

THREE UPHEAVALS IN MINOAN SEALING ADMINISTRATION : EVIDENCE FOR RADICAL CHANGE *

The First Upheaval

The first upheaval, perhaps self-evident but not for that reason to be despised, is the introduction to Crete, some time before the end of Middle Minoan II, of the full panoply of Near Eastern sealing practices. True, clay sealings had been known earlier on Crete but their use was rare and sporadic, with even well-burnt and well-excavated sites turning up nothing at all or, at best, one or two clay nodules¹. There is, thus, no evidence for the evolution of a sealing system on Crete itself, no gradual build-up from the occasional use of sealings to protect property to increasing frequency or complexity, but rather the sudden appearance at MM II B Phaistos (and now perhaps at Monastiraki as well) of a fully-developed system incorporating sealings into a bureaucratic organization². The impetus for this burst of administrative activity may reasonably be connected with the establishment, perhaps even the foundation, of the First

* Abbreviations :

FMP = R. HÄGG & N. MARINATOS (eds.), *The Function of the Minoan Palaces* (1987).

LB/Admin = J. BENNET, "The Structure of Linear B Administration at Knossos", *AJA* 89 (1985) 231-249.

Noduli = J. WEINGARTEN, "Some Unusual Minoan Clay Nodules", *Kadmos* 25 (1986) 1-21.

SSMC I = J. WEINGARTEN, "The Sealing Structures of Minoan Crete : MM II Phaistos to the Destruction of the Palace of Knossos. Part I : The Evidence until the LM I B Destructions", *OJA* 5 (1986) 279-298.

SSMC II : J. WEINGARTEN, "The Sealing Structures of Minoan Crete : MM II Phaistos to the Destruction of the Palace of Knossos. Part II : The Evidence from Knossos until the destruction of the Palace", *OJA* 7 (1988) 1-25.

Thera = C. DOUMAS (ed.), *Thera and the Aegean World* (1978).

- 1 The earliest securely dated Minoan sealings : EM II Myrtos (P. WARREN, *Myrtos. An Early Bronze Age Settlement in Crete* [1972], 40-42 : probably not a door sealing as suggested); 'pure EM context' fragmentary 'peg and pommel' sealing from Khania (E. HALLAGER, pers. comm. letter 4.10.89; a reported, but still unpublished sealing from EM I/II Stou Adami ta Zonaria (*AR* 1986/7, 57); EM III (MM Ia ?) Knossos : sealed jar stopper (S. HOOD, V.E.G. KENNA, *Antichità Cretesi* I [1973] 103-105). No other sealings can be safely dated to prepalatial levels : see *SSMC II*, 2 and n. 2, to which may now be added the Vat Room Deposit = MM II A : *AR* 1987-88, 69.
- 2 It must be stressed that the occasional use of sealings is not the same as the integration of sealings into an administrative structure. That sealings were sporadically used in the Prepalatial period is evident, but the impulse was weak and unsystematic, perhaps because there was as yet no need for large-scale administration. Compare EBA-MBA Syria where, during the ca. 800 years before 2200 BC, seals were used only to stamp pottery and not for bureaucratic purposes : B. MAGNESS-GARDINER, *Seals and Sealing in the Administration of the State : A Functional Analysis of the Seals in Second Millennium BC Syria* (diss. Arizona, 1987) 48-53.

Palaces³. Though few archaeologists today maintain that the Minoan palaces were directly influenced by Near Eastern or Anatolian models⁴, it is nonetheless salutary to consider that something so fundamental to the palatial economy as a working system of sealing administration was most probably imported wholesale from somewhere abroad.

What we see at Phaistos is an offshoot, and a very close one, of the widespread and ancient sealing system which is found throughout the Near East⁵. Though not *in situ*, over 6,500 nodules had been impressed directly on various kinds of identifiable goods: about 10% on rush matting and jars, and 90% on either flaring wooden pommels or small wooden cylindrical pegs (Pl. XVIa). The pommels and cylinders projected from the sides of boxes or possibly doors and were secured by the cords which fastened those boxes or doors⁶. These objects had been repeatedly sealed, unsealed and resealed by numerous, different seal-owners; some objects may have been opened and closed almost every day. Furthermore, it is very likely that the broken clay nodules were not immediately discarded but were retained for a time (perhaps even deliberately baked) to be checked against written authorizations of the operations. The sealings thus reflect large-scale storeroom administration integrated into a bureaucratic system, with both general and specific parallels in the Near East and Anatolia.

The Near Eastern system is still visible in the contemporary, or (as I would have it) slightly later, Hieroglyphic deposit from Quartier Mu at Mallia: five sealings out of a total of 28 clay nodules show traces of wooden supports (Pl. XVIb bottom), very like those now familiar to us from Phaistos⁷. But some evolution in the system has already taken place. A new sealing type is introduced, the first of a long line of Minoan hanging nodules: these are crescent-shaped sealings (Pl. XVIb top), which hang by cords, a string hole through the centre, which thus tell us nothing about the objects sealed. Crescents are only found in the two Hieroglyphic Deposits, at Mallia and at Knossos (Pl. XVIc), which adds a clerical dimension to their common use of hieroglyphic seals and hieroglyphic inscriptions on sealings. At Knossos, in addition to crescents, we find a handful of the first flat-based nodules: fairly flat cakes of clay pressed down over leather strips; these strips have been interpreted as the traces of leather or parchment documents⁸. Very similar document sealings are quite common in MM III B and LM I B deposits.

3 The Old Palace of Knossos "probably did not exist in MM I B but was most likely built after the end of MM I B during the MM II A period": J.A. MCGILLIVRAY, "The Foundation of the Old Palaces in Crete", in *Proceedings of the 6th Cretological Congress*, 1986 (forthcoming). If this radical view is accepted, the MM II A sealings at Knossos (SW area of the Palace: AR [1987-88] 68; the Vat Room sealings: see n. 1 above) may thus be coincident with the earliest palatial period. There is also some evidence that sealing practices at MM II B Phaistos were already evolving away from the Near Eastern model: see SSMC I, 295 n. 2.

4 On the contrary, foreign models are dismissed by J.W. GRAHAM, *The Palaces of Crete* (1969) 230-233, and O. PELON, "Particularités et développement des palais minoens", in (E. LEVY, ed.), *Le système palatial en Orient, en Grèce et à Rome* (1987) 198-201.

5 (a) E. FIANDRA, "Ancora a proposito delle cretule di Festòs", *BollArte* 60 (1975) 1-25, and (b) E. FIANDRA, "A che cosa servivano le cretule di Festòs", in *Proceedings of the Second International Cretological Congress* (1968) 383-397.

6 The pommels are of a well known flaring Egyptian shape and it is not impossible that they represent a carpentry borrowing (perhaps even imported chests) though the route need not have been direct from Egypt. See FIANDRA (*supra* n. 5 a) Pls. 52-54, and SSMC I, 280 and n. 6.

7 J.-Cl. POURSAT, "Sceaux et empreintes de sceaux", in B. DETOURNAY, J.-Cl. POURSAT, F. VANDENABEELE, *Mallia: Le Quartier Mu II* (1980) 198-199. Mallia 'town group' pottery phase likely to have lasted a little longer than Classical Kamarese phase at Phaistos: S. ANDREOU, *Pottery Groups of the Old Palace Period in Crete* (diss. Univ. of Cincinnati, 1978) 171.

8 I. PINI, "Neue Beobachtungen zu den tönernen Siegelabdrücken von Zakros", *AA* (1983) 559-572; J. WEINGARTEN, "The Use of the Zakro Sealings", *Kadmos* 22 (1983) 8-13.

The Mallia and Knossos Hieroglyphic Deposits thus fit neatly into an evolutionary post-Phaistos pattern : at Mallia there are still some directly-sealed wooden supports (doors or chests) as well as the new hanging crescent; Knossos mainly uses crescents but has, as well, a few flat-based document sealings⁹. The picture changes radically, however, after the Hieroglyphic Deposits, and the second upheaval is at hand.

The Second Upheaval

Hereafter, with very few exceptions, direct object sealing is abandoned¹⁰. The Minoans now give up pressing their clay nodules against containers and entirely switch to hanging nodules or document sealings instead. This apparently minor technical change has major administrative repercussions which we shall consider in a moment. Here, let it suffice to point out that the tried-and-true Near Eastern method does not outlive the First Palaces.

At the same time, and seemingly as part of the same upheaval, the use of inscribed seals disappears from the Minoan glyptic repertory and from sealing administration. The Minoans had already inscribed seals (with the so-called Arkhanes script) in MM I A and had continued, using Hieroglyphic script, at least through MM II. The Hieroglyphic Deposits show palatial administration to some extent dependent on inscribed—perhaps official—seals¹¹. Whatever the undeciphered scripts proclaimed—whether names or titles, invocations, or ornamental marks of ownership¹²—such engraving comes to an abrupt end with the Hieroglyphic Deposits.

This is a decidedly odd turn of events. What other ancient civilization once had and used—and used extensively—seals with inscriptions, then stopped—without, as explanation, either a loss (or at least decrease) of literacy or a radical change in political control? But, as far as we can tell, literacy increased after the loss of this medium. Indeed, with the inexplicable exception of pottery¹³, Minoan culture was going from strength to strength. But I wonder if, nonetheless, we have not missed a cultural disruption between the end of the Old Palaces and the nascent New, of which the wretched pottery is our sole positive witness. Such an upheaval may have followed, not immediately upon the MM II B destructions, but a little later, perhaps contemporaneously with whatever halted the rebuilding of post-destruction Phaistos, when the centre of administration in the Mesara switched to Ayia Triada¹⁴. This would allow the

9 That the Maliot sealing evolution does reflect a later date can now be argued on the basis of pottery : see n. 7 above. The dating of the Knossos Hieroglyphic Deposit remains problematic but it is, in sealing terms, more advanced than Mallia; see most recently P. YULE, "On the Date of the 'Hieroglyphic Deposit' at Knossos", *Kadmos* 17 (1978) 1-7, and I. PINI, "The Hieroglyphic Deposit and The Temple Repositories at Knossos", elsewhere in this volume.

10 SSMC II, Appendix II : four MM III B object sealings in the Temple Repositories; E. HALLAGER, "The Greek-Swedish Excavations at Khania", *Proceedings of the Fifth International Cretological Congress* (1986) 144 : LM I B object sealings in House I, Khania; see below p. 109.

11 Fifty-six percent of seals in the Knossos Hieroglyphic Deposit are inscribed; compare percentages of inscribed seals on second millennium Syrian seal impressions at Mari (76%), Alalah VII (37%), Alalah IV (31%) and Ugarit (95%; though almost all are stamped by the King's seal) : MAGNESS-GARDINER (*supra* n. 2) 78, Table I.

12 Not script in the strict sense but meant to mark property or establish the responsibility of the seal-owner : J.-P. OLIVIER, "Les sceaux avec des signes hiéroglyphiques", in I. PINI (ed.), *CMS Beiheft* 1 (1981) 105-115. In "The Relationship between Inscriptions on Hieroglyphic Seals and those written on Archival Documents" (this volume), Olivier returns to a more orthodox view of the script.

13 Most recently, P.P. BETANCOURT, *The History of Minoan Pottery* (1985) 103-105. *PM* I, 553 suggested that the Minoans were so wealthy that they used metal vases instead of clay, but, against this rather idealized view, one wonders why the pottery which was used was technically as well as stylistically poor.

14 Rebuilding began immediately at Phaistos, but inexplicably stopped, seemingly to the benefit of Ayia Triada; see F. CARINCI, "The 'III fase protopalaziale' at Phaistos", *Aegaeum* 3 (1989) 73-80; V. LA

necessary time for the bureaucratic evolution seen in the Hieroglyphic Deposits yet fit the evidence (albeit negative) for radical upheaval shortly thereafter : that is, the end of the Near Eastern sealing system and the loss of the use of script on seals.

When the smoke clears, the new bureaucrats do not require inscribed seals ¹⁵. Instead of Near Eastern bullae they are using flat-based nodules, which presumably sealed documents, and sealings which hang from such fine cords that they could never have sealed any kind of bulky goods. So the obvious question is : what secured the jars, sacks, matting, doors, chests, wickerwork, or whatever, the bulky goods upon which the palaces depended ? From MM III through the LM I B destructions, we have no trace of the means by which the Minoans protected such property nor, in fact, do we have *in situ* a single sealing from the magazines of any palace, or, indeed, villa.

The end of LM I B saw the destruction and burning of almost all palaces, villas, and settlements on the island. It is a unique chance for us to examine a single stratum (as it were) of Minoan administrative practices ¹⁶. And some of the results are surprising.

We start with the thriving villa of Ayia Triada, where were found over a thousand sealings, 21 roundels (that is, a mini-document, probably a receipt ¹⁷), and 147 Linear A tablets—more than all other LM I B sites combined. The sealings are overwhelmingly hanging types, and they were concentrated in the luxurious North-West area of the villa, well away from the magazines; they had almost certainly sealed containers of small-size, high-value goods ¹⁸. Few tablets were found with the sealings but, on the contrary, over half the tablets were just beyond the magazines where villa administrators were obviously controlling the receipt and dispatch of goods ¹⁹. There were, however, no sealings with this group of tablets nor in the magazines. No sealings at all were found in the surrounding town where the other half of the tablets were discovered.

At LM I B Zakro, on the other hand, the main deposit of sealings was located in the town some 200 meters from the Palace : 525 nodules, one tablet and one roundel were found in House A on the northernmost edge of the settlement ²⁰. The Archives within the Palace had only four sealings and fourteen tablets (plus numerous fragments) but much may have been lost due to water damage ²¹. Yet the Treasury, adjacent to the Archives, had no sealings at all, not even to secure the storeroom door; inside, the nine unlooted mudbrick chests which contained chalices, a rock crystal rhyton, Egyptian stone vases, and faience objects, were apparently unsealed. And, as always, no sealings were found in the extensive magazines.

ROSA, "Nouvelles données du Bronze moyen au Bronze récent à Hagia Triada", *Aegaeum* 3 (1989) 81-92; and n. 35 below

- 15 A possible survival into MM III B : the official (?) use of hieroglyphic seals on one roundel in the Temple Repositories, stamped by a four-sided prism with simplified hieroglyphic signs; see E. HALLAGER, "The Knossos Roundels", *BSA* 82 (1987) 55-70, Fig. 2 Rg, Rn, Rh, Ri. And three possible Linear A seals : (1) *CMS* II.3 38, a gold ring from Mavro Spelio (NB : the text would have been unintelligible in the impression); (2) *CMS* II.2 213b; (3) *CMS* XII 96 (is it genuine ? but cf. its papyrus flower with that on a seal impression on a roundel from the Temple Repositories = HALLAGER, *BSA* 82 [1987] Fig. 1 Rb).
- 16 One must keep in mind, however, that all LM I B destructions, though archaeologically simultaneous, were not necessarily truly simultaneous nor strictly contemporary; the stratum could represent ten years or even a generation.
- 17 E. HALLAGER, "The Use of Seals on the Minoan Roundel", in I. PINI, (ed.), *Fragen und Probleme der bronzezeitlichen ägäischen Glyptik*, (1989) 55-78.
- 18 J. WEINGARTEN, "Seal Use at LM I B Ayia Triada : A Minoan Elite in Action, Part I", *Kadmos* 26 (1987) 23-24, n. 33, 37, 38.
- 19 Findspots : WEINGARTEN (*supra* n. 18) 24, n. 37; *GORILA* I, xxi-xxii.
- 20 D.G. HOGARTH, "The Zakro Sealings", *JHS* 22 (1902) 76-93.
- 21 N.C. PLATON & W. C. BRICE, *Inscribed Tablets and Pithos of Linear A System from Zakro* (1975) 26-27, 35; see also *GORILA* 3, and *Noduli* 1-4.

We can say little about administrative arrangements at LM I B Khania because we are doomed to dig in the interstices of the modern city. It seems likely, however, that the 86 sealings with 82 tablets and 109 roundels from the Odos Katré site represent a palatial archive (though not *in situ*)²². The sealings divide into approximately 25% hanging nodules and 75% flat-based; the hanging nodules could have been collected from the storerooms to be checked in the Archive against written authorizations. Khania also has sealings in the LM I B town, our first good indication on Crete of possible private administration: the sealings, including stamped jar stoppers and a sealed stone vase (!), were found in House I in a cupboard next door to a room containing a single Linear A tablet²³.

The administrative riches of Khania contrast with a ghostly emptiness at the Palace of Mallia. No less than one-third of the Palace was occupied by storerooms²⁴, yet we have no nodules which might have sealed the containers therein. There are no sealings elsewhere in the Palace, nor were there any in the big houses in the town (such as Houses Za, Zb, Da, and E)²⁵. Sealings represent the most fundamental level of public (or indeed household) administration; their total absence at LM I B Mallia is even more striking than the absence of Linear A tablets and roundels.

Two villas with respectable numbers of sealings are both in the environs of Knossos: Sklavokampos (39 sealings) and Tylissos (from which three of an unknown larger number of carbonized sealings were published)²⁶. LM I B sealings are elsewhere rare and, in fact, most of those published are not sealings at all. The two nodules from Pyrgos are *noduli* ('sealings that do not seal', having no means of attachment whatsoever); these mini-documents have been interpreted as dockets²⁷. Three *noduli* have just been found in the new excavations at Palaikastro, a site with no LM I B sealings whatsoever²⁸. Thus, neither the villa of Pyrgos nor the prosperous town of Palaikastro, two extremely well-excavated and well-burnt sites, has yet brought forth even a single sealing although Pyrgos does have two Linear A tablets; the sole Palaikastro tablet, however, dates to LM I A, not LM I B²⁹. Finally, Gournia, an almost

22 I.A. PAPAPOSTOULOU, *Τά Σφραγίσματα τῶν Χανίων* (1977) Ch. 2. Other tablet finds might indicate the existence of a second, perhaps even a third archive: PAPAPOSTOULOU, Ch. 2, and E. HALLAGER and M. VLASAKIS, "New Evidence of Linear A Archives from Khania", *Kadmos* 25 (1986) 108-118.

23 HALLAGER (*supra* n. 10) 142-145; including two *noduli* (= J. WEINGARTEN, "Addendum: Some Unusual Clay Nodules", *Kadmos* 26 [1987] 39). One wonders if the stone vase was sealed to prevent pilfering or merely to keep out air. Among the sealings was a unique triangular clay bar with 12 seal impressions made by 10 different seals. A possibly similar object, now lost, is an inscribed 'sbarra prismatica' (=GORILA 2 Wa 1021 bis) with three different seal impressions from Ayia Triada (but was it a sealing?).

24 GRAHAM (*supra* n. 4) 129.

25 A sealing from the LM III B reoccupation deposit in Maison E probably dates from the fire destruction of Level III = LM II, not LM I B as published in O. PELON, *Mallia: Maisons III* (1970) 130-135.

26 Sklavokampos: S. MARINATOS, "Τὸ Μινωικὸν μέγαρον Σκλαβοκάμπου", *ArchEph* 1939-1940 (1948) 69-96. Tylissos: J. HAZZIDAKIS, *Tylissos à l'époque minoenne* (1921) 45-46; in 45 n. 4, the excavator remarked that the nodules had been deliberately baked, i.e., the first requirement for their further administrative use. Two Linear A tablets from Tylissos (= GORILA I, TY 2, 3), though found together, are so strikingly different in structure (W.C. BRICE, "The Linear A Tablets IV 8 and IV 9 from Tylissos", *Kadmos* 8 [1969] 121) that one wonders if TY 2 was not an earlier discard (cf. MA 4-9!).

27 *Noduli*, and its Addendum, *Kadmos* 26 (1987) 38-43. Pyrgos: G. CADOGAN, "A Probable Shrine in the Country House at Pyrgos", in R. HÄGG & N. MARINATOS (eds.), *Sanctuaries and Cults in the Aegean Bronze Age* (1981) 169-171. Cadogan confirms that neither has a string hole nor any other means of attachment (letter 11-03-86). It is uncertain if HM 1098 is indeed a *nodulus* or an oddly-shaped roundel; since the seal impression is on the flattened base rather than an edge, it probably belongs in the *nodulus* category.

28 Palaikastro: BSA 84 (1989) forthcoming.

29 F. VANDENABEELE, "La chronologie des documents en linéaire A", *BCH* 109 (1985) 12, suggests that PK 1 cannot be stratigraphically dated; but BSA 9 (1902-1903) 284, states that the tablet was found in the

entirely excavated town with a large house (the so-called 'Palace') : the excavator published one roundel (this, too, most likely of LM I A date) and fourteen LM I B sealings³⁰; in fact, there are only two true sealings; the rest are, again, *noduli*³¹.

This was the positive, now for the negative side. I have drawn up a list of villas and settlements destroyed in LM I B where, in the normal course of events, we would have expected to find at least occasional sealings. The conditions of excavation and preservation at each site were, I suggest, sufficiently good to have allowed the discovery of sealings if they were there. Therefore, their total absence is not due to chance. Not everyone will agree with every name on the list, and I have undoubtedly omitted others, but the general gist, I hope, is clear.

There are seventeen sites : the villas of Amnisos³², Ano Zakro, Arkhanes, Makrygialos, Mitropolis, Nirou Khani, Pyrgos, and Vathypetro³³; and quite probably, too, the eastern villas of Achladia, Manares, Tourtoulis and Zou³⁴; and three towns : Mochlos, Palaikastro, and Pseira. And, of course, the sealing-less palaces at Mallia and Phaistos.

Thus, only six of twenty-three contemporary burnt sites used sealings (and this includes the town of Gournia, with its two sealings). The question which we must address now is : however did the Minoans protect property ? Why did they not use such a *simple* system as sealings which had been introduced in its entirety some 300 years earlier ?

A solution to the puzzle suggests itself when we map the major LM I B burnt destructions (Pl. XVII). Sealings were found at the six sites marked by name. If I am allowed to omit Gournia (an omission which I shall justify in a moment) and if you permit me to group Tylissos and Sklavokampos with the unhappily unburnt black hole of Knossos, it is immediately clear that we have one site each in the north (Knossos), south (Ayia Triada), east (Zakro) and west (Khania). Four such geographically-spread sites can hardly be other than the four administrative centres of LM I B Crete. The palaces at Mallia and Phaistos are apparently no longer administratively operational³⁵, and, I suggest further, that, except for Ayia Triada (which has replaced Phaistos), all the villas and towns were administratively inactive at this time.

Such a sweeping statement needs justification, particularly since it runs contrary to the generally accepted opinion on the widespread use of Linear A accounting practices³⁶.

room's *lower* stratum, on a floor below the plaster floor on which lay vases of the LM I B destruction. PYR 1 is from a LM I B level (A. MORPURGO-DAVIES & G. CADOGAN, "A Linear A Tablet from Pyrgos, Mirtos, Crete", *Kadmos* 10 [1971] 105-109); PYR 2 cannot be dated.

30 H. BOYD-HAWES, *Gournia* (1908) 54-55. The roundel is from House Cf 25, one of the older houses (*op. cit.* 24) on the eastern slope of the hill; Quarters C and D probably went out of use after an LM I A destruction (see S. HOOD, "Traces of the Eruption Outside Thera", in *Thera*, 685-686, and P.P. BETANCOURT, "LM I A Pottery from Priniatikos Pyrgos", in *Thera*, 384).

31 I am most grateful to Professor I. PINI for confirming these *noduli* : three cone-shaped *noduli* from the Palace (BOYD-HAWES [*supra* n. 30] 24 = HM 103); eight triangular prismatic *noduli* from House Fg (BOYD-HAWES [*supra* n. 30] 24 = HM 105, of which only five can now be found in the Heraklion Museum).

32 W.-D. NIEMEIER, "Die Katastrophe von Thera und Späminoische Chronologie", *JdI* 95 (1980) 13-14 = LM I A; S. ALEXIOU, *Μινωικός Πολιτισμός* (1964) 44, and BETANCOURT (*supra* n. 13) 134 = LM I B.

33 NIEMEIER (*supra* n. 32) = LM I A; HOOD (*supra* n. 30) 684-685 = LM I B; note the Marine-style sherds in *Praktika* 1951, 270 (I am grateful to P.A. Mountjoy for this reference).

34 NIEMEIER (*supra* n. 32); following N. PLATON, *Praktika* (1953, 1956, 1959, 1960) = LM I A. I think it likely that the string of villas in the Stomios valley were destroyed at much the same time, but the pottery has never been properly published; indeed no pottery at all has been published from the first two sites. Some of the vases from Tourtoulis and Zou could be LM I B.

35 Also note that there are no Linear A documents in the LM I B destruction deposits at either site. CARINCI (*supra* n. 14) and LA ROSA (*supra* n. 14) suggest that the administrative centre had already moved from Phaistos to Ayia Triada.

36 T.G. PALAIMA, "Preliminary Comparative Textual Evidence for Palatial Control of Economic Activity in Minoan and Mycenaean Crete", in *FMP*, 301-306, on the 11 sites with LA documents as centres of

I take Gournia to prove the rule rather than the exception. One sealing and one *nodulus* — HM 101 and HM 102 (Pl. XVIII)—were found together in the West Court area of the main building (whether small palace or villa). Both were stamped by Taurokathapsia rings, two close 'look-alikes' almost impossible to separate in the rough and tumble of sealing practice, though they are different³⁷. It seems certain that both rings were made in the same workshop and were made intentionally similar in order to assert similar authority.

—Now, the ring which stamped the *nodulus* —HM 101—also stamped three nodules at Ayia Triada and two at Sklavokampos : all impressions have the same nick above the baseline which must have been a fault in the original ring and, thus, all the impressions must have been made by this same ring³⁸. Since the Ayia Triada nodules, at least, are of a clay *foreign* to that site, and since these nodules (as well as those from Sklavokampos) are flat-based document sealings, it seems probable that the ring-owner sent written documents from his own residence to Gournia, Ayia Triada, and Sklavokampos³⁹. Judged by seal iconography and by the clay of the Ayia Triada nodules, the source of that correspondence was Knossos⁴⁰.

—If one accepts this premise, one can hardly divorce the second look-alike ring which stamped the true sealing—HM 102—from a similar Knossian origin. Since *this* ring almost certainly also stamped a sealing at Sklavokampos and perhaps another at Ayia Triada⁴¹, and since the Gournia sealing is also flat-based document sealing, we can reasonably conclude that the *nodulus* and sealed document arrived together, carried by the same messenger from Knossos⁴².

The only other true sealing from Gournia (it, too, a document sealing) came from the Palace and was stamped by a talismanic gem⁴³. Did this sealing also arrive from elsewhere or is it the sole remaining trace of a once-extensive Gournia sealing system? We have no way of knowing, but I much incline to the former viewpoint⁴⁴. With only two sealings from the entire town, even *noduli*, which are really peripheral documents, are better represented.

The proportion of *noduli* at Gournia—six for every one sealing—is indeed remarkable. Taken together with those from Pyrgos and Palaikastro, they testify to the widespread acceptance and use of this form of mini-document even in the absence of the normal sphragistic

intensive regional exploitation; the same as J. BENNET, "Knossos and LM III Crete", in *FMP* 307-312, and *LB/Admin*, 231-233, and Ill. 2. I am only discussing, of course, the evidence of the LM I B destructions which we should not assume is true of the whole of the early Neopalatial period.

37 'Look-alikes' as a Minoan glyptic phenomenon : *SSMC* I, 289-293. The Gournia look-alikes, published as duplicates, were only distinguished with the aid of 10x magnification : J. BETTS, "New Light on Minoan Bureaucracy", *Kadmos* 6 (1967) 16-17, and *Noduli* 10-11, 16.

38 BETTS (*supra* n. 37) 16-17.

39 It is normally extremely difficult to judge the clay of such tiny artifacts but these particular nodules (and a single nodule stamped by AT 123) are of a clay utterly different from the rest of the Ayia Triada sealings. That the nodules travelled, not the ring : *Noduli* 11, 16; *pace* BETTS (*supra* n. 37) 25.

40 Iconography : BETTS (*supra* n. 37) 26-7. At least three other sealings at Ayia Triada could be of Knossian origin : (1) Wa 1852, inscribed *nodulus* with ridged and gabled back (*SSMC* II, 9), twice impressed by AT 82; (2) HM 508, stamped by AT 134 plus an Akkadian cylinder (I. PINI, "Ein orientalischer Rollsiegelabdruck auf der Tonplombe IM Inv. Nr. 508", *Marburger Winckelmann-Programm* [1978] 7-9); (3) HM 516, stamped by AT 117 (the Charioteer) plus AT 110 (charging bull); these ring impressions are also found on document sealings at other sites : AT 110 at SK and Z; AT 117 at SK.

41 BETTS (*supra* n. 37) 17.

42 Cf. an imported *nodulus* and three sealings stamped by the same gem at Zakro : *Noduli* 10, 21.

43 BOYD-HAWES (*supra* n. 30) 54.

44 The extensive excavations of almost the entire town—over 70 houses as well as the Palace—failed to uncover more sealings although the site was very well burnt. Sealings are tiny and have no intrinsic value : one might of course pulp them after use (but semi-fine clay is not a scarce commodity on Crete); rather, they were probably tossed out and left scattered about—on floors, in corners, rubbish heaps and pits so that some of them, surely, if once numerous, ought to have been burnt and preserved for us to find.

use of seals for sealings⁴⁵. If our interpretation of *noduli* as dockets is correct, they are evidence for the use of seals to establish identity, but they are not evidence for an active local bureaucracy.

The only serious evidence for local administration outside the four administrative centres must be the seven Linear A tablets from Arkhanes. But can an Arkhanes bureaucracy really be divorced from the economy of Knossos only 8 kilometers away? Surely, it is more likely that both tablets and scribes were dependent upon Knossos, that this evidence joins the Sklavokampos and Tylissos sealings as documents directed to or from, but, in any case, subsumed within, the administration of Knossos⁴⁶.

This leaves us with the two tablets from Pyrgos. PYR 1, at least, is certainly from an LM I B destruction. Tablets cannot be dismissed out of hand but, in the end, what is the significance of such isolated documents? They prove some degree of literacy at the site, but they do not prove an active bureaucracy. What purely local circumstances would give rise to the writing of one or two tablets? Might they not better be explained, in fact, as on-the-spot notes of a tax-gatherer, or even tablets sent out from an administrative centre, in any case, as at Gournia, documents which possibly originated elsewhere⁴⁷? Local administration in the provinces thus seems not to have been expressed on clay tablets, nor in sealings; in short, even the villas—perhaps, indeed more aptly, they should be called 'country houses'—were not above the level of manageable households, and therefore were unlikely to have been centres of power⁴⁸.

The Third Upheaval

If one accepts that LM I B Crete was already divided into four administrative regions, it will be the less shocking when, after the LM I B destructions, the four are reduced (rather literally) to one: Knossos. Just as the presence or absence of sealings defined the LM I B

45 The relatively large number of *noduli* at provincial sites could be explained if these sites were staging posts between the main administrative centres: official travellers from Knossos to Zakro, for example, would halt at Gournia where the *noduli* would identify them to the local authorities, perhaps entitling them to provisions, fresh pack animals and so forth.

46 Compare the North Palace at Ras Ibn Hani and the Royal Palace at Ugarit, five kilometers away, the former a branch of the latter's administration, "détachée topographiquement d'Ugarit mais restant sous le contrôle immédiat de l'autorité centrale....": P. BORDREUIL, J. LAGARCE, E. LAGARCE, A. BOUNNI, and N. SALIBY, "Les découvertes archéologiques et épigraphiques de Ras Ibn Hani (Syrie) en 1983", *CRAI* (1984) 419, 435.

Arkhanes seems a better candidate than Mallia—pace *LB/Admin*, 243—for the LM III 'second-order center' of *se-to-i-ja* since it must have depended on Knossos in LM I B (and LM II?), at a time when Mallia had no administrative function. Direct royal connections between Knossos and nearby Arkhanes seem more likely, too, than with Mallia (*wa-na-ka-te-ra* linked to *se-to-i-ja* in Le 654 and Le 525).

47 *ko-no-so-de*, 'to Knossos' (C 5753) suggests a tablet written elsewhere: *LB/Admin*, 243. In the Near East, tablets are regularly shipped from one city to another; e.g., wrapped in sealed leather sacks for transportation: BORDREUIL *et al.* (*supra* n. 46) 414, 417. Such tablets were baked before shipment. G. CADOGAN thinks that the firing of PYR 1 "may well have been deliberate" (letter of 15/03/89). While T.G. PALAIMA, "Linear A in the Cyclades", *TUAS* 7 (1982) 17, maintains that the tablets from Kea and Phylakopi were accidentally baked, the excavator of Phylakopi (C. RENFREW, "A Linear A Tablet Fragment from Phylakopi in Melos", *Kadmos* 16 [1977] 114) considers this "a matter of interpretation" for MI 2. The Kea tablet should be looked at anew.

48 We cannot know if villa inhabitants wrote on leather, parchment, or other perishable materials; but it is now fair to assume, with a reasonable degree of certainty, that they did not seal these documents; therefore, any such documents would have been of a trivial or transient nature (on unsealed documents, see E. FIANDRA & P. FERIOLI, "The Use of Clay Sealings in Administrative Functions from the 5th to 1st Millennium BC in the Orient, Nubia, Egypt and the Aegean: Similarities and Differences", elsewhere in this volume).

administrative centres, the concentration of LM III A sealings at Knossos (with but one single exception) defines its bureaucratic monopoly as clearly as does its possession of the only Linear B archives. Zakro disappears; the other two centers, Khania and Ayia Triada, may have been reorganized into 'second-order centers' now dependent on Mycenaean Knossos⁴⁹.

This political upheaval is accompanied by further administrative reorganization, not least in the realm of sealings. The circa 300 sealings from the Knossos destruction deposits have been studied (almost nodule by nodule) in the 1988 *Oxford Journal of Archaeology*, and we need not repeat here so recent an analysis. I should just like to draw the main conclusions from that *OJA* article :

First, the mass return, after almost 400 years, of direct object sealings, that is, sealings pressed directly onto containers (not a renewal of the Near Eastern pommels and pegs, but wickerwork, ropes and sacks). In the large East Wing deposit, for example, 66% of sealings directly sealed containers; the rest were hanging nodules or a bizarre new type which combined hanging and direct sealing⁵⁰.

Our second point is the disappearance of the flat-based document sealings⁵¹. These nodules were a Minoan innovation. They appeared early (at Knossos as early as anywhere) and thereafter are found in every Minoan sealing deposit. Their disappearance marks a real change in sealing practices and implies that the Mycenaeans had no use for those documents so necessary to Minoan administration.

Third, detailed analysis of individual sealing patterns show that, unlike most Minoan deposits, the Knossos sealings favoured the least active seal-owners rather than a resident seal-owning elite (Pl. XIX-XX); this has been interpreted as representing incoming sealings, most probably as part of a tax-based or tributary system rather than internal storeroom administration⁵².

The Knossos sealings thus testify to major changes in sealing practices : of a return to direct container sealings, coupled with the demise of document sealings, as well as underlining a further upheaval in sealing administration : that is, that sealings disappear from everywhere else on the island. But I did mention an exception, a single sealing from Khania. It is one of the bizarre combination sealings, hanging by a string but nonetheless additionally pressed against the container. This type is otherwise only known on Crete from the Knossos destruction deposits so it may be of consequence—and my tiny contribution to the Knossos dating debate—that the Khaniot nodule was found in an almost pure LM III A:1 deposit⁵³.

From our analysis of the Knossos sealings, we have been able to describe a major bureaucratic upheaval and would have been able to do so even in the absence of texts written in

49 Second-order centres : *LB/Admin*. LM II pottery has now been identified at Ayia Triada (P.P. BETANCOURT, "A Great Minoan Triangle : The Changing Character of Phaistos, Hagia Triada and Kommos during the MM I B-LM III Periods", *Scripta Mediterranea* 6 [1985] 42) which supports its having had such a role during this transitional period. *da-wo*, if indeed Ayia Triada (*LB/Admin*, 247), continues to eclipse *pa-i-to* in administrative importance : F 852 records an unparalleled amount of grain (at least 10,000 units) and large quantities of oil at *da-wo*.

50 *SSMC* II, 6-7, Fig. 3. E. FIANDRA reports (personal communication) that such combination nodules are known from Near Eastern deposits where they usually sealed boxes of documents.

51 *SSMC* II, 10.

52 *SSMC* II, 11-14; fig. 7.

53 *SSMC* II, 7 (for LM II A:1 read III A:1) and n. 5. However, there are combination nodules on the mainland at Pylos and Mycenae : J. WEINGARTEN, "Mycenaean Sealings : A Note" (forthcoming). An LM III B (?; not *in situ*) sealed jar stopper from Khania is reported by I. PINI, elsewhere in this volume. Isolated vase closures, though evidence for the protection of property, do not prove the use of sealings within an administrative system.

Mycenaean Greek. The sealing records of Crete preserve a discontinuous tale, with three radical upheavals punctuating the island's administrative history from slightly before 1750 until circa 1370 B.C. :

1. The *first upheaval* was the importation of a foreign sealing system;
2. the *second upheaval*, the discarding of that system, allied to the loss of inscribed, possibly official seals;
3. the *third upheaval*, the destruction of the Minoan system, and the development of a Mycenaean tributary sealing system.

For mute clay artifacts, three radical upheavals is quite a record.

Judith WEINGARTEN

LIST OF ILLUSTRATIONS

- Pl. XVIa : Sealing imprints of pommels and pegs, showing the objects sealed by some Phaistos nodules (after E. FIANDRA, "Ancora a proposito delle cretule di Festòs", *BollArte* 60 [1975] Pl. 53).
- Pl. XVIb : Sealings from Quartier Mu at Mallia (photograph courtesy of J.-Cl. Poursat).
- Pl. XVIc : Crescent sealings from the Hieroglyphic Deposit at Knossos (after *SM* I).
- Pl. XVII : Major LM I B burnt destructions.
- Pl. XVIIIa : Gournia, seal impression on *nodulus*, HM 101 (photograph courtesy of *CMS*).
- Pl. XVIIIb : Gournia, seal impression on document sealing, HM 102 (photograph courtesy of *CMS*).
- Pl. XIX : Intensive pattern of seal use, representing resident seal-owning elite working in internal store-rooms.
- Pl. XX : Non-intensive pattern of seal use, representing incoming sealings attached to containers and/or documents.

Response by Ingo PINI

In her discussion of the development of Minoan sealing systems from the beginning to the end Dr. Weingarten laid special emphasis on the upheavals. In my own paper I have tried to show that a seal use for some kind of economic control most probably started on Crete more or less simultaneously with that on the Greek mainland at Lerna and several other places. But I agree with Weingarten that a stimulus or impulse must have come from abroad, vaguely from somewhere in the East or Southeast. I would suggest that the Cretans (as well as the mainlanders) rather imported the idea of an administrative system, not the system itself. Within a fairly short time they developed it in their own way as they did with the seal shapes and seal motifs which show to a small extent influence from Egypt/Palestine, but were predominantly developed independently on Crete itself. So the evidence from the Old Palace at Phaistos, from Monastiraki, Knossos and Mallia in my opinion already provides the second, better documented stage of the development. All these groups of sealings more or less belong to the same chronological horizon. The really new elements are the "flat-based document sealings" or the "package-sealings" as I call them and the roundels, beginning in MM II/III, widely used in LM I and no longer known after that phase.

In her discussion of the evidence from the various LM I sites she rightly states that there are no sealings found in typical storerooms. Sealings were kept variously in the palace (Kato Zakros) in some kind of official rooms (Chania/Katré street), in single houses and/or villas (Chania/Aikaterini Square; Sklavokambos, Kato Zakros) and in a shrine [?] (Myrtos/Pyrgos). She also mentioned a few sealings from Gournia, Myrtos/Pyrgos, Tyliisos and now from Palaikastro. On the other hand she lists a number of well excavated LM I sites with no sealings at all. She arrives at the conclusion that in LM I Crete there were four administrative centres: Khania in the West, Knossos in the North of central Crete, Ayia Triada in the South, and Kato Zakros in the far East of the island. This seems a bit too logical, too modern to me, especially since our knowledge of LM I Crete is far from being complete. At least the roundels from Myrtos/Pyrgos¹ and Gournia², if not also the noduli from various sites, seem to point to some kind of administrative use as well. I do not consider the nonexisting evidence at places like Mallia as proof against active local bureaucracy. We should not forget that the almost completely excavated acropolis of Mycenae yielded only one sealing, a stray find from the so-called rhyton well and from the whole acropolis of Tiryns, also completely excavated, were found no more than two stoppers. Our own work as excavators may be very systematic. However, this does not necessarily lead to the conclusion that the evidence from such an excavation provides a complete picture of the whole site in ancient times.

1 G. CADOGAN, "A probable Shrine in the Country House at Pyrgos", in R. HÄGG and N. MARINATOS (eds.), *Sanctuaries and Cults in the Aegean Bronze Age* (1981) 171, Fig. 1. The piece has been studied by me for the Corpus.

2 B.E. WILLIAMS in H.B. HAWES *et al.*, *Gournia, Vasiliki and other Prehistoric Sites on the Isthmus of Hierapetra* (1908) 55, Fig. 31.

The third upheaval is provided by the evidence from Knossos : after all we know of LM III on Crete one will agree with Weingarten that Knossos became the main administrative center, but perhaps not the only one. At least Khania seems to have been active as well. The question whether Knossos shows the "Mycenaean tributary system" certainly will need further discussion. The date of the Knossos sealings is of importance here. If we accept at the moment the LM III A date of the sealings and the domination of Knossos by the Mycenaeans, then we are confronted with the strange fact that the Mycenaeans introduced the administrative use of seals on the mainland more than 100 years after they had done it at Knossos. The types of sealings are more or less the same in both areas. Although none of the motifs from the LM sealings at Knossos supports a late date favoured by Erik Hallager, Wolf Niemeier and others, we may assume that the administrators at Knossos, like their colleagues from the mainland, used exclusively earlier rings and seals. So the use of seals for administrative purposes may have ended at Knossos as on the mainland simultaneously about 1200 B.C.

Discussion

Pini :

I disagree with your treatment of the Gournia "look-alikes". I think that there are "look-alike" seals and seals which differ only slightly in details. This is known from the Near East and from Egypt as well.

Weingarten :

Perhaps I was being less than precise in using the term "look-alike". The seal designs are very similar. John Betts made this point very well : a contemporary scholar using ten-power magnification, after some difficulty, did see differences. I think we must consider sealing practice. The Minoans were particularly sloppy in impressing their seals. The impressions from "look-alike" seals could not be distinguished one from the other. They would be the same for purposes of administrative or official identification.

Pini :

If we adopt this point of view, we could take hundreds of seals and put them together as "look-alikes".

Palaima :

I agree with Weingarten. I can forge my wife's signature reasonably well, and she can forge mine. Only trained palaeographers, like Olivier, Bennett and myself, could distinguish the real from the forged signatures. In routine cases requiring signatures (bank deposit slips, the endorsement of small checks, signing of unimportant letters), the forged signatures are always accepted. Similarly these sealings look more alike to me than unlike. But it certainly depends upon the people who were scrutinizing the sealings in the rare circumstances in which the identification of the impressions would have been subject to dispute. Did they analyze the smallest details ?

Blasingham :

What is the present state of preservation of these sealings ? How badly have they been eroded since they were originally deposited ?

Pini :

Those from Gournia are well preserved.

S. Smith :

For the Egyptian seals, Weingarten pointed out that quite a few have very similar motifs.

It has been suggested that these might represent a family or clan group that would have had a number of different seals with the same or related motifs.

Weingarten :

Some Egyptian seals can only be distinguished by their size. In normal Aegean sealing practice, impressions from "look-alikes" would have been virtually identical unless someone was there with actual models to check against the impressions.

Magness-Gardiner :

But how exacting do you think the persons involved with sealings were ? Did they discriminate by subject or by particular versions of specific subjects ?

Pini :

I think that only very few people who were extremely familiar with a particular seal or ring could have determined whether it had been used to make a particular impression. Sometimes there are only slight differences, or the motifs are not well preserved. An individual could not have been identified by means of the sealing.

Magness-Gardiner :

It is a question that needs to be addressed, because we probably spend a lot more time looking at a particular sealing than the Minoans ever did when they were removing it from a particular commodity.

Palaima :

I think that there are some other major issues raised by Weingarten's paper that we should discuss. For me it is a radical idea that Crete had only four administrative centers. Would this work ? If so, how ? There is a great amount of rich agricultural territory between Knossos and Zakro, not to mention natural sub-regions. I wonder if Gournia might not have controlled some of this. Olivier may want to comment on a second point. Is it possible that the Minoan sealing system is imported from the Near East at a time when a writing system is developed that has virtually nothing to do with the Near East ? Why this paradox ? Of course, Claude Baurain is now suggesting that non-surviving linear precursors to the later streamlined cuneiform and "alphabetic" scripts of Syria-Palestine might have been the inspiration for Minoan writing. This seems to me at first glance to be an argument from deafening silence, but it would at least provide the Minoans with a source for the *idea* of writing similar to that for the *idea* of sealing.

Pini :

I think the Minoans did not take over the sealing system directly. They only got the idea, and they created something of their own on the island. Weingarten's first upheaval shows immediately new types which are not Near Eastern. During the transitional phase between EM and MM, the Minoans imported seals from Egypt, but these did not seriously affect the development of Minoan glyptic art. The Egyptian influence was restricted to a small group of seals. The Minoans immediately developed their own rich repertory of typically Minoan seal shapes and seal motifs which have nothing to do with the Near East. The overall system was also a Minoan creation.

Weingarten :

The Phaistos system has been brilliantly published by Fiandra. Is it possible to dispose entirely of her evidence for the pommels of Egyptian shape and other features which suggest very close connections with the Near East ?

Pini :

Of course, the Minoans may have used such borrowed shapes, but I do not think that they took over a ready and complete system from the Near East. They brought some ideas back, and there was an exchange between Crete and the Near East, but not a wholesale importation of a system from somewhere in the Near East directly to Crete.

Schmandt-Besserat :

From my own experience with token systems in the Near East, I find it difficult to imagine a culture borrowing wholesale a system of administration from a neighboring culture. Except in the case of invasions or conquests, such wholesale borrowing does not seem to have any parallels.

Palaima :

I wonder how far one would want to use Linear A and Linear B administration as parallels. Of course, much would depend on the date for the development of Linear B, which I place contemporary with or after the Mycenaean conquest of Crete. The Mycenaean system might thus fall into Schmandt-Besserat's "invasion" category.

Weingarten :

I would stress that the system is the same down to the smallest detail. I suspect that the Minoans knew for a long time that such things existed in the Near East, but never had the need to adopt them. When they do, it is impossible to tell the difference between Near Eastern and Minoan methods for 97% or 98% of the objects sealed. The Minoan system could be an independent creation. But I think that a relatively provincial society like Middle Minoan Crete through its contacts with the Near East could and did acquire an entire system. I cannot prove it.

Schmandt-Besserat :

Is there a parallel ?

Weingarten :

I think Syria is a good parallel.

Schmandt-Besserat :

But that was also a case of intrusion by another culture.

Kopcke :

Perhaps Weingarten might be willing to link the introduction of hieroglyphics and the use of seals in the, strictly defined, administrative sense. Both these elements, as far as I am concerned, seem to show Near Eastern influence. Many of the hieroglyphic signs have Egyptian, Anatolian or Syrian parallels. For example, Mellink suggests that the "pitcher" comes from Anatolia. The sign for "wine" may come from Egypt. The "goat" very closely resembles similar depictions at Ebla. These elements apparently would support what Schmandt-Besserat suggested : that the pictographic script came about as an independent amalgamation or invention on the basis of certain stimuli and not as a direct borrowing. Thus I find that this evidence somehow reinforces her critique.

Wiener :

There are many stages between independent invention and the total borrowing of a system, and there is a rich literature about what is normally called "stimulus diffusion". It is very common for people to pick up an idea and then adapt it to their own uses, whether putting a clay sealing onto pegs or many other comparably simple practices. One could cite as an example of "stimulus diffusion" the spread of pottery technology. The idea of firing clay and making pottery was transmitted from one culture to the next when cultures without this technology saw the products of the new technology : fired clay vessels. They neither completely took over the system nor did they invent making pots independently.

It seems to me that Weingarten has given us a startling new interpretation of the organization of life in Crete in LM I B. Her interpretation would fit with new views of the whole period. It used to be the canonical view, at least at the British School, that LM I B was a brief period lasting for one generation, i.e., thirty years in all the standard chronologies. But at Palaikastro last year, for example, it became very clear that we have two completely different levels in LM I B, in one place separated by a floor deposit. From the earlier level we find a lot of conical cups. The later level looks like a typical LM I B destruction level. It has been the view that I B at Kea is a long period. It is also the view of Coldstream at Kastri on Kythera that

I B was quite a long period. We have to take this longer chronology and also the evidence that I B may have been a rather violent period into consideration when evaluating Weingarten's interpretation of administrative developments.

Aruz :

I think some of the elements of this Near Eastern administrative use of sealings may have come in with Lerna because a great number of the Lerna sealings could be door sealings and have many of the same shapes that we find at Phaistos.

Weingarten :

We have the same system at Lerna, but not the Egyptian type of pommel.

Aruz :

No, but a number of Near Eastern features that are found, for instance, at Arslantepe-Malatya, are also already present at Lerna and could have been introduced into the Aegean earlier. Returning to LM I Crete, I want to ask how the relationship between Phaistos and Hagia Triada in that period is to be interpreted?

Weingarten :

Two very convincing papers by the current excavators at these sites indicate that the shift from Phaistos as administrative center to Hagia Triada had to have taken place quite a bit earlier than previously assumed. For some reason, when the Minoans started rebuilding Phaistos after the MM II B destruction, they came to a dead halt and then built up, and shifted focus to, Hagia Triada, linking these two sites together. I think that this makes sense, given the evidence we see later.

Hallager :

A comment on Weingarten's second upheaval : the sealing of objects directly through nodules. I wondered whether the hanging nodules were really used to seal objects. By studying their find-spots, we observe that they are almost always associated with tablets and in several cases with roundels in archival contexts. If they were used to seal objects, why have we not found any hanging nodules outside of archival contexts.

Weingarten :

I would not interpret House A at Zakro as an archival context. It has one roundel and one tablet compared to 525 sealings. I do not know if anyone can tell if the hanging nodules sealed such objects as I have been describing. The point is that they hung from very fine cords. We have no way of knowing what they were hanging from. My suggestion is that they cannot have been very large objects or they would have needed larger cords.

Palaima :

The House A material seems to be an administrative deposit, according to Linear B terminology. In the Northeast Workshop at Pylos, one finds many sealings and only a few longer tablets. This is somewhat comparable to House A. I do not consider the Northeast Workshop material an archives, although Imre Tegyey would like to see a separate administration in this area.

Hallager :

Weingarten argues from the only relatively certain context we have for "hanging nodules" (at Hagia Triada) that they were probably sealing small objects, such as luxury goods on the upper floor of the villa above Room 11. I am worried about this interpretation because of the missing archaeological evidence to support the theory. In spite of the fact that all the sites where "hanging nodules" have been found were destroyed by fire, I do not know of a single nodule found for which we can argue that it was discovered *in situ* close to what it might have sealed. It also strikes me as improbable that there was only *one* room at the entire site of Hagia Triada suitable for storing luxury goods and that this room coincidentally was situated right above or next to an archives room! Moreover, when the hanging nodules have been found in definite contexts, they have always turned up together with other evidence for administrative writing. I

would therefore rather interpret the "hanging nodules" as nodules sealing texts, i.e., rolls of papyrus or parchment, in a manner well documented in the Near East (cf. Fiandra in this volume). In my opinion, this interpretation of the "hanging nodules" would not conflict with that of the flatbased nodules. There is good evidence to conclude that the flatbased nodules sealed some kind of documents. Perhaps the two different classes of sealings were used for different types of documents. In any event, I do not think that there is anything in the actual sealing procedure which speaks decisively in favor of one solution or the other.

Concerning direct sealings connected with strings (Weingarten's 3rd upheaval), I should mention that such a sealing was discovered at the Greek-Swedish Excavations at Khania in 1987 in a fairly clear LM III B context ¹ during the excavation of a building which seems to have been destroyed by fire by the end of LM III B:1 ². It was during the excavation of the same building that we found the clay stopper with seal impressions ³ for which Pini has proposed a late date on the basis of stylistic analysis.

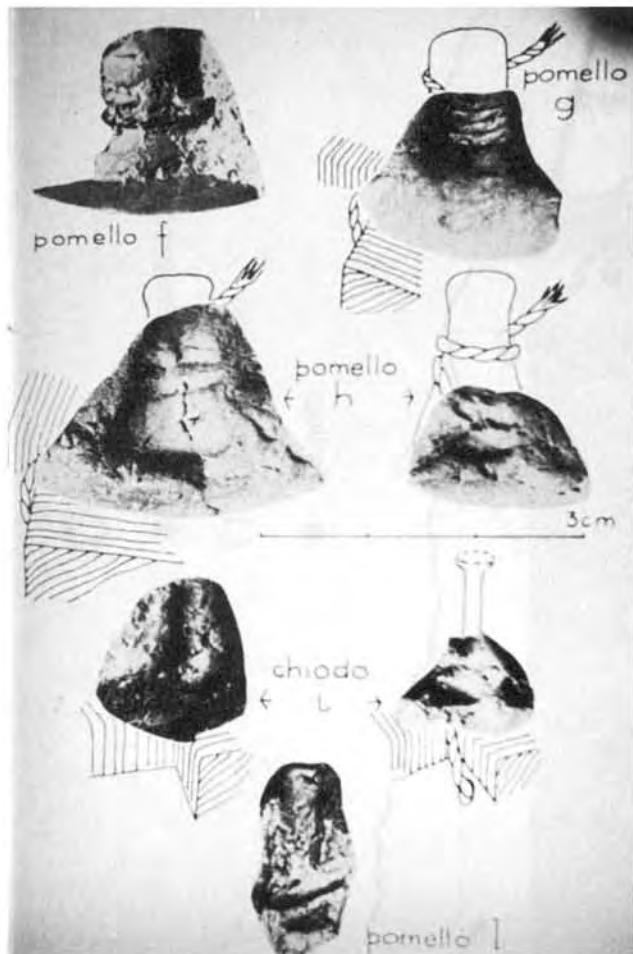
Weingarten :

I agree that the evidence is quite hard to interpret. I have no objection to these nodules hanging from almost anything. If they are hanging from sacks, they must be rather small sacks, given the almost threadlike fineness of the cords which are in fact knotted within the sealings. It is a totally negative situation, I agree.

Pini :

I think we must distinguish between the thickness of the strings from the parcels which are extremely fine in almost all cases and the thickness of the strings of the "hanging nodules" which are much thicker normally and could have been attached to some larger object.

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- 1 Mentioned in E. HALLAGER and Y. TZEDAKIS, "The Greek-Swedish Excavations at Kastelli, Khania 1987", AAA (forthcoming).
 - 2 See E. HALLAGER, "The Greek-Swedish Excavations at Khania", in *Proceedings of the Fifth International Cretological Congress at Hagios Nikolaos 1981* (Heraklion 1986) 150.
 - 3 See E. HALLAGER, "Sealing without Seals", in *The Prehistoric Aegean and its Relations to Adjacent Areas* (forthcoming). The stopper has museum number KH 1564.



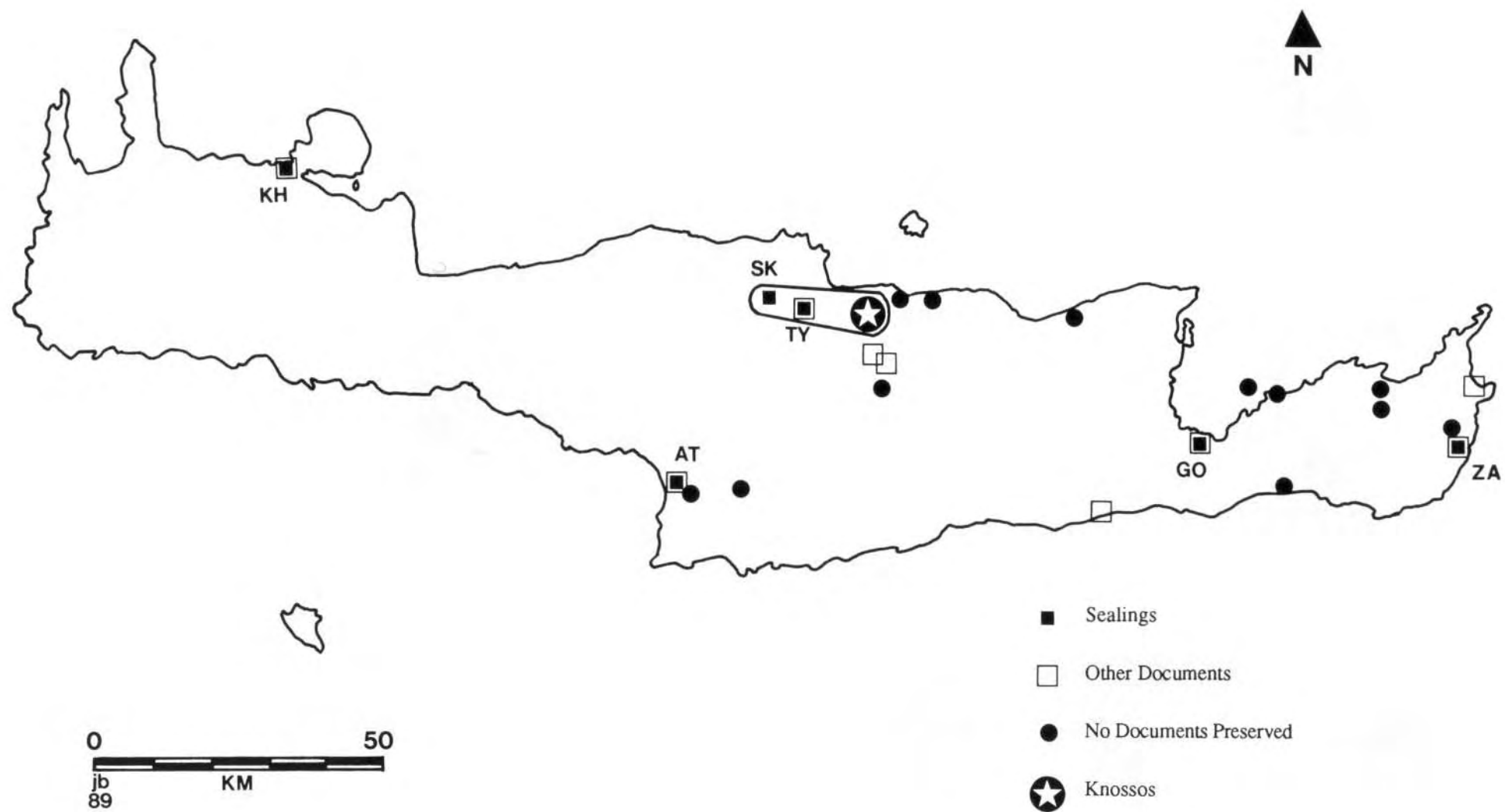
a



b



c

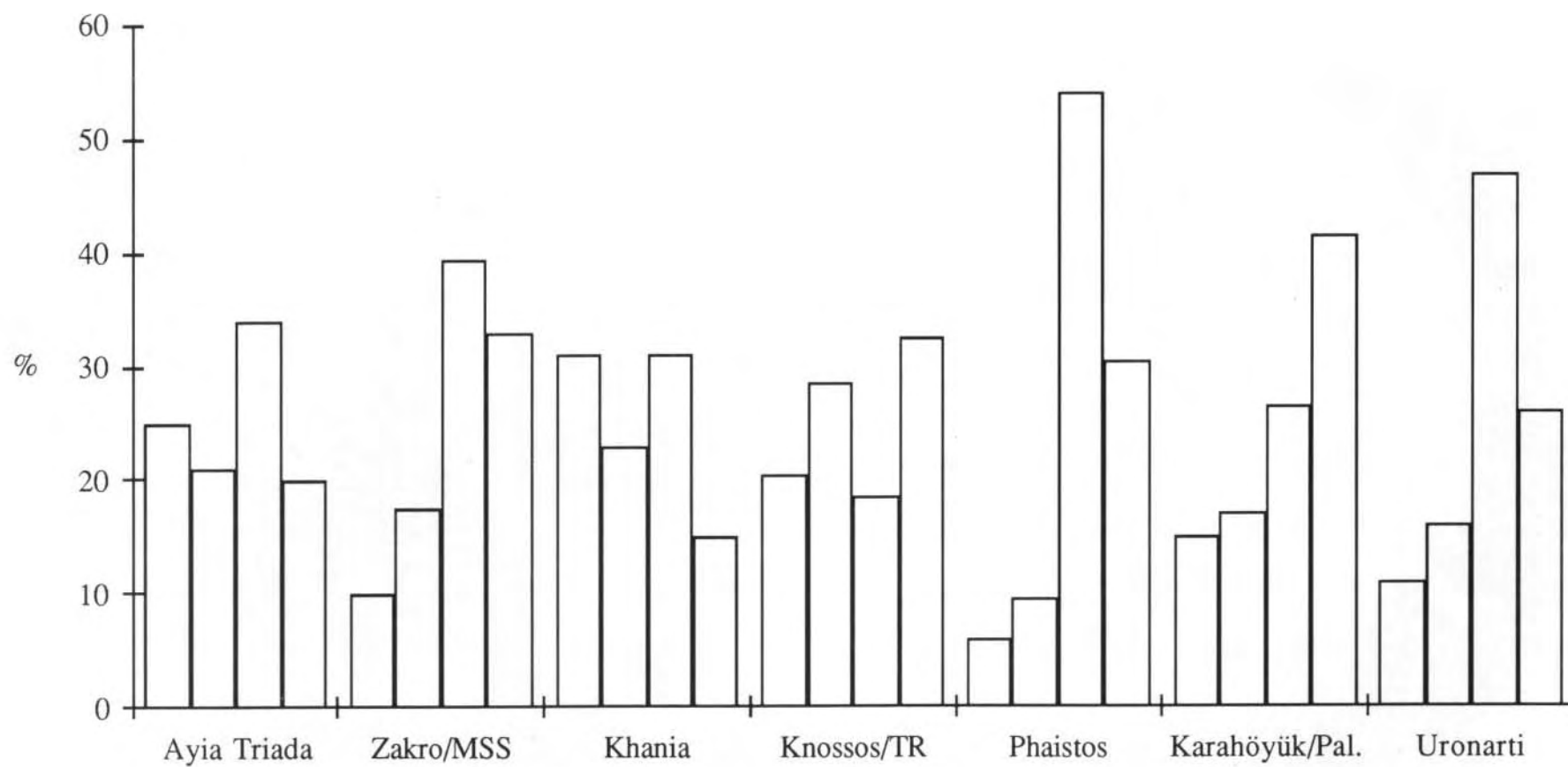




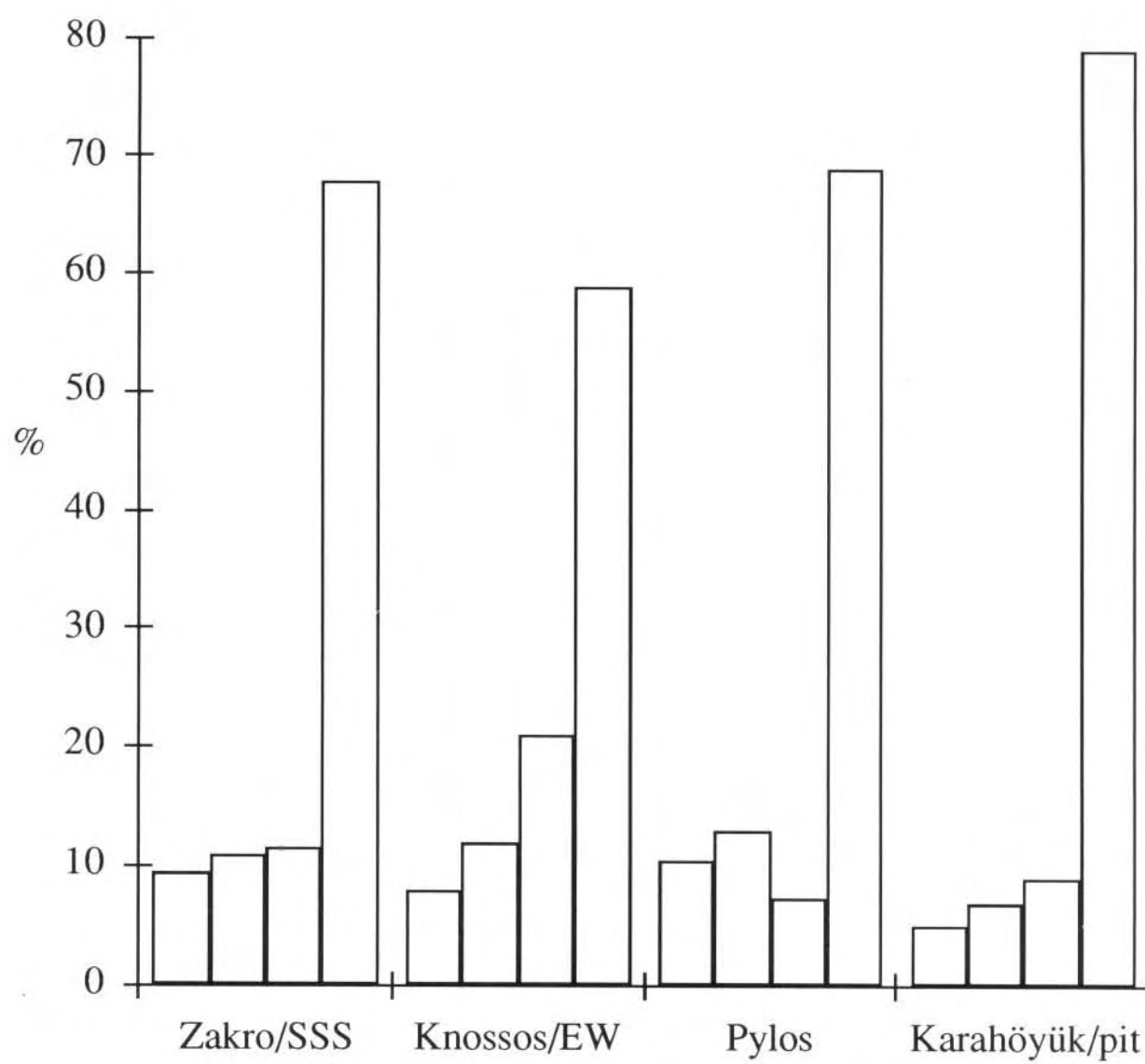
a



b



Columns from left to right :
 sealing activity of top seal-owner, top three seal-owners, next most active seal-owners, least active seal-owners



Columns from left to right :
 sealing activity of top seal-owner, top three seal-owners, next most active seal-owners, least active seal-owners