DAIS

THE AEGEAN FEAST

Proceedings of the 12th International Aegean Conference / 12e Rencontre égéenne internationale
University of Melbourne, Centre for Classics and Archaeology, 25-29 March 2008

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FOOD RATIONS AND PORTIONS
IN CRETAN HIEROGLYPHIC DOCUMENTS

Introduction

In working with Cretan Hieroglyphic, my goal has not been to decipher the language of the script but rather to understand (1) how the scribes organized information on the clay documents, (2) how the administrative process worked, and (3) what role the various types of clay documents and Hieroglyphic sealstones played in that administrative process.

My procedure has been to look at the Hieroglyphic corpus as a whole, to take each document as published in CHIC, to try to understand how the numbers worked (do they add up; are there two lists of totals: totals paid and totals not paid?), to reorganize the texts so they conform to a modern itemized receipt or budget (my “normalization” process), and then to take what progress I make in reading one document to help me understand other documents.

In this paper I will use this method and my three goals to shape my discussion of two sets of Hieroglyphic documents from Knossos that record the assessments, collections and deficits, and redistribution of a quantity of food that includes wine, grain or bread, figs, olives and olive oil, and cattle.

In what follows, I shall usually omit the transnumerations of the texts (these can be found in CHIC and on my Hieroglyphic website: http://people.ku.edu/~jyounger/Hiero) and my suggested phonetic values. My purpose in omitting this information is simply to make the following discussion more readable.

Knossos Set 1 (Pl. LXIXa)

I start with clay bar #058, which is complete (Pl. LXIXb). It begins with the common header (_MATERIAL) followed by a very large number, 1640, undoubtedly an assessment, and then a list of six words followed by small numbers that total 330, probably partial receipts. Of the header, the last sign (_MATERIAL) is always a terminal and probably means just that; the first sign (_MATERIAL) is always an initial and looks like the predecessor to AB a, and the second sign (_MATERIAL) may be the predecessor to AB de. The header A-DE is common in Hieroglyphic and may be related to the common Linear A header A-DU. The other words are not at present meaningful, but since most are hapax legomena, they are probably names.

With 330, we need 1310 to come up to the assessment 1640, and we can find it by associating two other documents, bars #057 and #062 (see Pl. LXIXa). I will not discuss these documents here—they are not central to my main theme.

But the 330 commodities that are listed on bar #058 are central. And we can locate these on other documents. Bar #052 (Pl. LXXa) seems to have two lists, one of five small numbers and another of two large numbers, 290 and 710, which must be assessments since they add up to a round 1000. When we normalize this bar we read sides a and c together (sides that are

* This study adapts texts from J.-P. OLIVIER and L. GODART, Corpus Hieroglyphicarum Inscriptionum Cretae (1996), hereafter CHIC. I am deeply indebted to J.-P. Olivier for the fonts, Malia-Maigre and Malia-Gros, specially designed for writing Cretan Hieroglyphic in Microsoft Word in Mac OS X. I am also grateful to Brent Davis for reading a version of this paper at the DAIS Conference. Proposed phonetic values for Hieroglyphic signs are given as italicized capitals (e.g., DE); doubtful signs are underlined in both text and illustrations; document numbers in bold refer to seal impressions in CHIC; numbers in bold are those actually given in the texts, while regular numbers are those restored in the texts. For some of the signs I give whimsical names to describe their appearance (e.g., "lightning-mountain-top" *167 ½) and to make them more memorable.
opposite each other—these have the small numbers) and sides b and d together (again, opposite each other—these have the large numbers); in fact, almost all bars make good sense when the opposite sides are read together (is there any influence from hieroglyphic prism seals?). The preserved small numbers add up to 270, but if 20 is restored before the break on side c, then they would add up to the smaller of the two larger numbers, 290.

What kind of number is this? The word that precedes it is “sistrum-icetong” (057-092), which is obviously equivalent to AB ki-ro, and which I have demonstrated was the Hieroglyphic equivalent of Linear A KI-RO, meaning “not paid” or “deficit.” We then have a neat reading: an assumed target of 1000, of which 290 is owed and therefore 710 has been paid (KI-RO).

What is the commodity? I would guess it is the logogram at the end of the heading, the “frond” sign ‘Y’ 174, which also functions as a phoneme, the predecessor to AB re, which also functions, albeit infrequently, as a logogram in Linear A.

If we place bar #052 next to #058 (Pl. LXIXa) we see immediately how they match: a similar heading, the same logogram RE, and most of the same numbers or totals.

Similarly, we can aduce another document, a fragmentary crescent sealing #020 (Pl. LXIXb) that appears at first glance to offer little information. But its two fragmentary statements contain signs found in our major document (#058).

The crescent was also impressed by a sealstone. Although CHIC does not consider the impression relevant, it does give another logogram, GRA, as well as the sealstone term for “total” (“mallet-eye”). “Mallet-eye” (044-005) occurs almost exclusively on sealstones (some 75 times), but the word is also written on two or three clay documents that are also impressed by seals having this term and/or its companion term, “mallet-arrow” (044-049), the other transaction term that appears almost exclusively on sealstones. It has long been thought that these two sealstone terms are either complementary or contradictory — the latter as it turns out. “Mallet-eye” on seals (044-005) probably means the same as KI-RU (“owed”) on documents, while “mallet-arrow” on seals (044-049) probably means the same as KU-RO (“paid”) on documents.

When we add this crescent to the others (Pl. LXIXa), we can see how such a sealing gives an individual piece of information, while a bar (like #052) can either give a summary of such individual pieces of information, or (like bar #058) be part of a series that places all this information into context. From this, I gather that crescents probably record the arrival (or not) of commodities into the palatial administrative system; since they are sealings on cord, they probably accompanied the commodity they refer to.

To summarize: This set of documents (Knossos Set 1; Pl. LXIXa) records the assessment of 1640 unspecified items, and the collection as well as deficits of some of these.

bar #058 baldly records the grand assessment totaling 1640 unspecified items
bar #062 lists four large assessments [005] totaling 1210 of these items
crecent #020 records some individual collections
bar #052 lists 290 collections not paid [005] (leaving 710 paid [005]) out of a total of 1000
bars #057 and #058 summarize 430 collections, which, when added to the 1210 assessments on bar #062, balance the grand assessment of 1640

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3 The RO (0070) is certain; the sign that precedes it is one of the two branch-signs (0028 or 0009).
4 Cf. HT 27a.2 and 41a.3, KH 8.1, and PH 31a.3 (SUS-SI-RE); these are published in L. GODART and J.-P. OLIVIER, Recueil des inscriptions en Linéaire A (1976-1985), and online at http://people.ku.edu/~jyounger/LinearA. 
5 CHIC #018 (mirroring its seal impressions #140 & #158), #059aA, and probably on #066c.
6 See the discussion in YOUNGER (supra n. 1).
7 See their use on clay document CHIC #059aA.
Knossos Set 2

Another bar #053 (Pl. LXXc) takes up 330 of the 430 collections and itemizes them in two lists. First, the commodities: 170 pot-items \( \text{F} *150 \), and 160 arrow-items \( \text{F} *176 \); it then reallocates these (list 2): 110 pot-items \( \text{F} *150 \), and 170 arrow-items \( \text{F} *176 \). The intervening side c (between the two lists) presents 50 cattle \( G *152 \) (inscribed as two encircled [corralled] sub-herds of 20 and 30 each). Since the 50 cattle plus 110 pot-items totals 160, I assume that List 2 + cattle is some kind of restatement and reorganization of List 1.

I will return to the inscription on the end of the bar (side e).

On bar #065 (Pl. LXXd), 340 of the original 430 commodities\(^9\) are broken down in detail; this bar comprises a complete and careful summary of two fragmentary bars #066 and #067 — these all make up what I call Knossos Set 2 (Pl. LXXIa).

All three documents list specific commodities: some kind of pot-item (by itself \( \text{F} *161 \) or accompanied by the double-ax \( [\text{F} *175 *161] \), some kind of cattle (by itself \( \text{F} *152 \) or accompanied by an adjunct \( [\text{F} *180 *152, *065b.4] \) that may also appear by itself \( [\text{F} *171, *067a.2] \), some wine \( [\text{F} *156] \), some kind of grain \( [\text{F} *180, *182] \), some unknown commodity \( [\text{F} *178] \), some oil \( [\text{F} *158] \), another unknown item ("lightning-mountain-top" \( [\text{F} *167] \), and some figs \( [\text{F} *155] \).

Now that we have some idea of what these 340 commodities are, in detail, we return to bar #053 (Pl. LXXc) that concerns 330 of these commodities in two groups of 170 and 160. This time, we look at the inscription on the end of the bar (side e). End-inscriptions occur rarely;\(^12\) presumably when stored on a shelf, the end would convey identifying information, like the label on a file folder. This inscription simply says "harp-man" \( \text{F} *058-002 \). The sign (looking like a bald doll’s bust) occurs frequently enough that I designate it \( \text{VIR} \). It always occurs at the end of a signgroup, probably as one of the \( \text{VIR} \) logograms (person, personnel).

What harp-man means, I do not know, but it may have something to do with the appearance of "crowned-man" \( \text{F} *003 \) that terminates the heading at the top of this document #053, announcing (I imagine) the subject of the inscription: people and commodities (including cattle).

It is therefore not coincidental, I think, that the 22 harp-men \( \text{F} *058-002 \) divide into the number of the commodities (330) a neat 15 times, suggesting a distribution among these 22 harp-men of 15 sets of commodities per harp-man. These harp-men may be workers, each getting 15 sets of commodities (a half-month’s worth), or each might be an overseer of 15 workers, each of whom would be getting a single set of rations. If our harp-men are supervisors, special people, then perhaps that is the meaning of the crowned-man \( \text{F} *003 \) in the heading.\(^13\)

Rations/Portions

This distribution of commodities among people allows us to think in terms of provisions and/or rations. Typical clusters of comestibles, for example, occur on several Hieroglyphic and Linear A documents. For example, Linear A tablet 114 from Ayia Triada (Pl. LXXlb) lists four
commodities and two types of wine (VINa and SA VINa). If we combine the two types of wine to make 10 units, and combine the oil and BOS to make another 10 units, then these are in a 1:1 ratio with GRA — plus a small amount of figs.

Of course I would expect the units of liquids to be different than the units of solids like figs; I have no idea how GRA would be measured, but if in loaves that might help explain the simple ratios between it and the other comestibles.

If we imagine that these comestibles were destined for 10 people at SA-RA2 (and it would be difficult to imagine any other animal eating such comestibles), each person would get 1 portion of wine, 1 portion of OLE+BOS,14 and 1 portion of GRA — plus a small amount of figs.

Compare another Linear A tablet, HT 121 (Pl. LXXIc), which sets out a similar set of ratios. I concentrate on the comestibles cited for SA-RA2; if we divide the figs (FIC) in half to produce a base unit (1), and make the other commodities proportional to it, then we get FIC=1, VIN = 1 ½, BOS = 1 ½, OLE = 2, and GRA = 2 ½. Again, if we imagine these food items destined for people, we could imagine that a single person at SA-RA2 would be getting 1 portion of figs, a portion and a half of wine and of BOS, 2 portions of oil, and 2 portions and a half of GRA.

If BOS were a portion of meat and GRA a loaf of bread (this is just a suggestion for narrative purposes), then we could imagine one person getting a cup of wine or two, a loaf of bread, some olive oil for dipping, and a cut of meat — plus a small amount of figs.

Let us return to the Hieroglyphic documents.

Like bar #053 that lists commodities associated with harp-men, tablet #068 (Pl. LXXId) sets out amounts of commodities, including personnel (crowned men 𓊍, VİR). The ratio of wine (𓊍) to person (𓊍; VIN : VİR) is 2:1. And if the double-ax commodity 𓊍 is added to GRA 𓊍 (plus ; a fraction; perhaps 1/8),15 then that combined commodity 𓊍 is also approximately in a 2:1 ratio with olives 𓊍. If we think of these staples (wine, GRA, olives, and “double ax” 𓊍) as being distributed among the 5 VİR, 𓊍, we obtain some slightly complex ratios.16 We can make these ratios simpler, however, if we combine the double ax and OLIV, producing: VIN 2 per person, 𓊍+OLIV 1.95 per person, and GRA 3 per person.

In other words, each person is getting 2 portions of wine, a little under 2 portions of double ax plus olives, and 3 portions of GRA.

If double ax 𓊍 is a portion of meat (like BOS in the Linear A examples) and GRA were a loaf of bread, then we could imagine one person getting a large cup of wine, a large loaf of bread, and some olives to accompany a small cut of meat — perhaps not a feast, but certainly a satisfying lunch.

John G. YOUNGER

14 The juxtaposition of OLIV+double ax 𓊍 on the previous Hieroglyphic document #068 and of OLE+BOS on HT 114 suggests that double ax 𓊍 may be a portion of meat.
15 This sign appears only on this document. If it is a fraction, as CHIC seems to think, the fact that it occurs twice in this document, each time in threes, ; ; ; , implies that a fourth occurrence of the sign would equal a whole number or a fraction that already has a sign. Unless ; is another and idiosyncratic way of writing 1/4, it could designate 1/8. ; ; would then mean 3/8, while four of these signs (𓊍), totaling 1/2, would be conventionally written as ; (see the caption to Pl. LXXIa).
16 𓊍 1 3/8 = 0.275/person; 8 3/8: OLIV = 1.875/person; 10 VIN = 2/person (assuming 𓊍 is a person).
<table>
<thead>
<tr>
<th>Plate</th>
<th>Illustration Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LXIXa</td>
<td>Knossos Set 1: crescent #020; bars #052, #057, #058, #062.</td>
</tr>
<tr>
<td>LXIXb</td>
<td>CHIC #058, bar from Knossos.</td>
</tr>
<tr>
<td>LXIa</td>
<td>CHIC #052, bar from Knossos.</td>
</tr>
<tr>
<td>LXIb</td>
<td>CHIC #020, crescent sealing from Knossos, plus its seal impression #145 (CMS II 8, no. 78).</td>
</tr>
<tr>
<td>LXIc</td>
<td>CHIC #053, bar from Knossos.</td>
</tr>
<tr>
<td>LXId</td>
<td>CHIC #065, bar from Knossos.</td>
</tr>
<tr>
<td>LXIIa</td>
<td>Knossos Set 2: bars #067, #066, #065.</td>
</tr>
<tr>
<td>LXIIb</td>
<td>HT 114, tablet from Haghia Triada.</td>
</tr>
<tr>
<td>LXIIc</td>
<td>HT 121, tablet from Haghia Triada.</td>
</tr>
<tr>
<td>LXIID</td>
<td>CHIC #068, tablet from Knossos.</td>
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</tbody>
</table>
### CHIC #058

**As on the bar**

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<tr>
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<tbody>
<tr>
<td>a.</td>
<td>X</td>
<td>1640</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Ø</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Ø</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>Ø</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

**CHIC normalizes**

<p>| | | | |</p>
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<tbody>
<tr>
<td>a.</td>
<td>X</td>
<td>1640</td>
<td></td>
</tr>
<tr>
<td>b1.</td>
<td>Ø</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>b2.</td>
<td>Ø</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>c1.</td>
<td>Ø</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>c2.</td>
<td>X</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>d1.</td>
<td>Ø</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>d2.</td>
<td>Ø</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>
**CHIC #052**

As on the bar

a. $\text{[60]} \times \circ \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \time
commodity summary on bar #067 | commodity summary on bar #066 | commodity summary on bar #065
--- | --- | ---
d X 1 | c @ 1 | a1 X 1 | a2 X 1
C2 X 1 | d2 t | b1 X 1 | b2 t

If these fractions have the following values: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{6}$, then #066a totals 2 ($\frac{5}{6}$; $\frac{1}{3}$ = $\frac{5}{6}$; $\frac{1}{2}$ = $\frac{5}{6}$; $\frac{1}{6}$ = $\frac{1}{2}$), and #065a-c totals "340" and d totals 2. On #067a3 and #065d4, $\frac{5}{6}$ would be another way of writing 1/2.

HT 114

<table>
<thead>
<tr>
<th>line</th>
<th>statement</th>
<th>logogram</th>
<th>numbers</th>
</tr>
</thead>
</table>
a1   | KI-RI-TA₂ | GRA      | 10      |
a1-2 | SA-RA₂   | OLE      | 7       |
a2   |          | FIC      | 1       |
a3   |          | VINa     | 1       |
a3-4 |          | BOSm     | 3       |

vacant

b1   | SA VINa | 9        |
b2-4 | vacant   |          |

CHIC #068

| rA   | 10 | 5 |
|      |    |   |
rB   | 15 | 8 |

HT 121

<table>
<thead>
<tr>
<th>line</th>
<th>statement</th>
<th>logogram</th>
<th>numbers</th>
</tr>
</thead>
</table>
1     | KI-RI-TA₂ | OLE+QE+DI | 10      |
2     | SA-RA₂   | GRA      | 5       |
2     |          | OLE      | 4       |
3     |          | FIC      | 2       |
3     |          | VINa     | 3       |
3-4   |          | BOSm     | 3       |