kg wool (for) 4th quality textiles |
| 5. | 1 gu ₂ 3½ ma-na siki tug ₂ guz-za du | 31¼ kg wool (for) guz-za textiles of ordinary quality |
| 6. | 1 gu ₂ 4½ ma-na siki du | 32¼ kg wool of ordinary quality |
| 7. | a ₂ -geš-gar-ra | (for) a ₂ -geš-gar-ra |
| 8. | ab-ba-gu-la | received by Abbagula |
| 9. | šu ba-ti | received by Abbagula |
| 10. | iti GAN2-maš | 1st month |
| 11. | mu hu-uh ₃ -nu-ri ^{ki} ba-hul | 7th year of Amar-Suen |

⁸ The rulers of Ur III were Ur-Namma, Šulgi, Amar-Suen, Šū-Suen and Ibbi-Suen. Šulgi ruled for 48 years, Amar-Suen and Šū-Suen both for 9 years and Ibbi-Suen ruled for 24 years although the evidence shows that the bureaucratic system beyond Ur ceased to function after his initial years.

⁹ It is a general finding of the texts that, throughout the Ur III period, textile weavers were women and their overseers were usually men (WAETZOLDT 1972, 2007; but see also GARCIA-VENTURA 2014).

This example has been chosen because it shows wool being supplied for the manufacture of textiles with a range of different qualities. It can be noted that they are listed with the items of the highest quality at the top and then descending in order to the lowest quality. A more typical example would include fewer different textile qualities.

There are over 30 tablets of this type dated to the years of Amar-Suen. It is interesting to note that almost all of these tablets are in the British Museum. These tablets were not formally excavated but were unearthed by locals and sold on the antiquities market. Examination of the BM catalogues shows that there are other such tablets that remain unpublished.

For the years of the following ruler, Šū-Suen, there are again around 30 tablets and many of these take a similar form to those already considered. However, it is useful to show a text that gives some insight into the administrative process.¹⁰

MVN 5, 192

1. 5.8 kg wool (for) textiles of 3rd quality
2. 86 kg wool (for) textiles of 4th quality
3. from the great weaving house
4. wool (for) a₂-geš-gar-ra (for) the weaving house of Šū-Suen
5. disbursed by Lu-uš-gi-na
- 6-7. received by Lu-dingir-ra
8. conveyed by Lugal-amar-ku
9. 12th month
10. 7th year of Šū-Suen

This tablet clearly has a similar function to the previous one. However, it includes some additional information. In particular, it provides the source of the wool (*e₂-uš-bar gu-la-ta*, the great weaving house), the name of the man who distributed/paid for the wool, the name of the man who was responsible for conveying the wool, in addition, to the person who finally received the wool for the weaving house (named after Šū-Suen).

¹⁰ The following texts are given in translation only. The Sumerian transliterations can be found on the CDLI web-site.

The following tablet records the weighing of the woven textiles:

TCTI 2, 3790

1. One nig-lam textile, 3rd quality
2. weight 1.17 kg
3. Three guz-za textiles, 4th quality
4. weight 7.5 kg
5. Two guz-za textiles, ordinary quality
6. weight 4.8 kg
- 7-8. weighed *a₂-geš-gar-ra* textiles
9. (from the) women weavers of Šū-Suen
10. 7th year of Šū-Suen

Thus, it can be seen that the *a₂-geš-gar-ra* in the textile industry was a tightly managed system, where the wool was weighed before it was disbursed, and the textiles were weighed once they had been manufactured.

This is clearly analogous to the Mycenaean *ta-ra-si-ja* system, where specific weights of wool were issued for specific textiles. Although there are differences of detail, both systems were designed to closely monitor the issuing of materials and the collection of the manufactured items, leaving little opportunity for wool to be wasted, lost or stolen.

The a₂-geš-gar-ra weaving groups

As already noted, texts identify the weaving group. This was done by using the name of their overseer or by referring to them using the generic term *geme₂ uš-bar*, women weavers. However, some *a₂-geš-gar-ra* groups are named explicitly in the Girsu tablets:

- women weavers of Šū-Suen
- women weavers of the governor (of Lagaš)
- women weavers of the high priestess of Bau
- women weavers of Girsu
- women weavers of Guabba
- women weavers of Irišaḡrig

The first three of these groups are named after a prominent person: the king, the local governor, or a high priestess. The latter three are identified by toponyms: Girsu, Guabba and Irisağrig. It is, of course, possible that the same group could appear twice in the list.

Guabba was located in the province of Lagash that included Girsu. The more surprising item in this list is the ‘weavers of Irisağrig’. Irisağrig was a significant town with its own calendar (i.e. local month names). Its precise location is uncertain, but it was roughly 100 km from Girsu.¹¹ It is most likely that, although this weaving group was somehow associated with Irisağrig, its actual location was in the Girsu region.

Rations/wages for the a₂-geš-gar-ra weavers

It is interesting to consider the numerous tablets listing the provisions supplied to the a₂-geš-gar-ra weavers. However, the question of rations/wages is more significant than it might first appear. So it is worthwhile introducing a short digression to give some perspective.

Digression on basic rations

Ignace Gelb states that the ration system was very much standardised throughout the Old Akkadian and Ur III periods.¹² The standard rations of barley were up to 60 litres per month for men, 30 litres for women, 20/30 litres for sons and daughters, depending on their age, and 10 litres for infants.

In addition, men and women would receive two to five litres of oil per year, with correspondingly lower rations for children. In this case, Gelb concludes that the oil ration was received once a year in the 11th or 12th month of the year. The wool ration was up to 2 kg for men and 1.5 kg for women, but it is not clear how frequently they received this ration.

Gelb also draws a distinction between semi-free serfs who received rations such as those outlined above, and free people who offered their services for hire and received wages.¹³ However, Hartmut Waetzoldt states that it is more correct to suggest that workers who were perma-

¹¹ MOLINA 2013.

¹² GELB 1965.

¹³ STEINKELLER 1987 summarises the on-going discussion on the distinction between slaves and serfs in the Ur III texts.

nently attached to a particular employment received rations, whereas wages were given for periods of short-term employment.¹⁴

Thus, when we consider the food allocated to the a₂-geš-gar-ra workers, we should be considering whether it is given as rations or wages and, if it is given as rations, we should also consider the extent to which it rises above the level of basic rations outlined above.

Barley rations for the a₂-geš-gar-ra weavers of the high priestess of Bau

This section returns again to discussion of the a₂-geš-gar-ra weaving groups and considers the distribution of barley. In practice, commodities were issued in bulk to the different weaving groups. This section examines how the barley rations were divided and distributed to the women weavers of the high priestess of Bau (*geme₂ uš-bar nin-dingir^dba-u₂*).

The first point to make is that, within the group, it was not necessary for the workers to refer to themselves as the ‘women weavers of the high priestess of Bau’. Therefore, the identification is more indirect. ASJ 2, 22 62 (S 34) lists the barley rations issued to the female weavers (*še-ba geme₂ uš-bar*) by the overseer Ur-Damu (*ugula ur-^dda-mu*). Its envelope has the seal of Ur-Damu, dedicated to the high priestess, with the following legend:

- | | |
|---|--------------------------------|
| 1. geme ₂ - ^d lamma | 1. ur- ^d da-mu |
| 2. nin-dingir | 2. dub-sar |
| 3. ^d ba-u ₂ | 3. dumu ur-sa ₆ -ga |
| | 4. ARAD ₂ -zu |

(Geme-Lamma, high priestess of Bau/ Ur-Damu, scribe, son of Ursaga, your servant). Thus, it is clear that Ur-Damu was the overseer of the weavers who worked for the high priestess of Bau.

There is a sequence of tablets that contain the wording ‘barley rations for the female weavers, overseer Ur-Damu’ (*še-ba geme₂ uš-bar / ugula ur-^dda-mu*). Each records the (usually) monthly distribution of barley during the years Š 33-43. In addition, there are five unpublished texts in the British Museum that have the seal of Ur-Damu and (based on catalogue information) are probably from the same sequence. There

¹⁴ WAETZOLDT 1987.

are differences in detail between the tablets, as the number of workers varies. However, the following is a reasonably typical example (CTPSM 1, 13; Š 33 xii):

1. 9 female workers 60 litres of first quality barley
2. 2 female workers 50 litres
3. 77 female workers 40 litres
4. 21 female workers 30 litres
5. 3 female workers, half-work, 30 litres
6. 5 old female workers, 20 litres
7. 35 [children?] 15 [litres]
8. 28 children 10 litres
9. their barley, 5645 litres
10. barley rations to female weavers
11. overseer Ur-Damu
12. 12th month
13. 33rd year of Šulgi

The quantities of barley issued for this month are typical of those for female workers, with the majority of women having 30 to 40 litres. If 30 litres is taken to be the necessary minimum for feeding adult females, then the 77 women who were given 40 litres of barley per month received in excess of this minimum.

It seems probable that the (unnamed) 11 women with higher rations probably served in a supervisory capacity. On this basis, they would each have managed teams of about 10 women.

The remaining people on the list could be regarded as beneficiaries of the work group. This particularly applies to the three workers who are only recorded as doing half the work but nevertheless received full 30 litres rations. One might guess that these women might have been pregnant, looking after infants or with other caring responsibilities or perhaps unwell. There are also five old female workers who had presumably become less efficient and were deemed to only require 20 litres of barley per month. There are also large numbers of children. The older children qualified for half rations and smaller children had one-third rations.

Table 1 shows how the numbers of people in each category changed over the ten years spanned by a group of 11 texts.¹⁵

| Year Month | 60 l. women | 50 l. women | 40 l. women | 30 l. women | half-work | old women | 20 l. children | 15 l. children | 10 l. children | Total nos. |
|-------------|----------------|----------------|----------------|----------------|-----------|--------------|-------------------|-------------------|-------------------|---------------|
| Š 33 xii | 9 | 2 | 77 | 21 | 3 | 5 | | 35 | 28 | 180 |
| Š 34 ii | 14 | 2 | 43 | 7 | 3 | 6 | | 32 | 25 | 132 |
| Š 34 vii | 9 | 7 | 77 | 24 | 3 | 5 | | 33 | 28 | 186 |
| Š 37 x | 16 | 2 | 92 | 43 | 11 | 4 | 24 | 26 | 32 | 250 |
| -- | 16 | 2 | 93 | 44 | 8 | 6 | 33 | 28 | 29 | 259 |
| Š 38 vi | 16 | 2 | 94 | 42 | 5 | 6 | 28 | 27 | 18 | 238 |
| Š 38 xi | 8 | 1 | 63 | 43 | 9 | 6 | 25 | 19 | 17 | 191 |
| Š 42 viii-x | | 18 | | 134 | 5 | 4 | 19 | 25 | 41 | 246 |
| Š 42 xi | | 18 | | 134 | 4 | 4 | 19 | 25 | 43 | 247 |
| Š 43 ix | | 19 | | 133 | 5 | 4 | 20 | 21 | 36? | 238 |
| Š 43 xi | | 19 | | 144 | 5 | 4 | 15 | 26 | 30 | 243 |

Table 1

From Š 42 onwards, the tablets include an old male janitor who received 50 litres of barley per month, which was a normal ration for elderly male workers.¹⁶

There seems to be clear evidence of changes of policy. Firstly, in Š 37 there was the introduction of a third category of children receiving 2/3 of the standard ration. Secondly, in Š 42, it appears that the 60 and 40 litre rations were reduced to 50 and 30 litres, respectively. The latter seems to coincide with the introduction of the male janitor.¹⁷

It would be possible to extend this discussion by considering the named personnel attached to the different weaving groups. However, this paper concerns the nature of the system of a₂-geš-gar-ra, and therefore that discussion is beyond its scope.

Thus, this section has shown that the barley received by these weavers are clearly described as barley rations (*še-ba*), and that levels of the ration for adult females, although initially more generous than the basic ration, in the later years became comparable to that basic ration.

¹⁵ The tablets used in Table 1 are respectively: CTPSM 1, 13; ASJ 2, 22 62; Mycenaean 4; Nisaba 18, 40; OTR 95; (CUSAS 16, 34, date missing); PPAC 5, 1188; SAT 1, 44 & 276; PPAC 5, 1329; SAT 1, 277; ASJ 3, 152 108. For an earlier discussion of some of these tablets, see WILCKE 1998.

¹⁶ WILKE 1998.

¹⁷ For completeness, we should also note the less likely alternative explanation that Ur-Damu distributed rations to two separate groups of weavers, and that we have the set of rations for one group from Š 33-38 and the other from Š 42-43.

Additional commodities for the a_2 -geš-gar-ra weaving groups

The previous section considered barley rations. This section extends that discussion to the other commodities that were issued to the a_2 -geš-gar-ra weaving groups named in Section 4 above. This shows examples that extend well beyond the limited constraints of basic rations.

It is worthwhile beginning with the following example given in full:

SNAT 258

1. 10.2 cubic metres of top quality fresh fish
2. fish rations for the women weavers of Girsu
- 3-4. Ahum-beli received
5. 2 cubic metres
6. (for the) women weavers of the high priestess of Bau
7. La-a disbursed
- 8-9. the women weavers received
10. 11th month
11. 7th year of Amar-Suen

Fish was transported in baskets, which would explain why it is measured by capacity rather than by weight.¹⁸ Nevertheless, this seems to be a very large amount of fish. The most likely explanation is that once this fish was supplied to the overseers, it became their responsibility either to distribute the fish, or to organise its preservation in some way and then distribute it with the rations over an extended period.

It is possible to give further examples of food and drink being allocated to the a_2 -geš-gar-ra weaving groups. TCTI 2, 2628 (IS 3) records an allocation of 5280 litres of barley to women weavers of Girsu. In addition, TCTI 2, 3679 (AS 8 iii) lists 1036 litres of beer (of ordinary quality) and 1036 litres of bread to those workers:

- ITT 2, 4203 (undated) records 40 litres of cooked fish for the women weavers of the governor. TCTI 2, 3460 (ŠS 2) notes 740 litres of top quality fish for the same group of weavers.

- PPAC 5, 1189 (IS 1) records the corpses of 390 sheep being received by the women weavers of Guabba, and HSS 4, 146 (ŠS 9 xi²) adds a fur-

¹⁸ ENGLUND 1990.

ther 20 to that total. Nisaba 17, 26 (AS 4 viii) notes 58.3 cubic metres of barley being given as wages for the same group of weavers; BPOA 1, 308 records a further 159.5 cubic metres; ITT 2, 661 (IS 2 xii) adds 9.1 cubic metres. Nisaba 18, 161 (AS 7 viii) lists 574 litres of sesame oil to these weavers.¹⁹

- ITT 5, 6799 records the corpses of 100 sheep being disbursed to the women weavers of Irisağrig.

- ITT 3, 5419 (ŠŠ 7) notes a gift from the king (*nig₂-ba lugal*) of 500g unbleached wool (*siki mug*) for each of the 42 women weavers of Šū-Suen.

The quantities of food listed here imply that the *a₂-geš-gar-ra* weavers were given generous supplies in return for their labour. However, these still are described as rations wherever the terminology is specific. The single explicit exception is Nisaba 17, 26, where the barley is described as wages. In addition, the large number of dead sheep listed in PPAC 5, 1189 and ITT 5, 6799, and the beer and bread listed in TCTI 2, 3679 are described as neither rations nor wages. Nevertheless, the presence of large quantities of fish and meat in their supplies clearly suggests that these women weavers, working under the *a₂-geš-gar-ra* system, were receiving rations well beyond basic subsistence levels.

It is possible to make two deductions from the analysis above. First, the fact that the *a₂-geš-gar-ra* weavers received rations implies that they had on-going permanent employment. Secondly, the generous nature of their rations implies that their status was markedly higher than the bulk of the serfs who received only basic rations.

Examples of non a₂-geš-gar-ra production

It is clear that the term *a₂-geš-gar-ra* was not used in all cases where materials were supplied to work groups and finished goods were returned to the Centre. This can be demonstrated by considering two examples.

The first example concerns weavers, and shows that most weaving was not labelled as *a₂-geš-gar-ra*. CT 10, pl. 40, BM 17747 (Š 35) summarises the disbursement of large quantities of wool to supervisors from seven different weaving workshops. However, only one of these is labelled as *a₂-geš-gar-ra*.

¹⁹ In order to avoid ambiguity, these lists exclude records, for example, of commodities being sent to Guabba for the women weavers (i.e. not using the set phrase *geme₂ uš-bar gu₂-ab-ba^{ki}*), as there is a possibility of more than one group of weavers at Guabba.

It is most probable that the majority of Ur III weavers would not be working in *a₂-geš-gar-ra* schemes. It seems likely that most weavers would have received basic rations and would be part of the category that Gelb describes as semi-free. Thus, if this were correct, then the *a₂-geš-gar-ra* weavers would fall into a more privileged group than most other weavers.

The second example is brewers who were also not described as *a₂-geš-gar-ra*. In this case, it is suggested that the brewers would have a higher status than the *a₂-geš-gar-ra* weavers.

Barley was distributed to the brewers of Umma to produce beer as part of the annual tax (*bala*) contribution of the city.²⁰ The quantities required were very large and this obligation caused a substantial spike in demand over a short period, which could only be met by special preparations.

The tablet Bod S 568 lists the beer supplied for the *bala* by 19 brewers, and this was overseen by Luturtura. Based on the information from seal impressions, it is evident that Luturtura was closely related to three of the 19 brewers listed in this text: his brother, Šešani, and his two uncles, Hala and ARAD-mu. This implies that the provision of the beer for the *bala* was lucrative for the brewers, and that the overseer specifically tried to involve his family members in the scheme.

It seems likely that the brewers worked as independent artisans who did not rely on rations, but were instead paid for their labours. Thus, although they were provided with materials (in this case barley) and supplied finished commodities for the Centre (the beer), this was not described as *a₂-geš-gar-ra*. It is tentatively suggested that gender might have played some part in this.

Discussion

In a paper comparing *ta-ra-si-ja* and *iškāru* in respect of the wheel and chariot records of Nuzi, Rougemont stated that the aim was to help improve our understanding of the relatively sparse and elliptical Mycenaean texts by comparing them with relevant near contemporary parallels from the Near East.²¹ The discussion in this paper has the same aim, although, in this case, the Near Eastern texts are much older than the

²⁰ FIRTH forthcoming.

²¹ ROUGEMONT 2015.

Middle Babylonian Nuzi records. However, here there is the considerable advantage that there are a substantial number of texts, which allow us to gain a fuller picture of the processes being considered.

Although one might try to suggest that *a₂-geš-gar-ra* in Ur III was a distant precursor of Mycenaean *ta-ra-si-ja*, there is clearly not a simple link between these two systems because of the substantial geographical and chronological differences. Therefore, it is not possible to assume that the presence of some feature in the *a₂-geš-gar-ra* texts necessarily implies the same feature was present in *ta-ra-si-ja*. Nevertheless, these were both Bronze Age bureaucracies trying to tackle the same problem of organising the manufacture of finished goods from the surplus raw materials held by the Centre, using the skills of a dispersed workforce. Thus, it is likely that they would encounter the same issues and perhaps solve them in similar ways. Therefore, there is some possibility that the *a₂-geš-gar-ra* and *ta-ra-si-ja* systems would share common features.

In this respect, it is interesting to compare the findings of this paper with those of Killen.²² In his paper, Killen tentatively concluded that:

- *ta-ra-si-ja* was a method of organising production in cases where the palace would otherwise not have had full control;
- *ta-ra-si-ja* production was mostly decentralised;
- it involved an extremely large workforce with a relatively low status;
- there were intermediaries between the palace and the workforce who also acted as supervisors, and these were not members of the ruling élite.

Killen's conclusions on *ta-ra-si-ja* with regard to textile workers are largely consistent with the findings of this paper on *a₂-geš-gar-ra*. Certainly, in both cases, the textile industry required a large workforce and there would have been supervisors who acted as intermediaries between the Centre and the workforce. Furthermore, the workforce would have had a relatively low status. However, it has been suggested in this paper that the *a₂-geš-gar-ra* workforce had a higher status than many other textile workers because they received rations that far exceeded the standard basic rations.

²² KILLEN 2001.

Thus, the a_2 -geš-gar-ra / ta-ra-si-ja systems were used as a means of exerting control through strict monitoring of the supplied raw materials and the received manufactured items where the Centre did not have direct control.

In the case of the Mycenaean unguent makers, Killen concludes that they would not have been included within the ta-ra-si-ja system. He suggested that the unguent makers were regarded as master-craftsmen with a higher status than the workers in ta-ra-si-ja industries. He also notes the practical difficulty under a ta-ra-si-ja system of trying to monitor the wide range of ingredients that were used in the unguents.

This latter type of argument would not be applicable to the brewers of Umma, as the range of ingredients needed for making beer was more limited. Therefore, it would seem more pertinent to concentrate on their status as master-craftsmen. Thus, it appears that the ta-ra-si-ja / a_2 -geš-gar-ra system was not appropriate for such workers with a higher status.

In his discussion, Killen notes that the extent of ta-ra-si-ja in wheel and chariot production is less certain, as the word ta-ra-si-ja is only used in one text, **So 4442**, probably relating to production at se-to-i-ja. It is tempting to assume that all of the wheel and chariot production for Knossos was under ta-ra-si-ja. However, the present discussion shows the possibility of flexibly operating both a_2 -geš-gar-ra and non a_2 -geš-gar-ra processes at the same time according to the prevailing circumstances.

Conclusions

The Ur III system of a_2 -geš-gar-ra with the textile industry has been described. It has been shown to be closely analogous to the ta-ra-si-ja system in the textile industry of Knossos.

It has also been shown that much of Ur III textile production was not under the a_2 -geš-gar-ra system. It has been suggested that, in these cases, the weavers had a lower status and were probably under a different sort of obligation to work in the textile workshops.

A further comparison has been made between with Mycenaean unguent makers and the Ur III brewers of Umma. In this case, it is suggested that they were regarded as master-craftsmen, and that it was not appropriate to subject them to the constraints of the ta-ra-si-ja / a_2 -geš-gar-ra systems. It is tentatively suggested that gender may have been a contributing factor in this distinction.

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