Jörg Weilhartner • Florian Ruppenstein (eds)
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Abbreviations

The abbreviations used in this volume for periodicals and series are those recommended by the German Archaeological institute (*Deutsches Archäologisches Institut*): http://www.dainst.org/richtlinien.

Additionally, the following abbreviation is used:

BCILL Bibliothèque des cahiers de l'Institut de Linguistique de Louvain

Mycenaean Administrative Sealing Practice: A World of its Own?*

Erik Hallager

Abstract: In 1989 Judith Weingarten presented at the international conference in Austin *Aegean Seals, Sealings and Administration* a paper ›Three Upheavals in Minoan Sealing Administration: Evidence for Radical Change‹. In that paper she argues for »the destruction of the Minoan System, and the development of a Mycenaean tributary sealing system«. Some scholars maintain a continuity in the administrative sealing systems from the Minoan to the Mycenaean period, but after my studies of the entire corpus of Minoan and Mycenaean sealings I can only conclude that Weingarten was right. The Minoan and Mycenaean sealing systems represent two different worlds. This paper presents the evidence for the two sealing systems and points out that there are so many similarities between the Mycenaean and the Cretan hieroglyphic sealing systems that they are probably related.

Among the topics addressed at the symposium ›Tradition and Innovation in the Mycenaean Palatial Polities‹ was: »Is the Mycenaean administrative practice a widely unchanged continuation of the Minoan model or rather a creative adoption with many new and different elements?«. When it comes to the sealing systems, it is argued here that sealing practices within the Linear B administration were profoundly different to those of the LM IB Linear A administration[1]. The Linear A and Linear B people may have recorded similar kinds of economic activities in their tablets, but they had different requirements for the use of seals. To understand that, it is necessary to present briefly the three sealing systems in the Aegean: the Hieroglyphic, the Linear A and the Linear B.

The oldest system is that of the Hieroglyphic sealed documents, the knowledge of which was greatly extended with the discovery of the archive at Petras[2]. The sealed documents from this administration (Fig. 1) consist of roundels (which in all probability functioned as receipts)[3]; *noduli* (like the roundels not fastened to anything; they possibly functioned as dockets)[4]; crescents, triangular in profile, with a knotted string running through the long axis, and usually provided with both an inscription and seal impression[5]; combination nodules, which were fastened to an object and kept in place with a string inside; irregular nodules, (so far found only at Petras), i.e. lumps of clay that have been casually attached to a string or an object with a string; and flat-based nodules. The flat-based nodules, so far known only from the Hieroglyphic Deposit at Knossos, are problematic: Ingo Pini has argued on the stylistic grounds of their seal impressions that they do not belong in the Hieroglyphic Deposit[6]. I have a feeling that he is right, but it cannot be definitely proven. Finally we have different kinds of direct sealings that had been attached to objects, sometimes provided with a string[7].

* I want to thank the organising committee for inviting me to this symposium. I wish to express my gratitude to Judith Weingarten for correcting the English text.

1 First argued by Weingarten 1990, 112–114.

2 Tsipopoulou – Hallager 2010.

3 Hallager 1996.

4 Weingarten 1986, 18; Hallager 1996, 130–133.

5 On the crescents, see Karnava 2000, 116–123.

6 Pini 1990, 41. 43.

7 On the irregular nodules, combination nodules, flat-based nodules and direct sealings, see Tsipopoulou – Hallager 2010, 184–192 with further references.

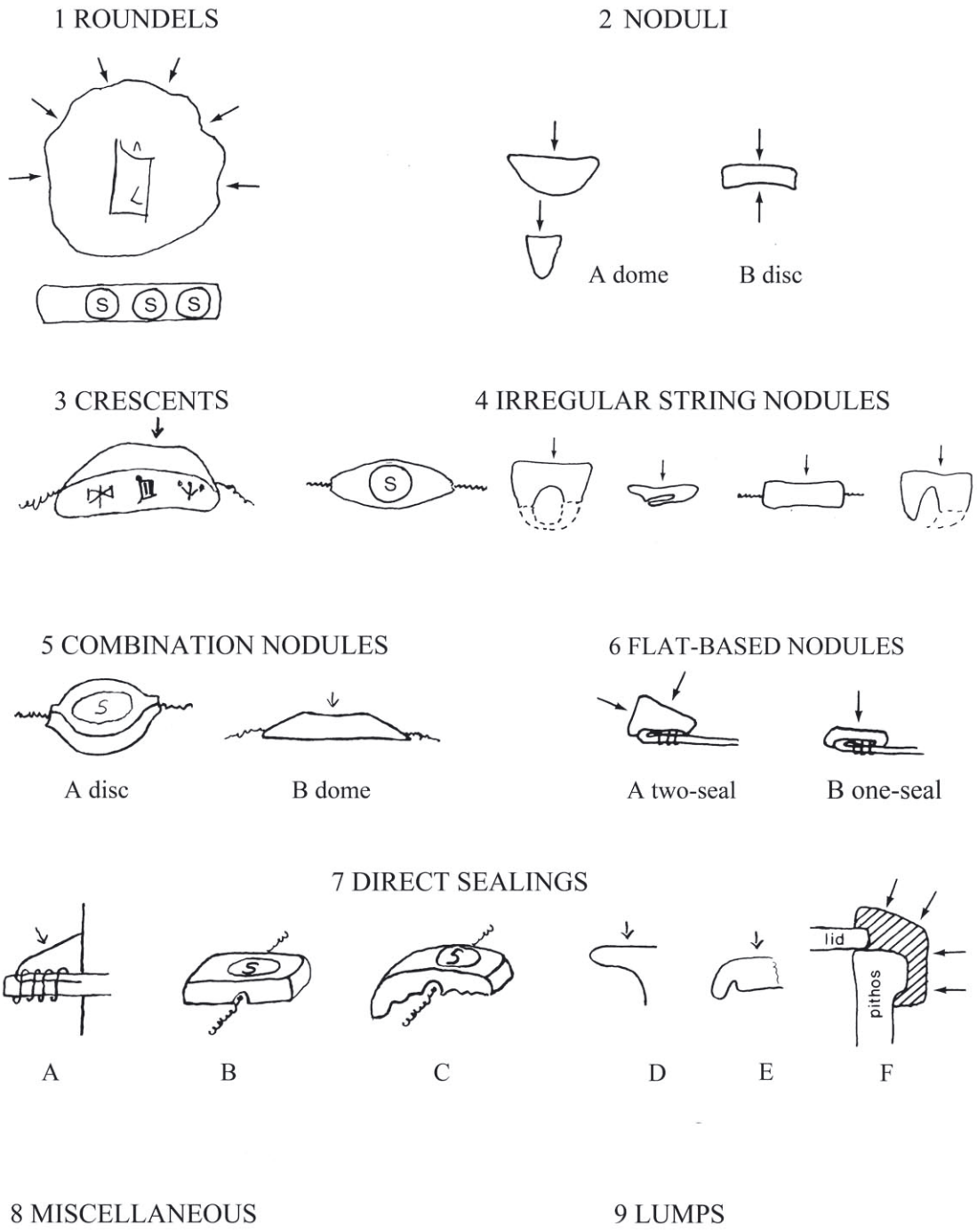

Fig. 1: The Hieroglyphic sealed documents (courtesy of author)

Concerning the contexts for Hieroglyphic administrative documents we have to disregard those from the palaces at Knossos and Malia, since they were found out of context as levelling deposits[8]. The two deposits where the documents were found *in situ*, Petras and Quartier Mu,

[8] For Malia: e.g. Poursat 1990, 55. See also Hallager 1996, 58–61. For Knossos: Hallager 1996, 57 f., with further references.

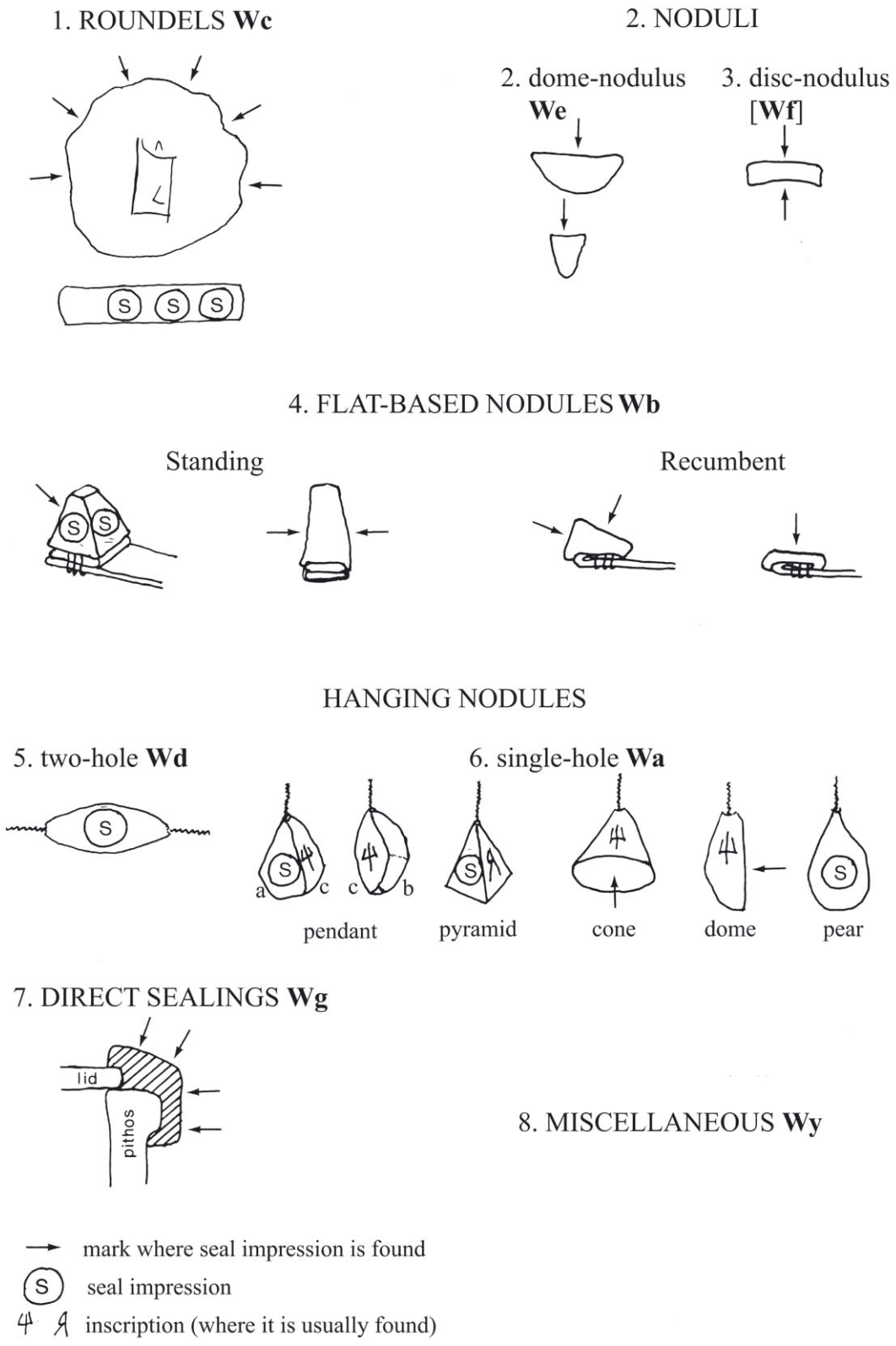

Fig. 2: The Linear A sealed documents (courtesy of author)

are quite illuminating. In Quartier Mu, the documents are scattered all over the buildings often in store rooms and/or work rooms[9] while at Petras they were found in an archive[10]. At Malia, the documents were produced or brought from somewhere else before they were collected and taken to the archive for further treatment – which is the situation reflected in the Petras material.

Fig. 3: Reverse of flat-based nodules from Khania (courtesy of author)

For the Linear A sealed documents (Fig. 2)[11], we shall concentrate on the LM I period, since the early Neopalatial period is a time of transition and there were still a few ›hangovers‹ from the Hieroglyphic administration[12]. The roundel and the *noduli* have already been presented. The flat-based nodule (or parcel nodule, the term preferred by the CMS), is the document which proves that the Linear A administrators also used parchment or leather as a writing material[13]. Those pieces of parchment were usually rather small, although larger pieces may also have been used. A piece of A5-size paper folded and wound up with a piece of string gives the same impression as those found on some of the Hagia Triada flat-based nodules[14]. The procedure for creating such a nodule was to fold the parchment, wind a thin string around it and add a small piece of clay into which the string was also wound. Thereafter the surface of the clay was polished and stamped with the seal[15]. This procedure displays a characteristic reverse on such nodules (Fig. 3). The flat-based nodules exist in two main types: recumbent with one or two seal impressions and standing with two or three seal impressions[16]. The hanging nodules are the most frequent in the Linear A administration. The two-hole hanging nodules are rather scarce[17] while the single-hole nodules are significant. A knot was formed at the end of a string and a piece of clay packed around it, after which the nodule was given one of four specific shapes before it was inscribed and sealed. The shapes are the pendant, the pyramid, the cone and the dome. The pear-shaped nodules belong with the early Neopalatial phase. There is no agreement as to what these latter nodules were used for, but there are indications that they might have been fastened to documents of a juridical nature[18]. At least there are parallels with both the Old and the New Hittite kingdom that single-hole nodules were attached to legal documents[19].

Concerning the Linear A sealed documents it is important to notice that the roundels, the flat-based nodules and the single-hole hanging nodules comprise more than 95% of the entire corpus of LM I sealings.

The archaeological contexts of the Linear A sealed documents[20] display a very clear pattern: they are always found clustered together wherever they were found – presumably in archives. At Hagia Triada the more than a thousand nodules had been stored in a room above the West Wing.

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9 Poursat 1990, pl. 2.
10 Tsipopoulou – Hallager 2010.
11 The section on the Linear A documents is based on Hallager 1996.
12 Hallager 2010.
13 Weingarten 1983. See Pini 1983, 559–563, esp. n. 16 with references to investigations carried out at the Deutsches Ledermuseum in Offenbach and at the Istituto delle Pelle in Rome.
14 Illustrated in Hallager 1996, 141 fig. 53.
15 E.g. in Hallager 1996, 135.
16 A total of 708 flat-based nodules from nine Cretan localities are known. Most of them (492) were found at Zakros.
17 74 examples are known which comprise 7% of the entire corpus of 1067 hanging nodules.
18 Hallager 1996, 237. See also Hallager 2010, 210–212.
19 Old Kingdom: Marazzi 2000, 79–102. New Kingdom: Herbordt 2010.
20 On the contexts see Hallager 1996, 39–77.

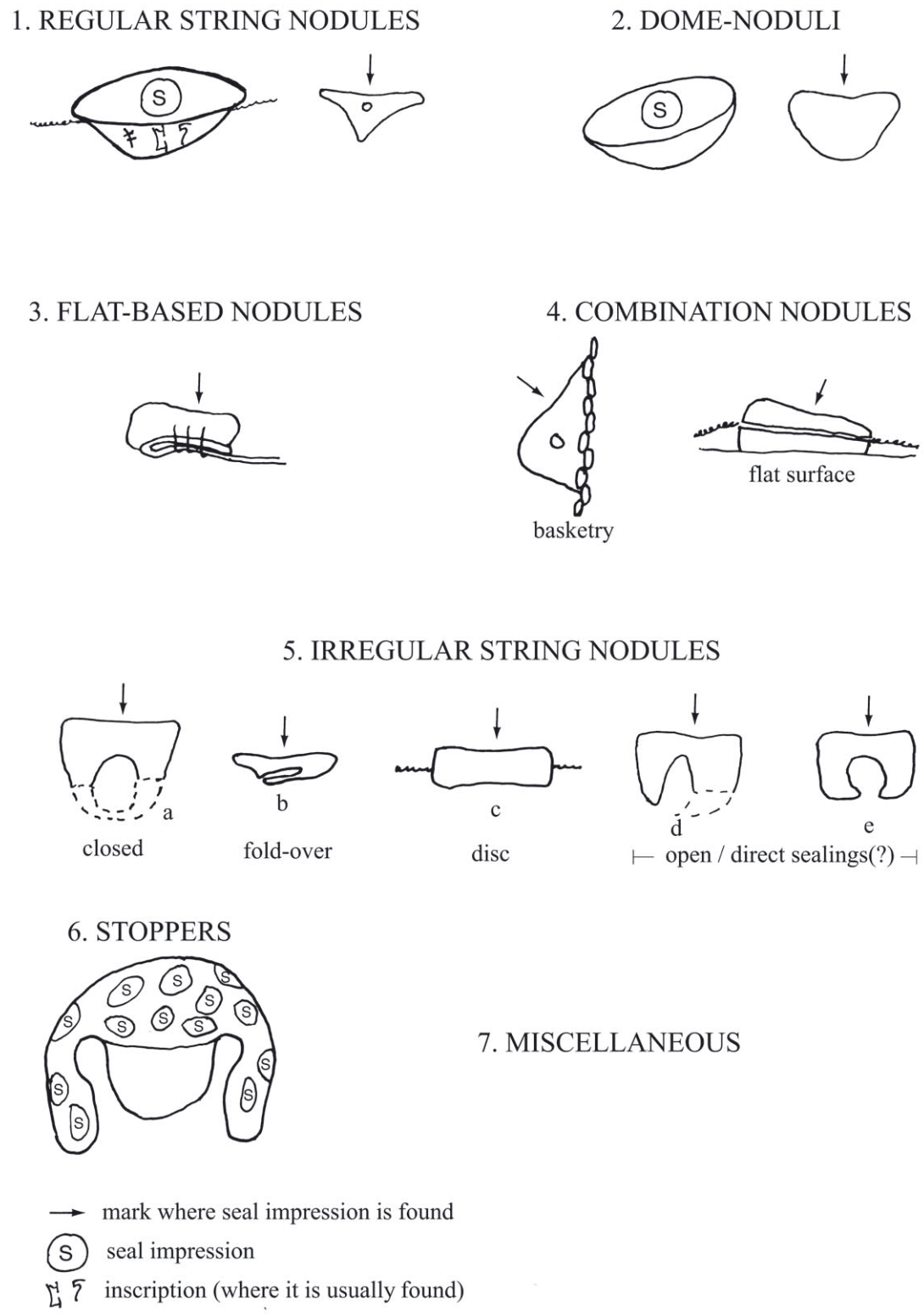

Fig. 4: The Linear B sealed documents (courtesy of author)

At Khania the documents were, except for a few stray pieces, found in the Katre excavation. At Pyrgos the small collection had been stored above Room 12, and at Tylissos the documents were found in a small storeroom η in Villa A. At Knossos the Linear A sealed documents were found in the East Temple Repositories and at Zakro in two areas: the well-known collection excavated by Hogarth in House A[21], and a collection from the West Wing of the palace. That the latter group once existed we know from Nicholas Platon, who could unfortunately also inform us that they – together with many Linear A tablets – had decomposed[22].

Among the Linear B sealed documents (Fig. 4), the dome-*noduli* continued in use from the previous periods – but they are few in number. The best known Linear B sealed documents, which I prefer to call the regular string nodules (or just regular nodules), are usually found intact, and are the only sealed documents which are also inscribed. They are surprisingly uniform within Linear B administration regardless of find spot and chronology[23]: X-ray photographs by Walter Müller at the CMS have shown that the string going through the nodule has a knot preventing it from sliding[24]. This kind of nodule is therefore fit for travelling and this is, in fact, what is suggested for the regular nodules found at Thebes, Pylos and Knossos. They seem to have followed goods from the dependencies around the palace as argued by Piteros, Olivier and Melena[25]. This also means that when regular nodules are found they might well be nodules prepared in one of the dependencies before being sent to the centre. Such could be the case, for example, with the regular nodules found at Midea[26] and/or the single uninscribed example discovered at Quartier Nu at Malia[27]. The flat-based nodules are problematic in the Linear B administration. In the entire corpus of more than a thousand nodules there exist only five, all from the Room of the Chariot Tablets at Knossos[28]. They display the same main characteristics as the Minoan ones except that they are not folded so tidily and they are bound by a much thicker string than the Minoan ones. I shall not try to explain their presence here[29], but only state that they are alien to the Linear B repertoire. Combination nodules[30], however, are found in the palaces at Knossos, Pylos, Mycenae and Thebes, and two types exist: those that have been pressed against basketry, and those pressed against a flat surface. These nodules probably sealed containers of some sort. The irregular nodules are the most common in the Linear B sealing system. They represent 56% of all recognisable types and like the combination nodules are only found in the palaces at Knossos, Pylos, Thebes and Mycenae. They exist in different variations. Some are fractured on both sides of the object they were fastened to (Fig. 5 a), while others are fractured on only one side of the object to which they were fastened – recalling the idea of direct sealings (Fig. 5 b). A few were folded over a flat string (Fig. 5 c)[31].The important thing about the irregular nodules is that, with very few exceptions, they are always fractured. This probably means that they were deliberately broken off the objects to which

[21] Hogarth 1902.
[22] N. Platon in Platon – Brice 1975, 27.
[23] Hallager 2005a, 251 f.
[24] Pini 1997, pls. 37. 38.
[25] Piteros et al. 1990. For Pylos: e.g. Shelmerdine – Bennet 1995, 127. See also Killen (1996, 78 f.) who argues that information given on regular nodules coming from outside the palace at Knossos is transferred unmodified to Linear B tablets.
[26] For the nodules: Olivier 1999, 434 (MI Wv 1); 2009, 195 f. (MI Wv 2–5); Del Freo 2008, 217 (MI Wv 6). See also CMS V Suppl. 3, nos. 236–240. Also Flouda 2010, 63 n. 12 suggests that »travelling bureaucrats representing the palace at Mycenae« might have been at work at Midea.
[27] Driessen – Farnoux 1994, 54 pl. 4, 3; CMS II 6, 194 f. and no. 211.
[28] HMs 110. 111. 253. 1243. 1650. Cf. Müller 2002, 43 pl. 11; Hallager 2005a, 252 thinks that there might have been as many as seven in that he adds HMs 1621 and 1546.
[29] They are used by Driessen 1990, 63–65 as an argument for an early date of the Linear B documents from the Room of the Chariot Tablets; *contra* Pini in CMS II 8, 8 f. See also Hallager 2005a, 252.
[30] Weingarten 1988, 6 f.
[31] What has been named a »fold-over nodule«. Cf. Hallager 2005b.

Fig. 5 a: AM 38.1014b showing fractures at both sides of a cord; b: HMs 133 showing only one fracture; c: HMs 256/6 folded over a flat string. Scale 1:1 (courtesy of author)

they had been fastened[32]. Sealed clay stoppers are the most widespread sealed object: usually used to seal stirrup jars, they were packed around the spout and then stamped all over[33].

The contexts of the Linear B sealed documents are totally different from those seen in the Minoan period in that they occur all over the site – mainly in workshops and storerooms – while only a few are found in archives as at Knossos[34] and Pylos[35], the two sites with the largest quantities of sealings. At Mycenae and Thebes too the sealings are spread across the site.

To sum up the Linear B sealings and their distribution, it will be noted that, with the exception of the clay stoppers and the regular nodules (for which there might be a natural explanation, see above), the sealings are found in the palaces, with those from Knossos far outnumbering the others[36]. All together 1,160 sealed documents are known from the Linear B administration. When the distribution map of Linear B sealed documents is compared with that of the Linear A sealed documents, a difference between the two systems springs to the eye. In the Linear B system the sealed documents – with the two exceptions mentioned above – are found only in the palaces. This contrasts with the Linear A system where sealed documents were found all over the island and not only in palaces or palatial buildings[37]. In this connection it is worth posing the question: what constitutes a Mycenaean palace in an administrative sense? In my opinion, it is necessary for the site to have both written records in Linear B and also sealings/nodules without which the administrators would be lost. It may therefore be questioned whether, for example, Tiryns and Khania can on present evidence be considered palaces in the administrative sense[38].

Another major difference between Linear A and Linear B administration is how often a seal was used. This may be demonstrated by examples from Hagia Triada and Knossos showing seals used ten times or more (Fig. 6). At Hagia Triada one seal is used 252 times while those used more than ten times constitute 75% of the 1,108 sealings from that site. At Knossos, the most frequently used seal – found 54 times – is CMS II 8, no. 401 which has only been found on very fragmentary nodules for which no secure context is known, while those used more than ten times constitute only 14% of the 825 sealings from Knossos. Far more common among the Knossos sealings are those only found once or twice, indicating the activity of many individuals who had business with the administration[39].

[32] Müller 2002, 55.

[33] For clay stoppers, see Müller et al. 1998, 10–13 with fig. 18, 12A; Hallager – Hallager 2007; Haskell et al. 2011, 3.

[34] For a possible identification of a central archive in the Northern Entrance Passage, see Driessen 1999.

[35] For distribution maps concerning Knossos and Pylos, see Hallager 2005a, figs. 6. 7.

[36] Hallager 2005a, 262 tab. 1. To this table should now be added three regular inscribed nodules and three irregular nodules from the New Kadmeion in Thebes. Cf. V. Aravantinos in: CMS V Suppl. 3, 545 f. nos. 369–373.

[37] For distribution maps, see Hallager 2005a, figs. 3. 4.

[38] Hallager 2004.

[39] Panagiotopoulos 2010, 301, however, argues that »the seal users which left their traces on the nodules known to us must have been employees of the palatial administration«.

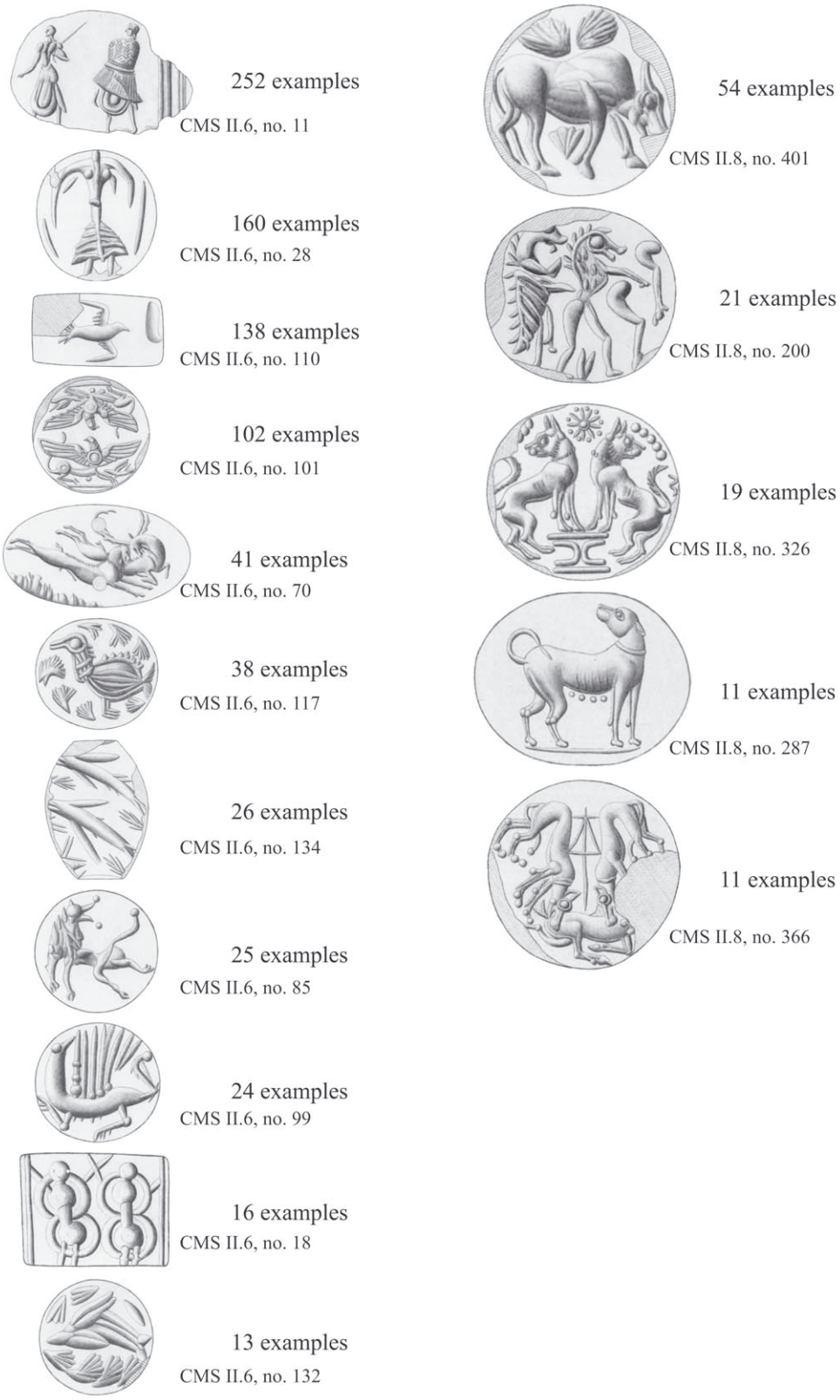

Fig. 6: Seals used ten times or more at LM IB Hagia Triada (left) and LM IIIB:1(?) Knossos (right). If these seals represent ›top-administrators‹ we see that there are no rules governing the kinds of seals nor the quality of the stones they should use. At Knossos two seals (nos. 200 and 401) are of soft stone and the remaining three of hard stone. At Hagia Triada there are two metal rings and four seals in soft stone (nos. 28. 85. 117. 132), while the remainder are in hard stone. The drawings of the seal devices are from CMS

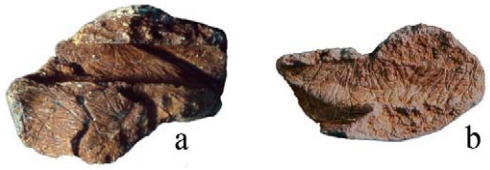

Fig. 7: Two Knossos nodules with imprints from wool on the reverse. a. HMs 134; b. HMs 699. Scale 1:1 (courtesy of author)

While the use and function of the regular nodules is well-known, those of the irregular nodules are less so. This has now been remedied by recent publications. The extensive Knossos material has been thoroughly presented and well illustrated by Müller (who, however, gives different descriptions to the group)[40]. The first important thing to note is that we find the same variety of impressions at Pylos[41], and among the few yet discovered at Mycenae and Thebes[42]. There is a uniform sealing system on the mainland and at Knossos. Second, these nodules have all been rather poorly attached to the objects they sealed, which means that they were not really fit for transportation. It is therefore most likely that the sealing procedure took place where the objects were stored[43]. One type of irregular nodule is, as far as I know, only found at Knossos: those with impressions from what the CMS called ›Tierhaare‹ or ›Fasern‹ or ›faserige[s] Material‹[44]. Two of the finest examples are illustrated (Fig. 7)[45]. I am convinced that these hair imprints are from the wool of sheep and/or perhaps goats[46]. I have made a few experiments with Cretan wool and cloth of Cretan wool, where the impressions appear very similar to those found on the Knossian nodules. Two of those nodules were found in the Southwest Basement[47] close to three Linear B tablets recording large quantities of wool[48]. Most of the rest that have a context came from the Domestic Quarter[49], where many tablets recording delivered – and missing – units of wool were found[50]. In my opinion, there is thus a good chance that wool was not only recorded but also stored in both the Southwest Basement and the Domestic Quarter.

My interpretation of the irregular nodules is thus that the objects were sealed where they were stored or would be used, and that many different individuals were responsible for them. How should this be understood in an administrative sense? I would like to suggest one possible scenario. Let us say that a dependant of the palace has been ordered to deliver a blanket on a certain day. He or she brings the blanket to the palace where it is stored on a shelf. In order for the administrators to know who has delivered it, the person who brought the blanket attaches an identification mark on the blanket, i.e. a lump of clay on which his or her seal is impressed. When the administrator has identified and recorded the delivery in another medium, the sealing can be broken off and discarded – or in rarer cases brought to the archive room for further treatment. This would explain why there are practically no intact irregular nodules[51]. It seems that discarded nodules were collected: at Pylos, at least, collections of broken nodules were found in doorways where they could have had no practical function. I imagine that they may have been collected in small baskets or the like, quite simply to be reused for new documents. This is possible with sun-

40 For Knossian reverses of irregular nodules, see Müller 2002, 59–64.
41 Müller 1997, 53–66.
42 The three irregular nodules from Mycenae display the same kind of imprints as found at Knossos and Pylos. Cf. Müller et al. 1998, pls. 12, 5. 7; 23. The same applies to the three new ones published from Thebes, CMS V Suppl. 3, nos. 370 (two examples) and 373. See Flouda 2010, 75 and fig. 19 for the reverse of no. 373.
43 Against this e.g. Flouda 2010, 75 f.; Panagiotopoulos 2010, 302.
44 E.g. CMS II 8, nos. 200. 257. 486.
45 Casts of these two nodules are illustrated in Müller 2002, fig. 23 a. c.
46 During my study of the Knossos sealings I noted 57 examples with what I called »fine threads«.
47 HMs 134 and 135 (CMS II 8, no. 257) from the Room of the Seal Impressions.
48 KN Dl 1060, Dp 1061 and Od 1062.
49 Mainly from the Wooden Staircase (Area of the Daemon Seals). Of these as many as 13 were carrying the impression of the Daemon Seal. See above (fig. 6, right column, second from top).
50 Many of the Dk tablets, esp. by hand 119.
51 Müller 2002, 55; Panagiotopoulos 2010, 304.

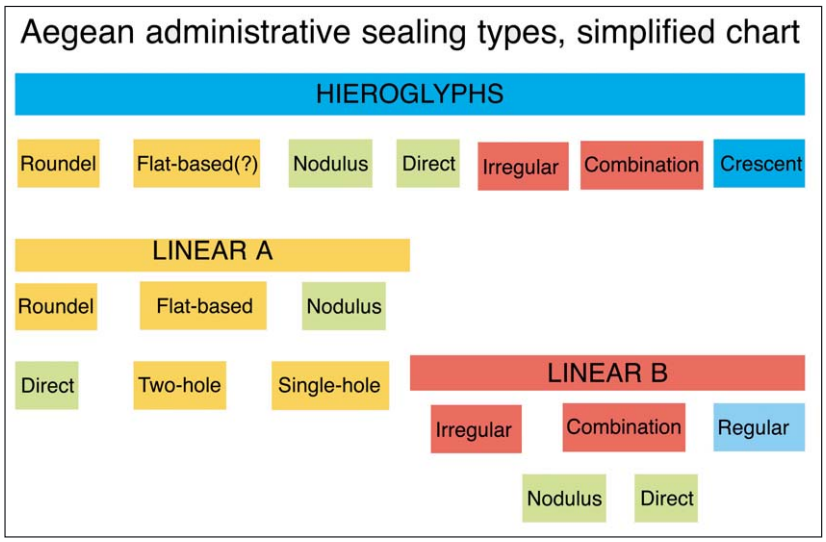

Fig. 8: Simplified chart of the possible development of the Aegean sealing systems (courtesy of author)

dried clay; there are very good indications from the Hieroglyphic Archive at Petras that discarded nodules were reused[52].

To sum up, what are the main reasons why the Linear B administration did not adopt the tools of the LM I Linear A administration? The first reason is suggested by the contexts, well illustrated at Knossos[53]. While Linear A documents were kept in archives and are usually found as complete documents, Linear B documents are – with the exception of the regular nodules – usually fragmentary and found scattered widely in storerooms and workshops. More important, however, are the sealing systems. In Linear A administration (Fig. 2) the roundel, flat-based nodules, and single-hole hanging nodules constitute more than 95% of nodules; these types of nodules are *not* found in the Linear B administration. In the Linear B administration (Fig. 4), on the other hand, regular string nodules, combination nodules and irregular nodules constitute more than 90% of the sealed documents; these types are *not* found in the Linear A administration.

Both systems needed seals, but obviously for quite different reasons. While Linear A administrators issued receipts on roundels, communicated and kept records on perishable sealed material (the flat-based nodules), and perhaps even stored legal documents (the single-hole hanging nodules), there is not the faintest trace of such activity in the Linear B sealing administration. Here, on the contrary, the seals were used in connection with economic activities (the regular and the irregular nodules) and to secure containers (the combination nodules).

The question that now arises is whether Linear B seal-use is an independent invention or whether it was inspired by or inherited from others. Here it is worthwhile comparing the Hieroglyphic (Fig. 1) and Linear B (Fig. 4) systems. In these two systems, the crescent and the regular nodules appear to be unique, but I wonder if they could not be the same kind of document. In both systems, they are the only documents that are both inscribed and stamped with a seal. Both documents are built around a string with a knot. According to Poursat[54], the crescents may very well have been documents following items from the outside to the storerooms – exactly like the regular nodules in the Linear B administration. If this is correct, the use of seals in the Hieroglyphic administration resembles that of the Linear B administration to a large extent. In short, I believe that

[52] Tsipopoulou – Hallager 2010, 242.
[53] Hallager 2005a, figs. 5. 6.
[54] Poursat 1990, 29. See further Karnava 2000, 116–120.

many of the direct sealings in the Hieroglyphic administration had, in fact, the same function as the irregular nodules. It may not be coincidence that the distribution of Hieroglyphic documents in Quartier Mu very much resembles that found in the Linear B administration.

To sum up the development of sealing systems (Fig. 8), only the *nodulus* and the direct sealings are found in all three systems. Hieroglyphic administration had sealing types which continued into the Linear A administration, but the latter also invented a number of new types not found elsewhere: the two-hole and single-hole hanging nodules, and possibly the flat-based nodules. Other Hieroglyphic sealing types that we find in the Linear B administration are irregular nodules, combination nodules, and possibly also the regular nodule/crescent[55].

When and where the Mycenaeans learned this system is a matter of pure speculation, but I would not be surprised if it happened on the mainland during or shortly after the Shaft Grave period[56], even though the archaeological evidence – on present knowledge – does not give the idea much support[57].

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[55] Hallager 2011.

[56] See also Godart 1979, 33–36; Duhoux 1985, 31. 34.

[57] Seals on the mainland are known from the period, but only become fairly common during the LH III period. That sealings have not been discovered, may well be due to the fact that no major settlement of the period has been destroyed by fire, which is necessary to bake the sealings.

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