CHAPTER 2: THE IMPRESSED NODULES

The 1993 excavation season at Akrotiri yielded an exciting and rather unexpected new find: the impressed clay nodule **N74** that was retrieved from the ground-level Room D18, a part of Delta-East.[334] The room, like much of the E part of Complex Delta (Δ) as well as the E part of Building Beta (B), was situated under the bed of a modern torrent, which had cleared away parts of the upper floors and their contents.[335] Luckily this room had almost its entire ceiling preserved in place. However, as the excavation progressed, it became apparent that the room, originally thought to be a single space, was in fact divided into two rooms through a median wall with an E–W orientation. The room to the S was named 'D18a' and the room to the N became 'D18b'; the newly discovered nodule had actually been found in D18a. During the 1995 excavation season nodules **N1**–**N73** were found in the adjacent Room D18b. The small fragment of impressed nodule **N75** was recovered in 1999 while excavating the foundation of the pillars for the new shelter: this last nodule was found in NPP 64, which was sunk into an open-air space to the S of Xeste 2.

The nodules, found in three separate findspots within the settlement, share a common characteristic, in that they are all of non-local clay. In all cases the clay was brownish-red in colour, whereas Theran products in clay indicate local sources were buff-colours, at least at the time of the VDL. The unique benefit offered by the Akrotiri evidence is that the nodules are unfired, since there was no fire destruction in the settlement; they thus preserve their clays' original colours, making their identification as non-local secure.

Contrary to popular belief, the settlement of Akrotiri did not perish under a hot, pyroclastic lava flow; the city, together with the whole island, was buried under layers of pumice and ash.[336] Although accounts of volcano eruptions occurring in historical periods testify to what is described as 'a rain of hot ash', the temperature of the ash that fell on Akrotiri has not been established. Indeed the retrieval of organic remains in open spaces of the settlement, such as intact reed baskets, wood, strings of vegetable fibers etc., argues against high ash temperatures.[337] In addition, there is no evidence of conflagration in any of the Akrotiri buildings or their contents.

These nodules are important not only because they were brought in to Akrotiri from elsewhere, but for a variety of other reasons. Firstly, their overwhelming majority belongs to a type of nodules well known from Cretan contexts of comparable dating, the so-called flat-based nodules.[338] Secondly, they bear a variety of seal impressions, some of which originate from gold rings and stone seals of exquisite craftsmanship. Thirdly, they present a rich iconographic repertory, which encourages extensive discussions of ideology, religion, power and the economy of the period. Lastly, they attest to the use of a large gold ring

334 See Chapter 1, p. 25 for the division of Complex Delta (Δ) into four different building units.

335 A modern torrent, which crossed the settlement in a N–S direction, had swept away the volcanic depositions in its path and had reached the pre-eruption levels; the torrent was redirected in 1968 to protect the buildings which were beginning to be uncovered (*Thera* II, 5, 7, pl. 1). The torrent bed is noted in Doumas 1983, 46–47, fig. 5.

336 A succinct description in Friedrich 2009, 79–98.

337 For the conditions under which organic materials were preserved in open-air or closed spaces, see Michailidis – Angelidis 2006.

338 Hallager 1996, 135–58.

Fig. 42. Minute nodule pieces from Room D18b; they do not join to any of the numbered nodules, therefore no catalogue numbers were given (Akrotiri Excavations Archives).

known to have been responsible for impressing sealings found at the Cretan sites of Agia Triada and Sklavokambos in LM IB.[339] The fact that the very same ring had stamped sealings at different sites and with a certain chronological gap has no precedent in existing evidence from the Aegean Bronze Age.

The catalogue of impressed nodules contains 75 entries (**N1–N75**). Initially the number of nodules in Room D18b was thought to be 58,[340] and together with nodule **N74** found in Room D18a they amounted to 59 specimens. It was on these nodules that the preliminary account[341] and their subsequent inclusion in the *CMS* were based.[342] Since then nodule **N75** was recovered in NPP 64A[343] and a further 15 pieces from Room D18b were catalogued by the author,[344] since their size or fragments of seal impressions meant they merited coverage in the full publication of the material.[345]

The main hoard of sealings retrieved in Room D18b accounts for 73 entries in the catalogue. However, this does not automatically mean that the hoard consisted of this

339 Krzyszkowska 2005a, 190. For a discussion of the repercussions of this conjunction, see Karnava 2011, and the main discussion on this phenomenon in Chapter 4, pp. 192–94, 203–10.

340 **N1**–**N9**, **N11**–**N35**, **N38**–**N40**, **N42**–**N56**, **N58**–**N60**, **N69**, **N71**–**N72**.

341 Doumas 2000b.

342 *CMS* V Suppl. 3 nos. 391–405.

343 Karnava 2008, 380–81.

344 **N10**, **N36**–**N37**, **N41**, **N57**, **N61**–**N68**, **N70**, **N73**.

345 Apart from these 15 fragments, nine more had been recorded in the excavation registration catalogue (A11678, A11681, A11683, A11688, A11690, A11691, A11693, A11694 + A11696); but these were subsequently joined with eight of those that had been initially catalogued (**N26**, **N15**, **N4**, **N24**, **N33**, **N13**, **N44**, **N12** respectively).

many nodules. Among the catalogued examples, six could well have been parts of larger nodules, even though no joins can be established between them.[346] Given, therefore, the state of preservation one may safely conclude that the hoard in Room D18b consisted of at least 67 nodules, although others evidently existed. Exactly how many more is difficult to say; however, it seems that this minimum number is not far from their actual number. In addition, 29 very small pieces, measuring 0.5–1 cm, with no traces of seal impressions or any other imprints, were left unnumbered (*Fig. 42*). Their quantity suggests that, put together, they could have accounted for one or two more nodules of the largest size, or they may have formed part of the numbered nodules, which are missing some small parts. If the two nodules from Room D18a and NPP 64A are added to the calculated minimum of nodules from Room D18b, the minimum of sealings retrieved at the whole site of Akrotiri reaches 69 pieces.

This chapter starts with a discussion of the archaeological contexts in which the nodules were found. The typology of the nodules is then reviewed, examined and compared to known types from Minoan Crete. Then follows a consideration of the decorative motifs attested on the sealings and their potential importance. The chapter closes with a discussion on the presence of the sealings at Akrotiri and their role.

THE CONTEXTS: D18 AND AN OPEN-AIR SPACE

Three separate localities within the site of Akrotiri are discussed here, constituting the findspots of the impressed clay nodules. The close physical proximity of two, D18a and D18b, does not guarantee any particular relationship between their contents: neither do the rooms' contents present us with similarities, nor does nodule **N74**, retrieved in Room D18a, share a common seal impression or belong to the same nodule types as nodules **N1**–**N73**, all found in Room D18b. Whether a distinct role should be attributed to Complex Delta (Δ), or, at least, to the building unit Delta-East, where Rooms D18a and D18b are situated, based on the retrieval of the sealings, will be discussed further below.

The single nodule **N75** recovered in NPP 64 attests, in turn, to a seal impression not encountered either among the seal impressions in D18b or the one in D18a, and also belongs to a different nodule type than the rest; its context also diverges from the other two, since it was found in an exterior space.

Delta-East: Rooms D18a and D18b

Parts of the building unit Delta-East had already come to light in 1970, when most of Complex Delta (Δ) was excavated.[347] Room D2, the 'Lilies Room', and the area immediately to its E, initially called 'The Eastern Quarters', were the first to be revealed;[348] difficulties lay in the fact that the area to the E had been under the bed of a modern torrent until 1968.

346 **N61**, **N63**–**N67**.

347 *Thera* IV, 10–28, plan I. The building was called, at the time, invariably 'Sector Delta' and 'Xeste Delta'. For the notion of the 'building unit', see above p. 25.

348 *Thera* IV, 20–26. The room, other than Room D2, investigated in that year to the NE of Room D2, was later numbered as 'Room D17' and it actually belongs to Delta-North.

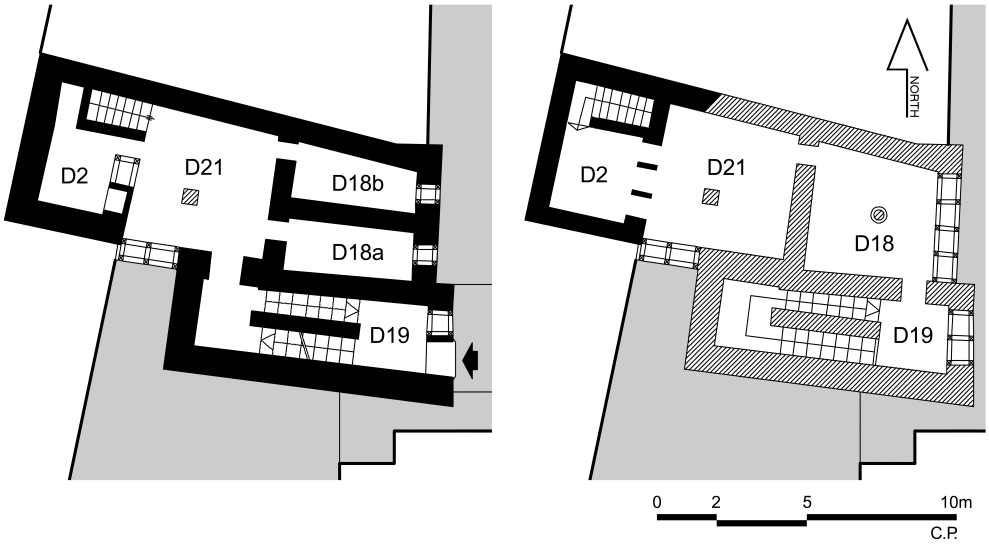


Fig. 43. Delta-East: plan of ground (left) and first (right) storeys (Palyvou 2005, 92, fig. 126; image courtesy of INSTAP Academic Press, Philadelphia, PA, USA).

Room D2 attracted the excavator's attention quickly and most naturally, since it contained an impressive variety of movable finds. In addition, still preserved, decorating three of its walls was a complete undamaged wall painting, the so-called Spring Fresco; to this day, this remains the only wall painting to be found truly *in situ*.[349] From the outset Room D2 and nearby Room D17 led the excavator to think of rooms 'of religious nature' due to the 'sacred' character of their contents. The upper and lower levels of Rooms D17a and D17 were again investigated in 1973, and Rooms D18 and D19 were first detected and numbered during that year.[350] Room D18 was not investigated, because it was '… full of holes from missing wooden pieces', whereas D19 was soon identified as having been a staircase (*Fig. 43*).

D18a (1993, 1994 excavation seasons)

Investigations in Delta-East resumed again only in 1993.[351] The E section of the room, until then designated as D18, preserved the ground-storey ceiling, therefore also the first-storey floor. By contrast, the W section of the room had been swept away by the modern torrent, since it was situated exactly inside the bed of the torrent; as a result, the ceiling and parts of the walls were missing to a distance of 1.69 m from the W wall. In addition, a retaining wall oriented N–S had been constructed in modern times to regulate the water course, which had penetrated into the pre-eruption layers as deep as half-way to the ground-level height (*Fig. 44*). The ground storey was found full of impure volcanic ash, the presence of

349 Doumas 1992, 98–107.
350 *Thera* VII, 13–15.
351 *Praktika* 1993, 181–83, pls. 108b–113.

which was interpreted as the result of infiltration by water from the torrent. The E preserved lower-level half was divided by a median wall into two 'compartments': the S was designated as 'a' (W. 1.65 m) and the N as 'b' (W. 1.40 m). It has been suggested that the two compartments were initially one room, which was divided in two after the SDL.[352] New evidence, which came to light during recent excavations, has provided a date for the construction of the E wall of D18a, namely during the early LC I phase, i. e. before the SDL.[353] In light of this information, it seems reasonable to assume that the strong seismic event attested through the SDL probably prompted the division of the room; the room itself, however, had only been constructed at the beginning of the LC I period.

In an effort to preserve the ground-level ceiling, where it still existed, excavation proceeded by an unorthodox method. The fill removal did not follow the horizontal axis; instead, it was decided to clear vertical *loci* and thus to excavate from W to E. In 1993 (and 1994, see further below) the investigation focused on D18a, which produced an impressive number and array of movable finds. The tight packing of objects and their disorderly placement meant the room had little potential for actual use.

The investigation in the W section of D18a, which was missing its ceiling, proceeded in the classic excavation method, from the upper levels to the lowest, in an area measuring (W) 1.9 × (N/S) 1.18 × (E) 1.7 m, since the room was narrower towards the E. It was discovered that the 1970 investigation had actually reached a preserved part of the floor at the SW corner of the room, made of beaten earth with the addition of small pebbles, which was then covered by plastic.[354]

The investigation in the W end of Room D18a, i. e. near its entrance, produced the following items, which are more or less visible in *Fig. 45*. Two clay slabs and a large jug leaning against them were found in the middle of the N wall. In the NE corner beneath a niche in the wall was a tripod cooking pot turned upside down on a small *asaminthos* ('bathtub'),[355] which turned out to contain eight tripod cooking pots. Two pieces of wood further came to light in the SE corner, while another *asaminthos* was retrieved from the middle of the S wall–SW corner. [356] The second *asaminthos*, fragments of which had already been detected in the 1970 season and left on the spot, stood immediately to the E of the SW corner. Both conical and Cycladic cups of different sizes were found in various spots, usually in groups; animal bones were also habitually recorded, even inside the cooking pots in the *asaminthos*.

The interior of the *asaminthos* in the SW corner of the room created a micro-context of its own. This produced — in very close proximity and near its bottom — a small alabaster amphora-rhyton,[357] a small one-handled bronze vessel in pieces, a bronze dagger with a wooden shaft,[358] Linear A tablet fragments,[359] a bell-shaped lead object with a bronze

352 Polychronakou-Sgouritsa 2008, 154.
353 Kariotis 2003, 436, 442.
354 The 1970 daybook does not record any movable finds from that part of the room, which is mentioned as 'space to the E of D2'. It is probable that some were removed without being recorded.
355 Kriga 2003b, 469 no. 17.
356 Kriga 2003b, 469 no. 18.
357 *Praktika* 1993, pls. 109b, 113a; Polychronakou-Sgouritsa 2000, 85.
358 *Praktika* 1993, pl. 112c.
359 *Praktika* 1993, pl. 113c; Boulotis in Rougemont – Olivier 1998; Boulotis 2008.

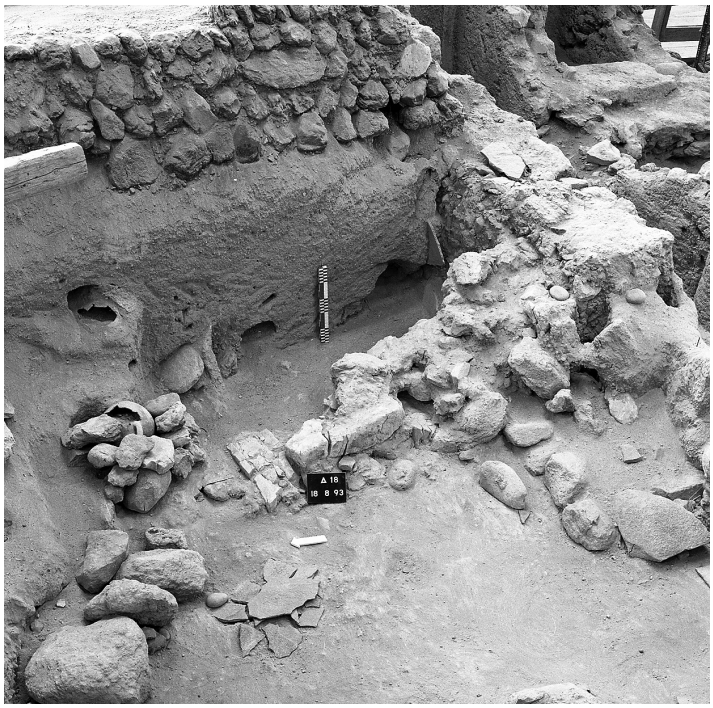


Fig. 44. Delta-East: Room D19, the entrance-main staircase (up right), its adjacent Room D18 (middle back) and a part of Room D21 (middle front) before the excavation of 1993–95; the retaining wall (up left), was a modern addition (Akrotiri Excavations Archives).

Fig. 45. Delta-East: Room D18a, W end, with contents on the floor (Akrotiri Excavations Archives).

Fig. 46. Delta-East: Room D18a, W end. The interior of the *asaminthos*, the outline of which is visible, contained a bronze dagger, a sherd from the clay vessel itself and two fragments of Linear A tablets (Akrotiri Excavations Archives).

suspension ring,[360] and nodule **N74**, found in sieving the soil from that particular microcontext (*Fig. 46*). Two further small fragments of Linear A tablets were recovered in cleaning the area immediately around the *asaminthos*, which comes as no surprise, since the vessel was broken and its interior had spilled outwards.

The rest of the room to the E, which was investigated to a distance of 2.93 m from the W wall, continued to produce medium-sized vessels, such as jugs, amphorae and more tripod cooking pots. Also found were numerous cups of all kinds and sizes in groups — a concentration of 41 cups near the S wall is noteworthy — at times stacked one inside the other and fallen upside-down. A number of organic objects, in particular wooden furniture, was salvaged through their imprints in the ash, which was filled with plaster of Paris and produced casts. The furniture included a table with intricate relief decoration and probable inlaid small ivory rings,[361] and a stool.

In the 1994 season the investigation of D18a was completed;[362] the room had a final length of 4.65 m, width 1.65 m and height 1.85 m. In that year the remaining fill of the room measured only c. 1.7 m to its E wall, but contained a mass of objects which was much more dense and varied than found in the E end of the room. The objects stored in the room

360 *Praktika* 1993, pls. 112d, 113b, termed as a weight; Michailidou (2008a, 29, fig. 20) suggests that the unique shape makes its exact interpretation difficult.

361 *Praktika* 1993, pls. 111, 112a.

362 *Praktika* 1994, 162–63, pls. 89–93.

seem mostly to have been lined up along the S wall; the same variety was observed as in the 1993 season. Among the pots were jugs, amphorae, tripod cooking pots, and cups, of all kinds and sizes; some new varieties were added: pithoi, lamps, cylindrical and conical rhyta, and clay 'offering tables'. A pithos, 'floating' in ash, at a height of 0.55 m from the floor, was found to contain two small wicker baskets. Another pithos, 'floating' c. 1 m from the floor, contained 13 wicker baskets, actual ropes, three bronze hooks, as well as fish remains.[363] Apart from the fishing implements, the pithos also contained a wooden box with ivory inlays. The imprints of two wooden shafts nearby, one measuring 0.95 m and the other 1.12 m, were taken to be oars.[364] At the E end of the room, the pattern of finds changed, with organic containers prevailing, such as baskets, a minimum of two wooden boxes, another wooden stool, and a barrel.[365] The baskets and the boxes contained many objects, which were probably not fortuitous collections, since they presented a number of unifying factors. One basket contained one egg-shaped alabaster rhyton, another rhyton of calcareous material, and a marble chalice.[366] Another contained a box with two bronze handles,[367] which in turn contained metal artefacts: *inter alia* an incense burner, two bowls, a juglet, an open vessel, three small cups and a dagger with three silver nails,[368] and a triton shell. Yet another box contained rather small clay vessels with white-on-red decoration,[369] while a further basket held a pair of bronze fire-tongs.[370] Again, near the E wall of the room, more good quality pottery was lined up. The final count of the room's pottery amounted to 380 clay pots.[371]

ROOM D18B (1994, 1995 EXCAVATION SEASONS)

The investigation of Room D18b was carried out in 1994 and 1995[372] by use of the same original method of vertical *loci*, in order to preserve the ceiling of the ground-level room. The W end of the room, which was, like its sibling 18a, partly destroyed by the torrent waters, was investigated by the normal excavation method (*Fig. 47*).

Room D18b contained a fixed structure, namely a built bench measuring 1.5 m in length, 0.3–0.35 m in width and 0.55 m in height, which fitted onto the N wall and reached all the way to the E wall.[373] This bench is comparable to the ones found in ground-level rooms with mill installations, i.e. Complex Alpha (A)/Western Room 1,[374] West House/Room 3a,[375] and Delta-South/Room D15.[376] A millstone was placed on top of the ruined W

363 Polychronakou-Sgouritsa 2000, 87, figs. 7a–b.
364 Polychronakou-Sgouritsa 2000, 88.
365 Polychronakou-Sgouritsa 2000, 87–88, n. 178, fig. 8.
366 Polychronakou-Sgouritsa 2000, 85, n. 164.
367 One is illustrated in Michailidou 2008a, 24, fig. 15.
368 *Praktika* 1994, pls. 90b–c, 93a–d; Michailidou 2008a, 20–22, figs. 7–10.
369 Polychronakou-Sgouritsa 2000, 84–85, figs. 5, 6.
370 Polychronakou-Sgouritsa 2000, 81, 87, n. 137; Michailidou 2008a, 19, fig. 4; Polychronakou-Sgouritsa 2008, 160, n. 76.
371 Polychronakou-Sgouritsa 2000, 83.
372 No mention of any investigation in Room D18b in *Praktika* 1994. In *Praktika* 1995: 127–30, pls. 60–62a, 63.
373 Polychronakou-Sgouritsa 2000, 77, n. 100; 83, n. 160; 2008, 154.
374 *Thera* II, 30, pl. 29b.
375 Moundrea-Agrafioti 2007, 82–90.
376 *Thera* V, 22–24, pls. 39–42.

Fig. 47. Delta-East: Room D18b on the day the first nodule was found (Akrotiri Excavations Archives).

wall of the room and a large grinder was recovered in its NW corner nearby;[377] inside the room, to the W of the bench, stood an *asaminthos* ('bathtub'), another companion to the fixed mill installations.

Unlike the situation in the adjacent Room D18a, D18b was practically devoid of movable finds: it contained two *asaminthoi*,[378] some cups, five wicker baskets, some wooden furniture and a small basket. The small number of movable finds fits either the picture of a room used for some sort of activity, therefore empty in order to facilitate movement, or a room that had been emptied in order to be renovated after damage caused by an earthquake. However, the first interpretation seems more likely, since no earthquake damage was attested and indeed the room even preserved its ceiling.

Among the finds, the highlight was naturally the batch of clay sealings **N1**–**N73** bearing a variety of seal impressions. The sealings were found at a short distance from the perfectly preserved ceiling, in around the middle of the room. The initial explanation offered for this proximity to the ceiling was that they were either placed in a container suspended from the ceiling, namely a sack or box, or that the water had lifted them this far up, in an otherwise empty room.[379]

377 Polychronakou-Sgouritsa 2008, 156.

378 *Praktika* 1995, 129, pl. 62a; *Ergon* 1995, 52–54, figs. 34, 36; Kriga 2003b, 468 nos. 12 = 7715, 13 = 7733, pls. 14, 15; 479.

379 *Praktika* 1995, 129.

A number of bronze hinges and nails were recovered together with and amidst the clay sealings, a fact that indicates the presence of a wooden box.[380] At least three intact hinges and fragments of more were found among the nodules, implying the existence of more than one box. Two hinges were also found in NPP 64, in definite association with a wooden box, which contained a balance set and the clay nodule **N75**.[381] Whether there were two or three hinges per box, it seems that more than one wooden box was reserved for the impressed clay nodules in D18b. It has been further suggested that the box(es) could have fallen from the upper level and entered the room carried by the alluvial silt, or, alternatively, hung from the ceiling.[382] The exact circumstances in which these boxes were kept will, however, remain elusive, since no traces of wood were detected during the excavation.

Bronze hinges were recovered at the palace of Zakros, apparently in close association with the tablets and sealings from the West Wing of the palace.[383] Platon speaks of three large bronze hinges and nine smaller, deducing either the presence of four wooden boxes, one larger and three smaller, assuming that all of the hinges were collected and that each box needed three hinges; alternatively, he posited seven or more boxes, if all hinges had not been salvaged and collected during the excavation, which he thought was more probable. The hinges from Zakros bear a close resemblance to the hinges found at Akrotiri.[384]

Hinges were also found at Knossos[385] as well as Pylos,[386] both finds of a later date. A suggestion that the bronze hinges in those localities could be indicative of the presence of wooden writing tablets was based on making the case against clay tablets being stored in wooden boxes;[387] it did not, however, take into account the fact that in all the above instances (Zakros, Knossos and Pylos), besides clay tablets, clay sealings were also present and their storage was left unaccounted for.[388]

Commentary: Delta-East, if a separate entity from the rest of Complex Delta (Δ), is the smallest building unit so far excavated at Akrotiri.[389] Its small size could be the reason why it apparently withstood the pre-eruption earthquake, presenting us with the only room

380 Polychronakou-Sgouritsa 2000, 81; 2008, 156.

381 See below, pp. 95–99.

382 Polychronakou-Sgouritsa 2008, 156.

383 Platon – Brice 1975, 26–27, figs. 4–6.

384 A photograph in Platon – Brice 1975, 27, fig. 4. Samples of hinges from different, unspecified areas of the Akrotiri settlement: Michailidou 2008a, 22, fig. 14.

385 At Knossos two bronze looped handles and a bronze elongated clamp with rivet holes in one end were found in the Western Temple Repository, and interpreted by the excavator as belonging to a 'treasure chest' (Evans 1921a, 469, fig. 337). Seven bronze hinges were found in the Room of the Chariot Tablets (Evans 1935b, 668–69; Palmer 1963, 73–74, pl. Va–b, VI, VII). 'Several bronze loop-handles' were found in the Armoury/Arsenal in the vicinity of sealings (Evans 1935b, 668–69; Palmer 1963, 158–59, pl. XXV).

386 At Pylos seven hinges were found in one of the archival rooms (no. 8), associated with a number of tablets and a direct sealing, which sealed a flat object wrapped by a broad leather band (Blegen – Rawson 1966, 98, no. 593.2, figs. 274.1, 275.13–14; Pini *et al.* 1997, 93–94, no. 21A).

387 Mylonas-Shear 1998.

388 The identifiable sealings from the Room of the Chariot Tablets at Knossos were two-hole hanging nodules, flat-based nodules and direct/two-hole hanging nodules (*CMS* II,8 p. 115); the Armoury/Arsenal sealings were single-hole and two-hole hanging nodules, as well as direct/two-hole hanging nodules (*CMS* II,8 p. 127).

389 For a short and informative description of the building unit: Palyvou 2005, 92–95.

that preserved its wall paintings on the walls.[390] The ground-level rooms, i. e. the ones that were not damaged by the torrent, were all in good shape, so good as to have been in no need of repairs after the last pre-eruption earthquake. In addition, it seems that two of these, D2 and D18a, were used for the temporary and hasty storage of undamaged items. In view of the fact that the ground level was not damaged, it is possible that part of the contents of these two rooms originated in rooms on the first floor,[391] which were probably in need of repair. That the first-floor rooms were damaged is further shown by the fact that the auxiliary staircase of the unit[392] was out of use, being turned into another temporary storeroom: it was evident that unimpeded access to the first floor was no longer required.

In order to access the building unit, one would enter from the main door to the E, which opened onto the Square of the Double Horns (*Fig. 43*). The door led to a vestibule/corridor D19, which also housed the main staircase. For access to the ground level, one would have had to pass under the N flight of stairs and enter into D21, a large room measuring 3.5 × 4.3 m, situated at the heart of the building, with a low stone platform slightly off-center, which has been interpreted as a central column base.[393] The room also had a large, horizontal window facing a blind alley to the S of the unit. The usefulness of such large windows was that they provided abundant daylight to sizeable rooms such as D21. However, it is interesting that some of these large ground-floor windows are found in rooms that had probable trade functions.[394] The main reason for this interpretation is that the contents of these large-windowed rooms would normally point to storage; however, storerooms best avoid exposure to the natural elements and do not require increased lighting conditions, large windows would therefore be a clear disadvantage.

Through Room D21 one had access to all the remaining rooms of the lower level, namely D2 to its W and D18, both (a) and (b), to its E. Access to the upper floor was either through the S flight of stairs of the main staircase D19, or through the auxiliary staircase at the N part of the building unit. Access to Rooms D18a and D18b, as well as D2, was therefore not immediately available upon entering the building. The upper floor of the unit was mostly destroyed by the torrent. However, we know that above the ground floor of D18 there was

390 And one of the few ground level rooms with figurative wall paintings; another instance was detected but not excavated in the so-called Kitchen, a ground-floor room in Building Eta (H), where again the main motif appears to have been lilies (*Thera* II, 28–29, pls. 27b, 30a; V, 15–16, pl. 14; Doumas 1992, 184–85; Vlachopoulos 2007, 128). See also pp. 48–49.

391 Suggested in Polychronakou-Sgouritsa 2000, 88.

392 Marinatos first interpreted the narrow space flanking the N wall of Room D2 as a cupboard, and subsequently as the 'treasury of the Fresco of the Lilies shrine' (*Thera* IV, 24, pl. 40; VI, 12–13, pl. 13a; VII, 13, pl. 12); Palyvou (2005, 93–95, fig. 126) interpreted it as an auxiliary staircase.

393 Palyvou (1999, 238) describes the platform as a flagstone protruding some few centimetres from the floor and representing in all likelihood a base for a wooden column; in a subsequent publication (2005, 92) she also provides the dimensions of the platform as 0.6 × 0.7 m and interprets it again as a column base rejecting an alternative explanation as a hearth. The dimensions of Room D21 appear to justify the column base hypothesis.

394 Large horizontal windows facing the street are found in Rooms A1, A2 and D16, all thought to be rooms that facilitated trading activities. They are also encountered at the House of the Anchor and the Sunken House which are not excavated (this latter is part of the Western Quarters, one of the building units of Complex Alpha (A): Moschou – Karnava forthcoming); see also pp. 8–13. More are attested in Xeste 3 (Palyvou 1999, 383–86; 2005, 148–49: Type C, Horizontal Windows). The above instances are all ground level rooms, but this type of window is also found in upper level rooms. For the function of rooms as trading spots, see Doumas 1983, 51; in response to Koehl 1990, 362; also, Chapter 1, pp. 33–38.

a large room with a central column, which had a *polyparathyron* (pier-and-window partition) on its E wall,[395] overlooking the Square of the Double Horns. Also, an upper-storey room existed above the ground floor of D2, separated from the rest of the upper floor with a *polythyron* (pier-and-door partition).

The contents of Room D2, the auxiliary staircase, and Room D18a are not necessarily to be considered as belonging originally to the room where they were found. It is possible that some of these objects had in fact been there all along, but amidst the mass of finds, it is impossible to tell which came first and which came last. However, there is no reason to think that the contents of D18b were in any way disturbed: the room was found in good condition, the ceiling was intact, and was apparently still functional, whatever its function was. The presence of a 'bench', the *asaminthoi* and the movable milling equipment, although highly doubtful whether this last was found exactly in its original position, shows that the room, at some point in its history, was probably used for food preparation activities, i. e. it was the 'mill-room' of the building unit. Since no other space on the ground floor offers this kind of evidence, there is no reason to doubt this was its function until the very end — assuming the building was still inhabited until the end.

Nevertheless, sealings found in what appears to have been a food preparation room, and a sealing and Linear A tablets found in a room that was apparently affected by the 'squatters' activities and turned into a makeshift storage room, make little sense in terms of their contexts. One suggestion could be that the sealings were in both cases *in situ*; another, that they had been transferred from elsewhere, as a result of the 'squatters' activities. One would assume — although no arguments can be made either for or against this assumption — that this emptying of damaged rooms and the stacking of objects in others was done separately in each individual building or 'household',[396] i. e. the stacked contents came from within the same building. But a persistent problem, for which no definitive answer has been offered so far, is whether each building unit, such as the four that compose Complex Delta (Δ) and the at least three that compose Complex Alpha (A),[397] can be identified with a 'household'. If such were the case, even if the sealings were not *in situ*, we would have to assume that they had been transferred there from somewhere else within the same building unit, Delta-East. The only thing that is certain is that their provenance is not to be sought in other buildings further to the N, in a scenario that would see them ending up in Delta-East carried by the torrent; had they come from a different building, it would have been a curious coincidence that they all, notably the sealings in D18b and the Linear A tablets together with one other sealing, ended up in Delta-East.

One point also worth considering here is the possibility that the rebuilding activities of the inhabitants and their refurbishment efforts after the last pre-eruption earthquake focused on 'private' buildings, whereas little attention was paid to buildings of 'public' character, such as Xeste 3 and 4. This suggestion is supported by the fact that the spaces surrounding those buildings were not cleared of the debris from the latest pre-eruption damage; Kouretes Street, the main access road to Xeste 4, remained blocked by the ashlar

395 Palyvou 1999, 386–87, pls. 210a, 212; 2005, 93, figs. 127, 128.

396 The notion of a 'household' is poorly explored in Thera. Some research on the matter has been done for Crete (Glowacki – Vogeikoff-Brogan 2011), while some stimulating discussions have been held for the extra-Aegean world (Müller 2015).

397 Moschou – Karnava forthcoming; see also pp. 8–13.

blocks fallen from the building.[398] In this respect Complex Delta (Δ), which presents evidence of clearing/repairs in various parts does not qualify as a 'public' building, at least not in the sense that Xeste 3 is thought to be.

The post-depositional state of the contents of Rooms D18a and D18b also merits a comment. The daybooks describe that these ground-level rooms, situated under the former torrent bed, were found filled with impure volcanic ash, which was interpreted as having filtered in with water from the torrent; it is this fluid ash that is supposed to have lifted the box(es) in D18b to the ceiling level. So, did the water harm the unfired sealings and, if not, why not? The stamped sealings appear not to have been affected: since the dimensions of certain seal impressions, such as those coming from the ring with the chariot scene,[399] can be measured against impressions from the same ring attested on the accidentally fired sealings from Crete, it is verified that they did not lose their original size. Also, the water seems not to have affected unfired clay objects even immediately below the torrent bed, since Linear A tablets and their accompanying nodule **N74** were found in the adjacent D18a,[400] all objects likewise unfired. The limited effect water had on the contents of these rooms is also indicated by the retrieval of unfired clay cylinders, some of which were found in the SW corner of Room D17, further N within the same torrent bed.[401]

It is probable, therefore, that either water never entered these rooms directly, or we have to assume that unfired clay does not get distorted or even dissolve so easily when immersed in water.[402] At this point we have to mention the instance of an unknown number of Minoan clay tablets dissolving immediately after their discovery in the Zakros palace in the 1960s. Due to the sea level rising in eastern Crete during the intevening millennia the palace in Zakros is nowadays practically under sea level, the problem accentuated by natural spring waters spouting at the site; thus, water has to be drained in order for the excavation to proceed. Platon mentions that they had to wait for the midday sun to dry the soil, still there was no way to salvage and collect more than a dozen tablets out of a tablet archive that probably numbered in the hundreds.[403] At Akrotiri, by contrast, the torrent that crossed over this particular part of the settlement had been redirected in 1968,[404] therefore when the sealings were excavated the area had been dry for more than 20 years. Moreover, the tablets and sealings found in different Cretan sites had only been baked accidentally by the fires that destroyed the rooms where they were kept, i. e. not under proper firing conditions; it seems therefore plausible that half-firing results in clay being more friable than not firing at all.

The presence of impressed nodules as well as Linear A tablets has led Boulotis to speak of a small archival deposit, though not suggesting that this would be the only one to be

398 Nikolakopoulou 2003, 571.

399 See further below, pp. 117–20.

400 *Praktika* 1993, 182–83. The tablets were thought at the outset to be of 'white clay, different than the ordinary local clay'. The difference, however, between the colour of the clay tablets and that of local pottery is that the latter was fired, a process which always alters the colour of the clay.

401 Tzachili 1992; 2002–03; 2008.

402 Experimental methods have shown that corrections and erasures are thought to have been a more efficient method of re-using dry clay tablets (Pape *et al.* 2014), rather than making them anew (Sjöquist – Åström 1991, 19–22).

403 Platon – Brice 1975, 30.

404 See above, n. 335.

Fig. 48. Nodules **N13**, **N14** and **N15** found complete (although not intact), tops; scale: 3:2 (Akrotiri Excavations Archives/*CMS* Archive).

expected in the settlement; other buildings could have accommodated other archival deposits.[405] Nonetheless, since there is no way of telling whether the items in D18a were *in situ*, we cannot assign a definite function to this particular room or indeed to any rooms in this building unit. In addition, Rooms D18a and D18b do not constitute the only findspots of nodules in the settlement, since another nodule fragment was found at a different location of the settlement. Doumas initially suggested that the collection of all sealings in the same spot indicates that they no longer functioned as guarantees of security or authenticity;[406] in turn this would exclude the possibility of any association between the sealings and other items found in the room. Whether valid or not, this suggestion however also implies that we are dealing with an archival deposit, regardless of whether or not it was found *in situ*. The characterization of the total of sealings as an archival deposit seems to be the most plausible explanation.

Hallager points to the impressive proportion (88%) of flat-based nodules recovered complete or almost complete on different Cretan sites, 'despite having all been found in levels accompanied by violent destruction'.[407] It is noteworthy that Akrotiri presents us with a similar case. Although the nodules were not subjected to any conflagration — on the contrary, they were preserved in extremely humid conditions — the overwhelming majority are intact (*Fig. 48*). It is evident that even the nodules that were joined together by the conservators had not been broken in antiquity; some were retrieved from the sieve in pieces, because they became friable after coming into the normal (dry) atmospheric conditions. This fact begs the question as to whether or not the documents sealed by flat-based nodules were ever opened. To suppose that all the batches so far found at Zakros, Agia Triada, Knossos, Sklavokambos, Chania, and now Akrotiri, were of nodules just made and/or received, and therefore not opened or discarded, is too much of a coincidence. The repetition of this phenomenon implies that this was the standard condition of all flat-based nodules: either kept unopened or opened with extreme care, so as to preserve the clay nodule in one piece.[408]

405 Boulotis in Rougemont – Olivier 1998, 408; Boulotis 2008, 72.
406 Doumas 2000b, 63–65.
407 Hallager 1996, 136.
408 See also below, The flat-based nodules: the term and the type, pp. 102–07 (on how the flat-based nodules were manufactured), and Discussion, pp. 224–30.

Open Area to the S of Xeste 2 (NPP 64)

NPP 64 was opened in 1999 in the same area as PP 64, about which very little information is included in the 1973 report.[409] When investigation resumed, it was established that the new pillar pit had been dug into an open area during the latest pre-eruption phase, limited only to the E by a wall with N–S orientation.[410] The old pillar had been founded on a layer of debris consisting of soil and stones, which served as the ground surface of the open area. Two complete pots, uncovered during the 1973 investigation, had been left *in situ*. Additional whole pots and various other items were discovered in the new pit in more or less the same levels, showing that more had been removed from the very spot where the Dexion pillar was placed. The new and the old finds simply rested on top of a debris layer, shrouded by thin pumice and sealed over by the layer of thick pumice.

The objects which constituted the immediate context of the sealing were recovered near the SW corner of the new pit, in a space defined on one end by the three-handled pithamphora, and on the other end by a bronze vessel[411] (*Figs. 49, 50*). Near the bronze vessel lay a number of clay pots, namely a cup under the bronze vessel, a jug containing a cup and organic remains, and another cup, as well as various stone objects, among which a probable weight and a vessel.

Further S from the bronze vessel and to the NW of the three-handled pithamphora, two bronze circular pans were recovered, along with their bronze beam and two weights, a stone and a lead disc (*Fig. 51*);[412] traces of wood, having apparently fused with the bronze alloy,[413] were preserved on the curved surfaces of the pans. It was subsequently revealed that the balance set was placed inside a rectangular wooden box, measuring 20 × 10 cm, from which wooden scraps and two bronze hinges were collected.[414] A bronze ring with a nail, probably belonging to the box, was found in its interior.[415] The box also contained another worked stone object, oblong in shape, hard and black — potentially a touchstone[416]— and nodule **N75**. Further S and near the three-handled pithamphora more items were found, namely a stone bead and another stone weight. Finally, a double strainer jug was recovered (*Fig. 52*).[417]

Commentary: The wider context of nodule **N75**, which is an open space presenting us with abundant movable finds in pristine state of preservation, does not appear to be particularly informative at first sight. The same phenomenon, however, that of collecting objects in

409 *Thera* VII, 21, plan B; *Praktika* 1999, 189, fig. 23, pls. 121, 122.

410 See also Chapter 3, for the impressed pithos rim found in nearby NPP 64A (**I2**), pp. 157–60.

411 *Praktika* 1999, pl. 122c–d.

412 The information in Michailidou 2006, 259. The author also proposes an alternate interpretation of the bronze shaft, other than that of a balance beam, based on the evidence of balance sets from the early 20th century: an object for adding dust to the pan for weighing purposes.

413 In archaeological contexts bronze objects help preserve any organic substances that come into contact with them (see a number of instances mentioned in Michailidou 2008b).

414 See the bronze hinges found in relation to the nodules in Room D18b, p. 90.

415 Another ring with nail was found in assocation with one of the wooden boxes in Room D18a (information from the daybook of Room D18a, kept by N. Polychronakou-Sgouritsa). This precludes the interpretation that the ring was part of the balance set.

416 Michailidou 2006, 245.

417 *Praktika* 1999, pl. 122a.

Fig. 49. NPP 64: whole pots *in situ* from the PP as well as the NPP investigation (Akrotiri Excavations Archives, photo by C. Papanikolopoulos; *Praktika* 1999, pl. 121a).

Fig. 50. NPP 64, middle of the W side: a bronze vessel *in situ* (Akrotiri Excavations Archives, photo by C. Papanikolopoulos – D. Sakatzis).

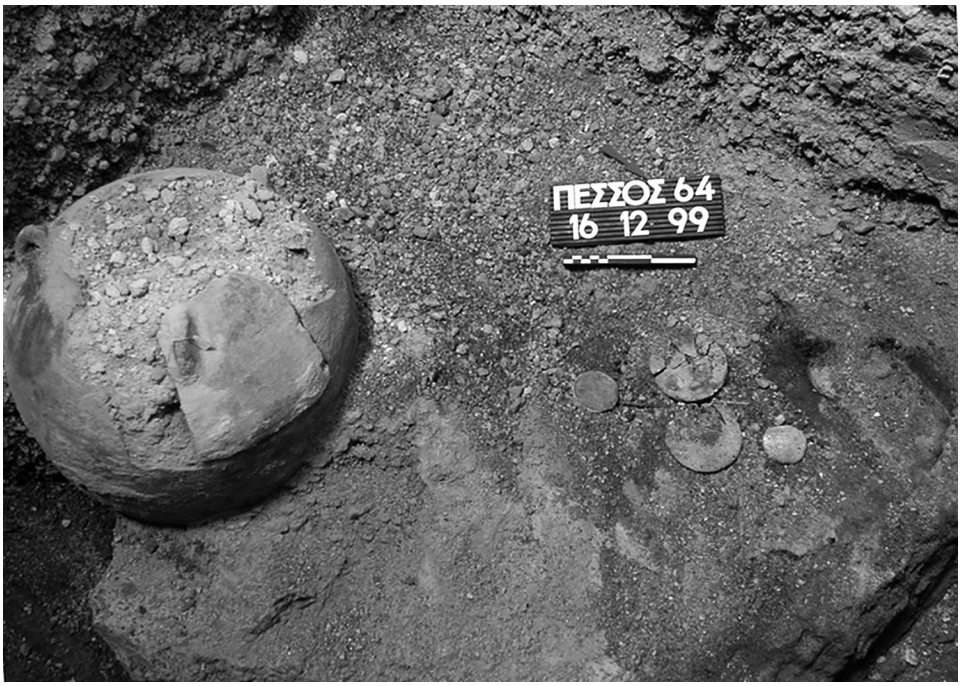


Fig. 51. NPP 64, SW corner: three-handled pithamphora, bronze circular pans with bronze beam, two disc weights of stone and lead, all *in situ* (Akrotiri Excavations Archives, photo by C. Papanikolopoulos – D. Sakatzis).

Fig. 52. NPP 64, SW corner: double strainer jug *in situ* (Akrotiri Excavations Archives, photo by C. Papanikolopoulos – D. Sakatzis; *Praktika* 1999, pl. 121b).

open spaces, such as streets and/or squares, is also encountered elsewhere in the settlement.[418] In all cases, the objects were found on top of thick layers of debris, as if they had been caught in the layer of thin pumice which first fell onto the settlement following the volcanic eruption.[419] The depths at which they were found varied slightly, depending on the inclination of the surfaces — usually uneven — on which they had been placed.

The explanation for this accumulation of intact objects outside buildings can be attributed to the activities of the 'squatters'. The term was first devised by Marinatos,[420] who saw 'squatters' behind the clearing of debris from open spaces to facilitate circulation and architectural interventions, e. g. the blocking of openings, erection of provisional dividing walls, etc. At first he was not clear about assemblages of objects in open spaces: '… where they could form a shelter, inhabitants settled and worked for a short time'. Such items would have been dragged out from the interiors of partly collapsed buildings. The motivation may have been to facilitate structural repairs inside the buildings or to use the objects for everyday activities outside the damaged buildings, or even both. Because some of these open-air assemblages consisted of large numbers of voluminous objects, such as pithoi and *asaminthoi* ('bathtubs'), they must have originated in a nearby building. One cannot, of course, exclude the possibility that objects could come from more than one building. Furthermore, even if items in these piles had originated from a single building, there is no reason to suppose they had all belonged to the same room, i. e. they may have been functionally unrelated. It should also be stressed that the picture is not complete, since these object piles continue beyond the limit of the pits and none has been investigated in its entirety.[421]

The movable items found on top of the debris layer in NPP 64 can, therefore, be integrated into the framework of activities carried out by the inhabitants after the pre-eruption earthquake. They can be seen as having originally belonged to one of the buildings in the vicinity and, at some point, having been pulled out into the middle of the street to be salvaged. From a chronological standpoint, this places them among the equipment used almost until the very end of the life of the settlement.

Although it is impossible to be certain if the items found together with the wooden box were somehow connected with it, the nodule's micro-context is of major interest. As previously mentioned, it was found inside a wooden box, which chiefly contained a balance set and associated paraphernalia, namely disc-shaped weights. One possible explanation is that the nodule was somehow part of the weighing process. Alternatively — since this is another imported nodule — it might point to or verify an action that took place elsewhere, more specifically where the box, balance set and the nodule had originated. In a discussion about the balance set in NPP 64, it has already been suggested that the nodule 'may indi-

418 Nikolakopoulou 2003, 563–65. Areas where items were found in the open: Terrace of the Beds (*Praktika* 1993, 178–80); Area of the Good Vases-NPP 39 (*Praktika* 1975, 229; Nikolakopoulou 2003, 562–63); NPP 1B, NPP 22, NPP 68A, NPP 73, NPP 76, NPP 78, NPP 78A (Nikolakopoulou 2003).

419 Doumas 1978, 781.

420 *Thera* III, 7.

421 See Nikolakopoulou 2003, 557–65 for the various types of 'squatter' activities, especially in open spaces, e. g. the sorting and arrangement of debris-derived construction materials; the organization of working and food preparation areas. In view of the most recent excavations at the site, there seems to be an even stronger case for the activities of individuals or the community after the seismic destruction right before the volcanic eruption, *pace* Treuil 2008, 292–94.

cate the proprietor of the box'.[422] However, explanations that attempt to identify ownership through the nodule fail to take into account the specific nodule type. This is a *nodulus*, which is found in Crete in archival deposits containing sealings and/or tablets.

Another question relates to the purpose of this particular balance set. Seven sets have been found at Akrotiri, among which two came from Room D16 in Delta-South, one from Sector Alpha (A) and another from Room D1a in Delta-West.[423] The NPP 64 pans are medium-sized, with the same dimensions as those from Room D1a; the two found in D16 are the largest and the smallest found so far. The disc-shaped weights from NPP 64 both had a diameter of 4.7 cm, but the stone one weighed 39.5 gr, whereas the lead one 101.7 gr. A pair of not very dissimilar disc weights was retrieved in Xeste 3, one of marble weighing 62.1 gr[424] and another one of lead weighing 52.5 gr. A tentative explanation offered for the Xeste weights is that they were used for weighing saffron, a valuable condiment then and now. This is supported by the iconography in Xeste 3 itself, with its emphasis on the gathering and offering of saffron, as well as the use of the crocus/saffron as decorative motifs. Moreover in the Linear B tablets saffron is weighed in quantities of 3.6 gr to 500 gr.[425] Although this suggestion is plausible enough for the Xeste 3 weights, it cannot be further corroborated by the evidence from NPP 64. The small quantities indicated by the NPP 64 weights would be entirely consistent with handling a precious substance and equally seem to exclude the weighing of large amounts of metal or bulky items such as wool. The presence inside the box of a possible touchstone, which would be used for testing the authenticity of precious metals, in combination with the relatively small balance weights, might well point to the weighing of precious metals, such as gold and silver.

Neopalatial *noduli* in Crete are associated with a variety of contexts, e. g. sealing archives, storerooms and workshops, and occasionally come from findspots identified as private houses.[426] Such diverse circumstances mean that *noduli* cannot be used to interpret the function(s) of the buildings in which they are found. Unfortunately this applies equally to the Akrotiri *nodulus*: it can tell us nothing about the nature of the building where it was once kept inside the wooden box that came to be dragged outdoors following the earthquake.

FUNCTIONAL TRAITS OF THE AKROTIRI NODULES

Various types of clay nodules[427] were used for administrative purposes in Crete during the Minoan Neopalatial period. Their exact functions and roles are matters of scholarly debate, but they undoubtedly testify to the existence of a meticulous, complex and multifaceted administrative system. This is not the place to discuss the history of this Cretan Neopalatial administrative system, which made use of both writing and seals, but based

422 Michailidou 2006, 245, probably following Weingarten 1990b, 19–20, who suggested that *noduli* were meant to identify their carrier.

423 Michailidou 2006, 244–46; 2008b.

424 Room 4, ground level, Ø 4.3 cm.

425 Michailidou 2006, 238–39.

426 Hallager 1996, 129–30. A recent find comes from Gournia (Watrous *et al.* 2015, 441, 449–50, no. 5).

427 See n. 16.

on present knowledge, it was a purely Minoan invention with no parallels in neighbouring civilizations;[428] ties to the preceding Minoan Protopalatial administrative system(s) are obscure.[429]

To introduce the reader to matters pertaining to typology, Minoan Neopalatial clay sealings — i. e. clay nodules bearing seal impressions and also occasionally incised Linear A inscriptions — can be grouped in three generic categories. The first category comprises clay nodules suspended on cords, i. e. the so-called hanging nodules, which exhibit either one hole or two on opposite sides, from which a cord exited. In the second category the nodules bear the imprint of an object onto which they had been attached while the clay was still moist; these are the so-called flat-based nodules and the direct nodules. The third category includes nodules that were never attached to anything else, whether an object or a cord: the so-called *noduli* and roundels.[430]

The clay sealings retrieved at Akrotiri attest, surprisingly enough, to all these categories and to the overwhelming majority of their subcategories, with the sole exception of roundels.[431] The 'surprise' is twofold. Firstly, in the scholarly literature there has been an assumption — so far unproven[432] — that certain Neopalatial sealings were dispatched from one site to another. Secondly, this notion of 'travelling' nodules was thought to pertain chiefly to flat-based nodules and, with seemingly less certainty, to other sealing varieties. While flat-based nodules constitute the overwhelming majority of sealings found at Akrotiri, it is noteworthy that other types are also represented, if only with a single specimen each. Out of the 73 sealings from Room D18b that are sufficiently large and well enough preserved to identify their type, **N1**–**N68** are clearly flat-based nodules (*Figs. 49, 54*). Also represented are a single-hole hanging nodule, **N69**, with an impression unique among the D18b nodules, and a two-hole hanging nodule, **N70**, which is incomplete and does not preserve any traces of its seal impression (*Figs. 57, 58*). The impressed nodule **N74** from D18a, found together with the Linear A tablets, is a direct sealing (*Figs. 53, 59*); on its reverse is the imprint of a circular object wrapped with a cord against which the nodule had been pressed. Finally, the impressed nodule **N75** retrieved from an open area to the S of Xeste 2 can be identified as a *nodulus*, a sealing that was never attached to anything else (*Fig. 61*).

Table 2 sets out various terms that are used in the literature for the nodule types encountered in Akrotiri in English, French and German. In the present study the terms that were introduced by Hallager were chosen. Not all of them are accurate, but since they have been established in the literature they are being overtaken here as such in order to avoid more confusion regarding the terminology used for Aegean sealings by suggesting new terms. Flat-based nodules, for example, constitute a specific and well-defined type but go by various names. The term 'flat-based', employed here, is the most commonly-used albeit it is as inaccurate as the German term *Päckchenplomben*. These nodules are in fact a kind of direct sealing, i. e. one that preserves on one of its sides the imprint of the object to which it was

428 For a more detailed discussion, see Concluding Remarks, pp. 231–36.

429 The historical framework, allowing for differences of opinion in historical interpretations and the evidence from more recent finds, is nicely laid out in Weingarten 1990a; the complicated Protopalatial situation is summed up in Krzyszkowska 2005a, 98–118.

430 Hallager 1996, 19–38, for the full array of Minoan administrative documents (incised and/or stamped).

431 Karnava forthcoming b. There is no way of telling whether or not the absence of roundels is accidental.

432 The cautionary tales in Krzyszkowska 2005a, 188–92.

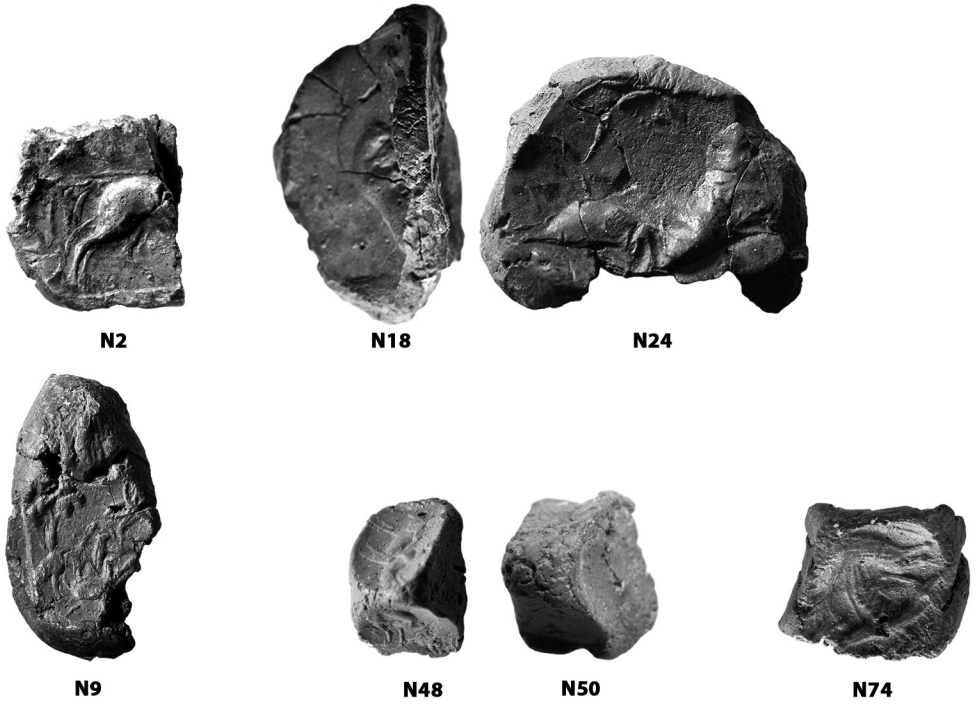


Fig. 53. Some flat-based Akrotiri nodules, all from Room D18b except for **N74**, a direct sealing from Room D18a. **N18** and **N24** are among the largest in size, **N48** and **N50** are among the smallest in size. All four attest to the combination of two seal impressions each; **N2** and **N9** bear one seal impression each; scale 3:2 (Akrotiri Excavations Archives/*CMS* Archive).

Weingarten	Hallager	Pini	*CMS*	French Literature
Classes I–V; flat-based nodule; document sealing	flat-based nodule	parcel sealing; leather sealing	*Päckchenplombe*	*scellé; pastille*
object sealing: molar	direct sealing	molar	*Stöpselplombe*	*scellé*
nodulus (I)	*nodulus:* dome-shaped	disc-shaped/3-finger/2-finger *nodulus*	*Nodulus*	*boulette*
Class VI	two-hole hanging nodule	around string nodule	*Schnurplombe*	*pendule*
Classes VII–XI	single-hole hanging nodule	pendant	*Schnurendplombe*	*pendule*

Table 2. Cretan Neopalatial clay sealing types attested at Akrotiri and their nomenclature; the shaded terms are the ones used in the present study. After Weingarten 1986a; 1988; Hallager 1996; Pini 1990; *CMS*; Chapouthier 1930; Poursat in Poursat *et al.* 1978; *CHIC*.

attached.[433] Direct sealings — known principally from the sizeable Protopalatial deposits at Phaistos and Monastiraki — all but disappear in the Neopalatial period: our flat-based nodules are among the few examples of clay nodules that were fastened to an actual object and, from what it seems, a portable one.

In the following pages the flat-based nodules are discussed extensively, since they represent the majority of the sealings retrieved at Akrotiri; the discussion includes description and categorization of the nodules found at Akrotiri and comparisons with relevant finds in Crete. The same follows for the single-hole hanging nodule, the two-hole hanging nodule, the direct sealing and the *nodulus*.

The Flat-Based Nodules

THE TYPE

Fundamental to understanding the function and importance of the Akrotiri impressed nodules is what the numerous flat-based nodules were meant to seal. The imprints preserved on the undersides of the nodules show that the clay virtually surrounded a rather thin and relatively flat object with a smooth, roughly even surface, which was folded over and held together by a string. We may also infer that the object was pliable, since in some instances strings pulled taut had made the once-flat surface undulating.[434] The imprints point to an organic object, tentatively suggested as papyrus, palm-leaf or leather by researchers, when specimens were first found at the beginning of the 20th century. Papyrus and palm-leaves have very distinctive imprints,[435] which are not attested in any of the flat-based nodules; the smooth surface of the object suggests that the sealed object was made of leather. Opinions vary only as to whether we are dealing with small parcels,[436] or a folded sheet — always of leather. Folded sheets of leather, sealed with clay and impressed with seals bring to mind pieces of parchment, i. e. leather prepared as a writing surface;[437] the small size of some of these objects, less than 1 × 1 cm, excludes the possibility that the leather, presumably an early form of parchment, was anything other than folded.

Hallager describes clearly the process by which such clay nodules were created: 'The principle of the flat-based nodule is that a tiny folded piece of worked leather — or parchment — has been wound with a thin string, upon which a small lump of clay has been applied and the thin string further wound around the "parcel" and within the clay lump, the procedure ending with the impression of one or more seals into the clay.'[438] The Akrotiri evidence confirms Hallager's description of the procedure followed to make flat-based

433 Direct nodules are not a unified category of nodules. For the varieties, see Hallager 1996, 34–35, 201.

434 It is in this respect that the term 'flat-based' nodule is imprecise: the only category of Minoan administrative documents that actually have one flat side, created by pressing the nodule against a flat, hard surface, are the Protopalatial crescent-shaped nodules (for a succinct description, see Hallager 1996, 34).

435 Clear papyrus imprints are attested on the back of Hellenistic sealings from Kallipolis in Aetolia (Themelis 1979, 263, fig. 21).

436 Pini 1983, 560.

437 Pini 1983, 562, n. 16; Weingarten 1983a, with a lengthy discussion on the recognition of the material involved.

438 Hallager 1996, 135; in accordance: Müller in *CMS* II,7 p. 271.

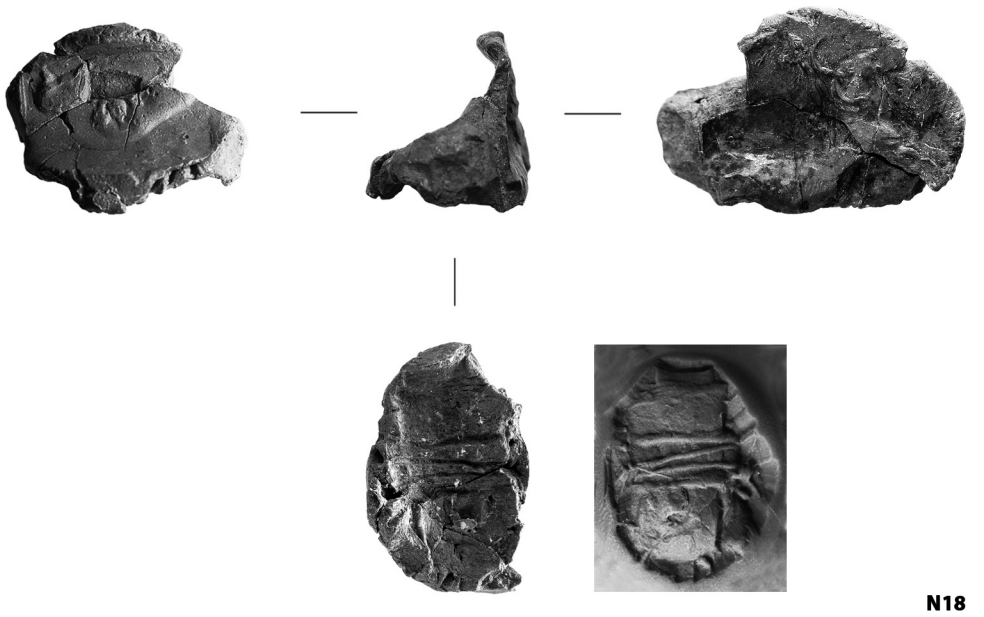


Fig. 54. Flat-based nodule **N18**. Centre: section; upper right: seal impression (*CMS* V Suppl. 3 no. 392); upper left: seal impression (*CMS* V Suppl. 3 no. 393); lower right: (modern) cast of the sealed object; lower middle: imprint of the sealed object, as left on the clay; scale 3:2 (Akrotiri Excavations Archives/*CMS* Archive).

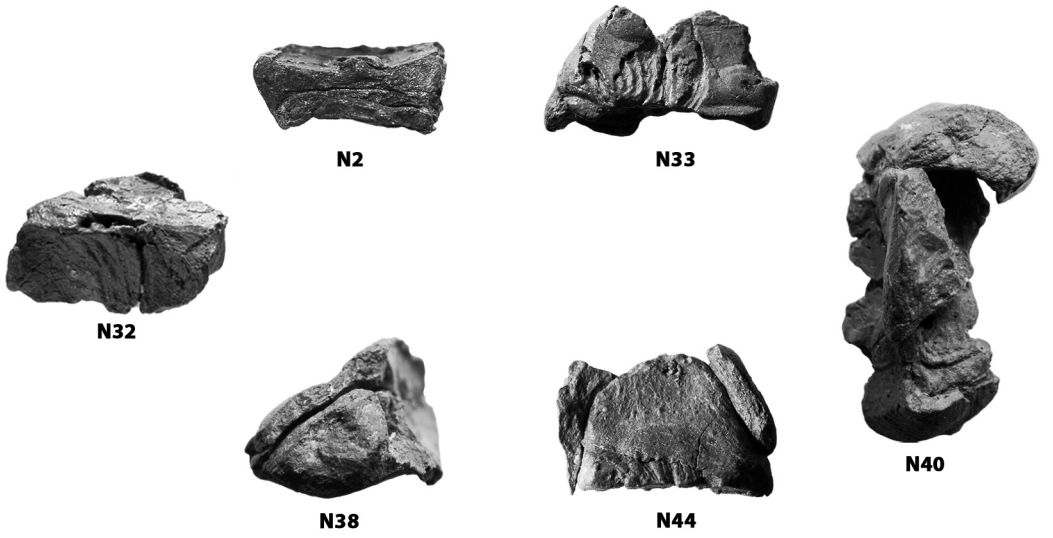


Fig. 55. Flat-based nodules and manufacturing sequence: **N32**, with string exits from inside the clay (3/4 view); **N2**, one-seal flat-based nodule with layers of clay (section); **N38**, two-seal flat-based nodule with layers of clay (section); **N33**, two-seal flat-based nodule with layers of clay (side); **N44**, two-seal flat-based nodule with layers of clay (side); **N40**, two-seal flat-based nodule with layers of clay (top); scale 3:2 (Akrotiri Excavations Archives/*CMS* Archive).

nodules (*Fig. 54*). Traces of the strings are preserved on one side, the one we assume was the underside, of all the flat-based nodules from Room D18b.

In addition, string holes are not only imprinted on the nodules' underside, but they exit from inside the clay (*Fig. 55:* **N32**). This shows that the string was first wound around the folded leather a number of times, then a layer of clay was applied on top of it, and the string was repeatedly wound around the folded leather together with that first layer of clay. That the clay was placed on top of the folded leather in layers is also evident in the section of the one-seal flat-based nodule **N2**, as well as that of the two-seal flat-based nodule **N38**, where the first clay layer appears to have taken already the shape of a gable (*Fig. 55*). The final layer of clay would receive the seal impression, apparently placed atop the nodule after tying had been completed and probably after the clay had somewhat dried out (*Fig. 55:* **N33**); consequently the various clay layers remained distinct and had not melded together (*Fig. 55:* **N2**, **N38**, **N44**, **N40**). Some nodules even attest to three superimposed layers of clay (*Fig. 55:* **N44**, **N40**). In these cases the first was placed atop the folded leather; then, when these had been tied together, a second gable-shaped layer of clay was added; and finally a third layer covered the whole nodule and received two seal impressions on either side of the 'gable'.

Last but not least, an important technical observation should be stressed: the Akrotiri evidence shows that the clay was not only meant to be placed on top of the folded leather but also to be wrapped around its four sides, sometimes even reaching as far as its underside. Since the overwhelming majority of the Akrotiri flat-based nodules are complete, they also preserve complete imprints of the folded leather on their undersides. Based on Cretan evidence Hallager suggested that some of the flat-based nodules were placed at the edge or the middle of a folded piece of parchment much larger than the actual clay nodule.[439] Such a suggestion has been however disproven through modern experiments.[440] Moreover, there is no corroboration for it among the Akrotiri flat-based nodules. While some fragmentary specimens do not preserve the imprint of the whole folded piece of leather, it is impossible to determine if it had actually been larger than the clay sealing, or if the fragmentary condition of the latter is in itself to blame.

What is, however, evident is that the clay nodules were fashioned in such a way as to ensure that the sealing and folded piece of leather were held together once the clay had dried completely. Hence the binding of the piece of leather with string and formation of the nodule were done simultaneously; this probably also explains why the clay covered the sides of the folded piece of leather as well. Since the pieces of leather with the stamped clay nodules on top would travel, they probably had to keep firmly together.

TERMINOLOGY AND SUBTYPES OF FLAT-BASED NODULES IN PREVIOUS LITERATURE

The term 'flat-based' nodule, which is used in the present study, was first devised by Weingarten,[441] who later opted for 'document sealing'.[442] Weingarten was the first to study in detail the diverse types of nodules in Minoan Crete, beginning with Neopalatial sealings

439 Hallager 1996, 137–45, with visual reconstruction in figs. 51 and 53.
440 *CMS* II,6 pp. 355–56, n. 28; Krzyszkowska 2005a, 156.
441 Weingarten 1983b, 25–26, with description of Classes I–V.
442 Weingarten 1991, 304.

and, most notably, those of Zakros. She suggested a typology of eleven classes of Neopalatial nodules (Classes I–XI),[443] of which Classes I–V correspond to subtypes of flat-based nodules. Her criteria for arranging the material was primarily the shape of the nodule and secondarily the number of impressions it bore, from one to three. Classes I and II bear two seal impressions each, the former on practically parallel vertical sides, the latter on a gabled-shaped nodule; Class III bears three different seal-impressions; Class IV has a recumbent shape and bears two seal impressions; Class V bears a single seal impression. Her initial interpretation regarding the use of these nodules was that they sealed 'the *strips* [of leather] which tied the documents rather than … the documents themselves'.[444]

Pini, based on his study of the Zakros material, where the nodule *par excellence* was the flat-based nodule, established the general term *Päckchenplombe* (parcel nodule) for this type of impressed nodule.[445] His interpretation, however, differed from that of Weingarten: in his view the imprints indicated small pieces of folded leather or parchment that resembled packets or parcels. Furthermore since the unfolded piece of leather was probably no more than 2–3 × 3–4 cm, and since the folded layers were bound tightly together, these 'packets' did not contain anything; instead the pieces of leather carried short written texts. Pini further divided his parcel nodules into *Plättchenplombe* (two-seal nodule with roughly parallel sides) and *dreiseitiges Prisma* (three-seal prismatic nodule).

In his study of Neopalatial nodule types, Hallager retained the term 'flat-based' nodule.[446] He formulated his own typology, merging Weingarten's classes into two main types: the 'standing' nodule (Weingarten's Classes I–III) where the height was greater than its length; and the 'recumbent' nodule (Weingarten's Classes IV–V) where length was greater than height. Further subdivisions of these types are based on the number of seals used: three-seal, two-seal, one-seal.

In *CMS* II,7 (1998), which published the seal impressions from Kato Zakros, and *CMS* II,6 (1999), where nodules from Agia Triada and other Cretan findspots in central and eastern Crete were published, the appendices discussed nodules and other objects bearing seal impressions.[447] In these, Müller presented a detailed typology of flat-based nodules based primarily on the number of impressions each nodule bore and secondarily on the shape of the nodule, which was in reality created by the number of impressions.[448] His subtypes are: *Päckchenplombe, Horizontalscheibe* (one-seal); *Päckchenplombe, Vertikalscheibe* (two-seal); *Päckchenplombe, Pyramide* (three-seal). In these broad subtypes, variations occur, such as *Horizontalscheibe mit zweitem Abdruck* (with two seal impressions), or *Vertikalscheibe, giebelförmige Variante* (gable-shaped), or *Vertikalscheibe, giebelförmige Variante mit flachem Giebel* (gable-shaped, with flat gable); in these variations, the shape becomes the dominant criterion and the number of seal impressions takes second place. In the recent publication of the seal impressions from the Akrotiri sealings and the first comprehensive treatment of these sealings in *CMS* V Suppl. 3 (2004), it is this typology that appears in the description of the impressed nodules.

443 Weingarten 1986a, 2, table 1.
444 Weingarten 1983a, 12.
445 Pini 1983.
446 Hallager 1996, 22, table 1; 135–58.
447 *CMS* II,7 pp. 271–77; *CMS* II,6 pp. 339–99.
448 *CMS* II,7 pp. 272, 274, table 1; *CMS* II,6 pp. 349–60, 395, table 4.

Ten flat-based nodules from Akrotiri bear the impression of one seal, and 52 of two seals; no three-seal nodules are attested. According to Weingarten's typology, they fall within Classes II and IV (with two impressions) as well as V (one impression); Classes I and III are completely absent. According to Hallager's typology, they fall between standing and recumbent two-seal, whereas the one-seal are naturally recumbent. According to Müller's typology, 10 are *Horizontalscheibe*, and the remaining fall under *Vertikalscheibe*.

The subtypes described above make little sense, apart from imposing a formal taxonomy: nodules from the Akrotiri hoard presenting a number of similar traits, such as the same combination of seal impressions and the exact same clay, waver at times between subtypes. Differences in the shapes of hand-made objects are to be expected, but need we assume that they were actually meaningful? For instance, it seems highly dubious that in a hoard as numerous as that found in Zakros House A, with more than 500 nodules, one could distinguish between nodules based on a straight or triangular profile (Weingarten's Classes I and II respectively) or on the ratio between a nodule's height and length (Hallager's standing and recumbent categories, and Müller's *Horizontalscheibe mit zweitem Abdruck* and *Vertikalscheibe*). It is more probable that the different subtypes represent variations, incomprehensible by us, in the way nodules were made. They could reflect differences in time between the creation of various subtypes; or, as is often suggested, localized administrative habits and rules. They could even represent administrative responsibilities and duties. Unfortunately, although the various subtypes have helped scholars bring some order to this material, they seem to offer little assistance in gaining a deeper understanding of how the system worked.

It has been suggested that 'the person who actually rolled or moulded the clay between his fingers already had in mind the shape of the nodule which would emerge'.[449] It has also been suggested that the determining factor in the final shaping of the flat-based nodule was the size of the piece of leather to be sealed.[450] Both suggestions are significant when combined with the information provided by the Akrotiri material:[451] it seems that the size of the piece of leather did in fact define the size of the nodule, and, in this respect, the person who prepared the clay really did have in mind what (s)he had to do. Nonetheless, the Akrotiri material adds another parameter: while some nodules were placed on small-sized pieces of leather half the size of others, it is also evident that the seals used on the smaller pieces were also of small size. In this case, we have to assume that smaller-sized seals were reserved for smaller-sized leather pieces.

The following examples will help illustrate the relationship between seals, nodule shapes and sizes among the Akrotiri flat-based nodules. A sizeable metal signet ring, with an estimated original bezel size of 3.3 × 2.44 cm, stamped single-handedly the horizontally positioned surface of a one-seal nodule (*Fig. 56*: **N6**): the piece of leather beneath was 2.6 × 1.9 cm. The same ring joined a sizeable stone cushion, of dimensions 2.15 × 1.4–1.5 cm, to impress a large gable-shaped two-seal nodule (*Fig. 56*: **N15**), beneath which the folded piece of leather was 2 × 1.45 cm. Subsequently the same sizeable metal signet ring joined a smaller metal ring, with estimated bezel-size of 1.8 × 1.1 cm, in order to produce a gable-

449 Weingarten 1983b, 25.
450 Krzyszkowska 2005a, 156.
451 See further below, Groups among the Akrotiri flat-based nodules, pp. 200–03.

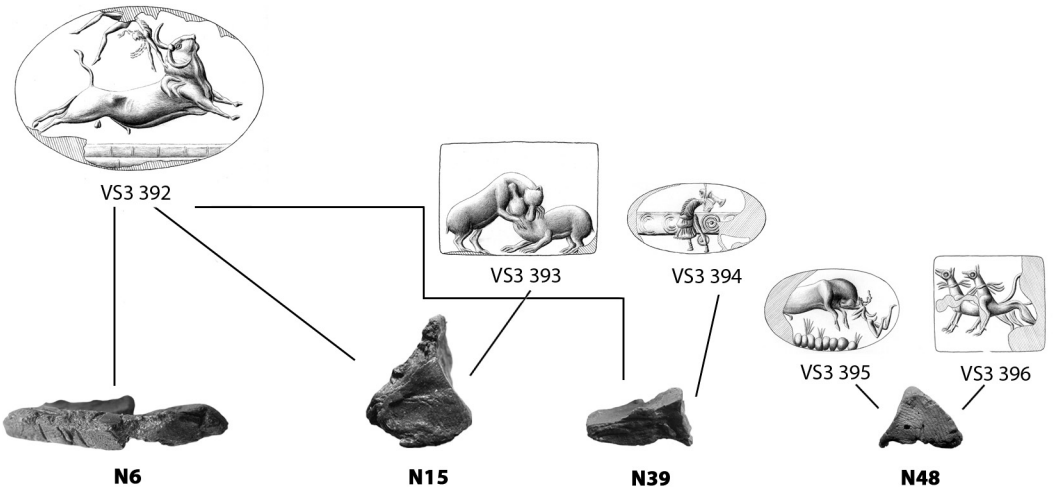


Fig. 56. Sections of nodules **N6**, **N15**, **N39**, **N48** and the seal impressions they bear; scale 1:1 (Akrotiri Excavations Archives/*CMS* Archive).

shaped nodule, albeit considerably shorter than the previous (*Fig. 56*: **N39**). Here the two impressed sides of the 'gable' do not match in size or inclination and the piece of leather was 0.65 × 1.3 cm. Finally, a small metal signet ring, of dimensions 1.7–1.8 × 1.0–1.1 cm, together with a small stone cushion measuring 1.5 × 1 cm produced a small-sized two-seal nodule (*Fig. 56*: **N48**). The size of the piece of leather covered by the first three nodules was practically twice that of the fourth piece of leather, which measured 0.8 × 1.2 cm.

Since the flat-based nodules constitute the majority of nodules retrieved at Akrotiri, they will be examined in more detail than the other nodule types. The history of research, an account of their findspots in Crete and observations on seal use patterns on them are considered separately in Chapter 4.

The Single-Hole Hanging Nodule

Nodule **N69** was retrieved among the hoard of nodules in Room D18b. These belong overwhelmingly to the flat-based type, while only one is a two-hole hanging nodule. **N69** bears the impression of a seal not otherwise attested on any of the Akrotiri sealings (*Fig. 57*).

The name 'single-hole hanging' nodule refers to a basic feature of these nodules, namely that they hung at the edge of a cord, around which the clay was fashioned; the nodules were then stamped and often incised by means of a stylus with Linear A.[452] The imprints retrieved from broken nodules suggest that the now-lost cords had been made of gut, leather or fibres. The imprints also reveal that the end of the cord was knotted, probably in order to prevent the clay from slipping. Hence they offer no clues as to the kind(s) of object(s) associated with single-hole hanging nodules. The specimen from Akrotiri is easily recognizable as belonging to this nodule type, only there is no way of telling whether or not it was incised, since its lower half is missing.

452 Hallager 1996, 37, 161–63; Müller, in *CMS* II,6 pp. 340–46: *Schnurendplomben*.

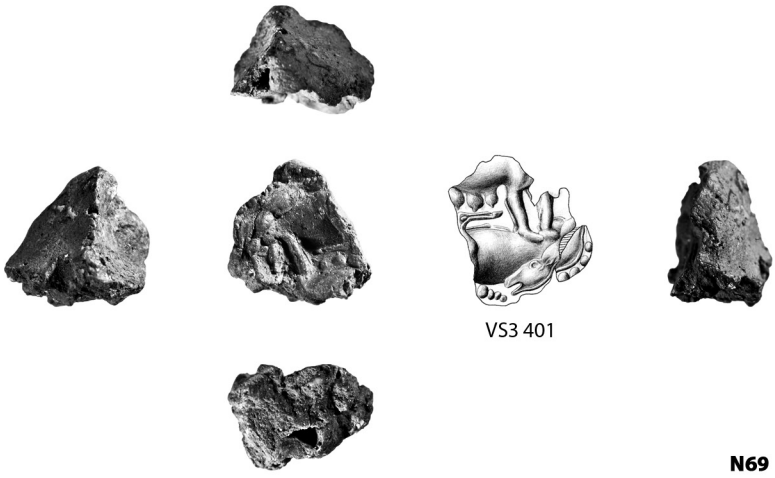


Fig. 57. Single-hole hanging nodule **N69** with the seal impression it bears; scale 3:2 (Akrotiri Excavations Archives/*CMS* Archive).

Single-hole hanging nodules are the main variety found at Agia Triada with over 900 specimens; approximately 20 specimens each are documented at Knossos[453] and Chania[454] but they are almost virtually absent from Zakros, where only six specimens are found.[455] A distinction in sub-varieties of single-hole hanging nodules is based on the shape of the nodule, which reflects the specific way in which they were made: there are gables, pyramids, conoids, pendants — the last with pyramidical or rounded back.[456] The shape of the unique Akrotiri specimen places it tentatively among the subvariety of pendants with pyramid back, but some caution is reserved on account of its fragmented state. It is a triangular but rather irregular clay lump with three flat sides, on one of which a seal was impressed.[457] Numerous parallels of this particular subvariety are attested at Agia Triada, Knossos and Chania, whereas Zakros has only one near-parallel.

Since nodules of this variety provide no information concerning the objects to which they were attached, if any, various suggestions have been put forward as to their function.

453 *CMS* II,8 where 16 different seals were used for 20 single-hole hanging nodules (nos. 22, 31, 46, 56, 95, 157, 158, 187, 194, 267, 279 × 2, 289 × 2, 492 + 593 × 2, 593 × 2, 604, 687). Nodule with seal impression no. 31 was retrieved from the Arsenal, where bronze hinges from a box were also found (see also n. 385, 388) and two nodules were stamped by two different seals.

454 *CMS* V Suppl. 1A where eight different seals were used for 20 single-hole hanging nodules (nos. 151, 152, 153 × 2, 162 × 3, 167, 168 × 3, 169 × 8, 180). Two of these seals (nos. 162, 169) were also used for stamping roundels at the same site, and one (no. 153) was also used to stamp two specimens of two-hole nodules.

455 *CMS* II,7 where three different seals stamped six single-hole hanging nodules (nos. 23 × 4, 82, 45). The last seal was also used to stamp three different single-hole hanging nodules found in Agia Triada (*CMS* II,6 no. 68). See also, Krzyszkowska 2005a, 158, 184.

456 Krzyszkowska 2005a, 159.

457 Hallager 1996, 162, 'pendant'; Krzyszkowska 2005a, 158–160, 'pendant with pyramid back'; Müller in *CMS* II,6 p. 345, table 1: *mit pyramidenförmiger Rückseite*.

It has been suggested that they basically served an archival role;[458] it has also been proposed that within an archive small containers with high-value goods were secured by the cords from which these nodules hung.[459] However if we take into consideration their high concentration in the same findspot, especially in the instance of Agia Triada, the chances that they were actually fastened to containers decreases.[460] Nevertheless the perception that they functioned as some sort of tags, which conveyed certain information through stamping and the practically standard incising of a Linear A sign, persists in the literature.[461]

The Akrotiri evidence proves, first of all, that single-hole hanging nodules were also travelling nodules, much like the flat-based nodules.[462] This is a valuable piece of information, although there is no way of telling whether it applies to all single-hole hanging nodules, wherever found, i. e. if the Akrotiri evidence should be seen as the rule or the exception. Since it was found along with flat-based nodules in Room D18b, it might have been attached to the container that transported the flat-based nodules or, alternatively, to another, unspecified commodity that came with them. If the latter were true, it is noteworthy that the single-hole nodule still ended up with the flat-based nodules. Regardless of whether or not all single-hole nodules travelled, an archival character is not precluded: since some of them turn up in archival deposits, we can posit that their final destination was the inclusion in an archive. The sheer number of single-hole hanging nodules at Agia Triada argues against any accidental inclusion in those archival deposits which contain only one or two specimens.

The seals used to stamp single-hole hanging nodules were also used to seal other document types, such as roundels and two-hole hanging nodules, found at the same site.[463] The potential to stamp different varieties of nodules most likely highlights flexibility in the administrative duties of seal bearers, and may also demonstrate an increased degree of administrative authority and responsibility. More recent documentation shows that the same seals could be used for single-hole hanging nodules and flat-based nodules dispersed between different sites, since impressions of the same large gold ring with a combat scene are attested on single-hole nodules at Knossos and flat-based nodules found at Agia Triada.[464]

458 Hallager 1996, 197.

459 Weingarten 1987, 34–37; 1991, 304.

460 Hallager 1996, 198–99. Hallager argues that, because of their association with flat-based nodules and Linear A tablets, single-hole hanging nodules could have been attached to written documents, even papyrus, with the advantage that the contents of the document could be accessed without damaging the sealing; there is, however, no way of either proving or disproving such claim.

461 Müller in *CMS* II,6 p. 341.

462 This has already been suggested on account of single-hole hanging nodules found at Knossos but thought to have travelled from Agia Triada because of similarity in shape and clay (Krzyszkowska 2005a, 189). Such a suggestion, however, relies on the (unproven) assumption that the single-hole hanging nodules found at Agia Triada were locally produced.

463 Hallager 1996, 219. See previously n. 454, with the relative evidence coming from Chania.

464 *CMS* II,8 no. 279 on two single-hole hanging nodules from Knossos and *CMS* II,6 no. 15 on five flat-based nodules from Agia Triada, two being dual-stamped with *CMS* II,6 no. 4 (Krzyszkowska 2005a, 190 nos. 368–371). Despite the fact that these impressions are given different numbers in the *CMS* they were actually produced by the same seal.

The Two-Hole Hanging Nodule

Nodule **N70** belonged to the same batch of nodules in Room D18b as the single-hole hanging nodule **N69**, and was thus associated with a clear majority of flat-based nodules (*Fig. 58*). **N70** can be identififed as a two-hole hanging nodule, a variety not attested elsewhere at Akrotiri. Whether it was unique in other respects is impossible to say, since its seal impression is not preserved.

The name 'two-hole hanging' nodule refers to a clay nodule that was shaped around a knotted cord. But unlike single-hole hanging nodules, where the knotted end of a cord was wrapped inside the nodule, in two-hole nodules a cord with a knot ran right through the nodule; the name 'two-hole' refers to the imprints the cord left on opposite sides of these nodules as it entered and exited.[465] The Akrotiri two-hole hanging nodule is fragmentary and estimated to preserve about one-third of its original mass. It was originally gable-shaped and had a single seal impression, now missing; the nodule also lacks half of its reverse. Since it bore no seal impression, the nodule was omitted from the nodules published in *CMS* V Suppl. 3. The present author had registered it in the excavation inventory book, but was unaware of what it was until comparable specimens were examined in the Herakleion Museum. Its shape and cord impressions identify it without a shred of doubt as a two-hole hanging nodule.[466]

This nodule variety is not often found in LM IB archival deposits in Crete but, whatever its function, it was seemingly later inherited by the Mycenaean administration, where it became the prevailing nodule shape[467] — unlike the single-hole hanging nodule that disappears after LM IB. Two-hole hanging nodules have been found in limited numbers at Chania[468] and Agia Triada,[469] but the largest Neopalatial concentration comes from Zakros.[470] The Chania evidence shows a seal used on both single-hole and two-hole hanging nodules.[471] The Zakros evidence is further informative because it shows another overlap in seal use between flat-based nodules and two-hole hanging nodules.[472] We should note here that the stamping of two-hole hanging nodules with two or three different seals is so far peculiar to Zakros. Knossos is a case apart, with more than 700 two-hole hanging nodules

465 Hallager 1996, 36–37, 159–99, where they are treated together with single-hole hanging nodules; Krzyszkowska 2005a, 160–61; Müller in *CMS* II,6 pp. 346–48 (*Schnurplomben*).

466 Confusion seems sometimes to occur in distinguishing between single-hole and two-hole hanging nodules, because there exists a subvariety of single-hole hanging nodules which display a second hole at the opposite end (Hallager 1996, 163); in the present instance the nodule shape leaves no doubt as to its type.

467 Krzyszkowska 2005a, 217–22; Panagiotopoulos 2014, 106–12.

468 Seven specimens of two-hole nodules that date to the LM I period are found at Chania (*CMS* V Suppl. 1A nos. 153 × 2, 155, 181 × 3; V no. 235); two more specimens date to the LM III period (*CMS* V Suppl. 1A nos. 127, 141).

469 Only five specimens (all of them with a question mark due to their fragmentary state): *CMS* II,6 nos. 62, 65, 69, 95, 118.

470 56 specimens are listed in *CMS* II,7.

471 A seal used on two-hole hanging nodules also stamped two single-hole hanging nodules from the same site (*CMS* V Suppl. 1A no. 153).

472 In at least nine instances: *CMS* II,7 no. 71 (one-seal flat-based) and nos. 71-74-124 (three-seal two-hole hanging); the rest are a pair and identical triplettes on flat-based and two-hole hanging nodules: *CMS* II,7 nos. 17 + 38, 72 + 76 + 89, 83 + 179 + 198, 117 + 119 + 151, 129 + 135+ 194, 134 + 148 + 164, 150 + 154 + 229, 187 + 189 + 210.

Fig. 58. Two-hole hanging nodule **N70**; scale 3:2 (Akrotiri Excavations Archives/*CMS* Archive).

attested, although the dating of most examples from the palace is either unknown or disputed. Some 30 two-hole hanging nodules are attributed to the Neopalatial period based on the style of the seal impressions and some examples could even go back to the Protopalatial period on the basis of the same criterion. The fact remains, however, that most two-hole hanging nodules from Knossos belong to the Mycenaean levels.[473]

Two-hole hanging nodules are thought to have functioned as tags for labelling of commodities or their containers, and were subsequently placed in an archive;[474] this interpretation follows the same argument as for single-hole hanging nodules. Nonetheless there must have been fundamental differences in function between the two nodule varieties, since their typological discrepancies appear to be real and consistent. More importantly, single-hole hanging nodules disappear together with the Minoan administration, whereas two-hole hanging nodules proved to be further useful in the context of Mycenaean administration, a fact which implies that the inability to distinguish between the two types of nodules is in the eye of the beholder.

473 Weingarten 1994a, 183–87.

474 Hallager 1996, 159; Müller, *CMS* II,8 p. 53; Krzyszkowska 2005a, 160. The main argument Hallager offers in support of his interpretation is that a two-hole hanging nodule (HMs 1152, now *CMS* II,7 no. 250), was found in the palace together with an amphora. *CMS* II,7 offers, however, conflicting information on the provenance of this nodule, which it designates as coming from House A, except in its introduction (*CMS* II,7 p. XVII), where it is listed as coming from the palace; if HMs 1152 was indeed found in House A, then only two flat-based nodules and two *noduli* survive from the palace of Zakros.

Fig. 59. Direct sealing **N74** from Akrotiri; scale 3:2 (Akrotiri Excavations Archives/*CMS* Archive).

The Direct Sealing

The direct sealing **N74**, retrieved from inside an *asaminthos* ('bathtub') in the SW corner of Room D18a, is also unique. Apart from being a different kind of nodule than the other Akrotiri nodules, the seal impression on it is also unparalleled, i. e. not attested either among the remaining Akrotiri seal impressions or anywhere among the Cretan evidence. No other nodule was found with it, unlike the numerous specimens found all together in the adjacent room; also, it was accompanied by a number of locally produced Linear A tablets, as if to demonstrate the close relationship between sealings and writing at Akrotiri in a way similar to Crete. Therefore a potential connection between **N74** and the nodules found elsewhere in the settlement cannot be established either on the basis of the seal impression or of the sealing type to which it belongs.

N74 belongs to a broad category of sealings consisting of diverse examples. But each displays on its reverse the imprint of the object against which it had been pressed; hence the term 'direct' seems appropriate for these sealings.[475] Direct sealings, primarily known in the Aegean from EH II onwards and frequently attested in Protopalatial Crete, were attached to knobs and pegs, and evidently served to secure doors or chests.[476] The fact that they are almost absent from Neopalatial sealing deposits has been described as 'a radical change in the way goods and commodities were controlled'.[477]

475 Hallager 1996, 34–35, 201; Müller, in *CMS* II,6 p. 360: *Objektplomben*. As mentioned previously, flat-based nodules do, however, theoretically qualify as direct sealings, since they preserve on their reverses the imprints of the objects to which they were attached. Because these imprints are so distinctive and they were attached specifically to documents, they constitute a category of their own.

476 90% of the Phaistos Protopalatial sealings were direct sealings (Fiandra 1968); Militello 2000; Relaki 2012, 299–313; Weingarten 1990c; 1992; 1994b.

477 Krzyszkowska 2005a, 155.

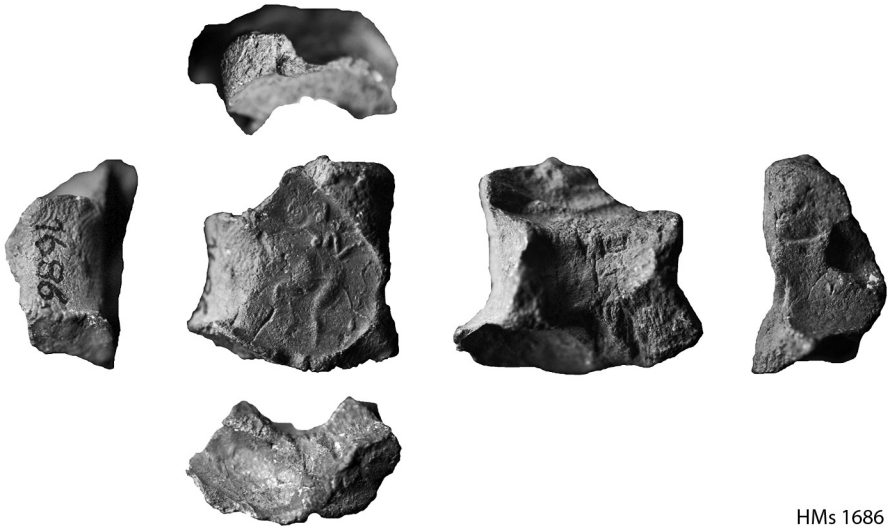


Fig. 60. Direct sealing from Agia Triada (HMs1686 = *CMS* II,6 no. 35); scale 3:2 (Archaeological Museum of Herakleion © Ministry of Culture and Sports/Archaeological Receipts Fund, photos by A. Karnava).

This particular sealing preserves on its reverse the impression of a semi-circular shaft, around which a rather thick string had been wound many times (*Fig. 59*). Since this sealing seems to have travelled from Crete in this state, we assume it had been attached to a movable object; thus the shaft could represent part of a peg or knob belonging to a box.

The overall shape and manner in which **N74** was made is strongly reminiscent of another unique direct sealing retrieved at Agia Triada (*Fig. 60*). There the imprint of the object had the appearance of skin, prompting Müller to suggest that it probably represented a leather container or a leather bag.[478] However, the Akrotiri sealing now provides additional insights, since it was clearly attached with string to a solid shaft or peg. Unfortunately, we cannot identify the material from which the shaft or peg was made, since its surface was almost entirely covered by string.

We could, however, venture to suggest that **N74** may have secured some sort of container, in which the nodules were transported to Akrotiri or which held unspecified goods that accompanied them. The latter option is favoured by the distance which separated **N74**, found in Room D18a, from the hoard of sealings in Room D18b, and also by its proximity to the Linear A tablets; in such case, the tablets could have registered the product(s) associated with/secured by this sealing.

The fact that this direct sealing had travelled, whether together with the other sealings or not, shows that this sealing type could be involved in the movement of sealings and/or products from one place to another. Direct sealings are not always, therefore, indicative of administrative activities being carried out where they were found.

478 *CMS* II,6 no. 35 = HMs 1686; Müller, in *CMS* II,6 p. 360, figs. 5, 6.

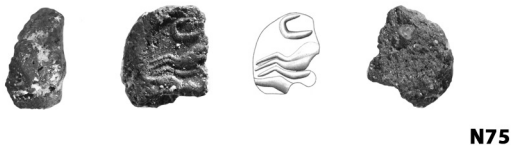


Fig. 61. *Nodulus* **N75** with the seal impression it bears; scale 3:2 (Akrotiri Excavations Archives/*CMS* Archive).

The *Nodulus*

The fragment of the *nodulus* **N75** was retrieved in 1999 in a findspot and archaeological context that had little in common with those of the other Cretan sealings found at Akrotiri. This fragment is yet another unique example at Akrotiri of a particular Neopalatial sealing type. In addition, much like the single-hole hanging nodule and the direct sealing (both unique), this *nodulus* also bears the impression of a seal otherwise unattested at Akrotiri or in Crete (*Fig. 61*).

The *nodulus* is probably the only type of sealing that is attested throughout Minoan administration in its various phases.[479] The realization that *noduli* should be considered a separate category of sealings was slow to come;[480] yet they are clearly recognizable as simple lumps of clay, without any visible means of attachment, which bore one or more seal impressions from different seals. It appears that the number of impressions on the nodule defined its shape: two seal impressions produced the so-called disc *nodulus*,[481] whereas a single impression, as on **N75**, produced the so-called dome *nodulus*.[482] The Akrotiri fragment is too small to judge the original shape definitively, whether conical, pyramidal or rounded on the back, but a rounded oblong shape is most likely.[483] The fact that the Akrotiri *nodulus* was impressed by a metal signet ring conforms to evidence collected for Neopalatial dome-shaped *noduli* found in Crete, where 44% carry impressions of metal rings. In addition, during this period the motifs on these rings were mostly '… animals, with the bull predominant but also boar, lion, agrimi, stag, and dogs'.[484]

As previously described, the micro-context of this sealing — inside a wooden box, together with a balance set and possible weighing equipment — is unprecedented in the Minoan world. It is hard to escape the notion that the *nodulus* was somehow connected to the weighing process; alternatively, it could have indicated an intention or an act that took place where the box originated, such as to authenticate or certify. Some kind of connection between a *nodulus* and the weighing process is not wholly inconceivable, since

479 Krzyszkowska 2005a, 161–63.

480 Weingarten 1986a.

481 The Zakros evidence shows overlaps between impressions on two-seal flat-based nodules and two-seal *noduli* in three instances: *CMS* II,7 nos. 105 + 159, 156 + 227, 162 + 171.

482 Hallager 1996, 121–33.

483 Hallager (1996, 121) suggests that the shape of the *nodulus* was ultimately defined by the way the lump was held and the sort of seal that had been used; in this respect, an oval-shaped ring bezel would have created an oblong dome-shaped *nodulus*.

484 Hallager 1996, 128. A recently recovered *nodulus* from Gournia also shows two bulls *tête-bêche* (head-to-tail) (Watrous *et al.* 2015, 449–50 no. 5).

certain examples at Agia Triada, and also one from Samothrace, bear incised fractional signs.[485] Linear A fractions were meant to denote quantities smaller than a unit[486] and they are indicative of the precision required by and aspired to by Linear A scribes. This is not to say that all *noduli*, with and without fractions, had the same function, since many changes in their typology and sealing patterns can be seen during the hundreds of years they were used; different functions have even been posited for the disc-shaped and the dome-shaped *noduli*.[487]

The interpretation offered for the function and use of these sealings, that they served as tokens of some kind, still remains valid and is the most widely accepted.[488] At Akrotiri, where weighing and perhaps product exchange appears to be the case, the *nodulus* — a piece of clay authenticated by its seal impression — could have served as a receipt, i. e. as proof that goods had changed hands. It is not clear, however, whether the product exchange implied by this issuing of tokens also meant that all *noduli* travelled. Two *noduli* and a third possible one were already attested in a locality outside Crete, namely Samothrace in the northern Aegean,[489] yet the excavator appears to be of the opinion that they were locally manufactured.[490]

THE ICONOGRAPHY: THE HIGHLIGHTS OF MINOAN GLYPTIC

The impressed sealings retrieved at Akrotiri comprise a minimum of 69 specimens, but attest to the use of only 19 different seals (*Fig. 62*).[491] Sixteen different seals had been used to stamp the flat-based nodules in Room D18b,[492] another seal impressed the single-hole hanging nodule in Room D18b,[493] yet another the direct nodule in Room D18a,[494] and a further seal is attested on the *nodulus* from NPP 64.[495]

The seals used were metal rings and stone seals of different shapes and sizes. All are to be seen as Minoan products, overwhelmingly Neopalatial in date. Virtually all were of superb craftsmanship and bore an impressive array of figurative motifs: a chariot scene; bull-related

485 *GORILA* II nos. HT Wa 1021, HT Wa <1021 bis>, HT Wa 1023, HT Wa 1024; Matsas 1995, 240–41, pl. XXXVIIa–c: SA Wa 1; Hallager 1996, 127.

486 Bennett 1950.

487 Hallager 1996, 129–33.

488 The suggestion put forward and distilled over the years: Weingarten 1986a; 1987; 1990b. An extensive discussion also in Hallager 1996, 130–33.

489 Matsas 1991; 1995; *CMS* V Suppl. 1B nos. 321, 327; V Suppl. 3 no. 343.

490 Matsas (2009, 260) suggests that the *noduli* and the roundels were of local clay, as opposed to the direct sealing which was of clay foreign to Samothrace. Despite the fact that it is not clear whether locally reproduced types of distinctly Minoan administrative documents should fall under a Minoan or a minoanizing production, the phenomenon has been described as 'the adoption of Minoan administrative systems' (Girella – Pavúk 2016, 19).

491 The seal impression which became detached from the two-hole hanging nodule could be lurking amongst the fragmentary impressions. If different from the seal impressions attested, then the number of seals used for the production of the Akrotiri sealings would rise to 20.

492 *CMS* V Suppl. 3 nos. 391–400, 403–405; seal impressions on **N10**; **N62**; **N68**.

493 *CMS* V Suppl. 3 no. 401.

494 *CMS* V Suppl. 3 no. 402.

495 Seal impression on **N75**.

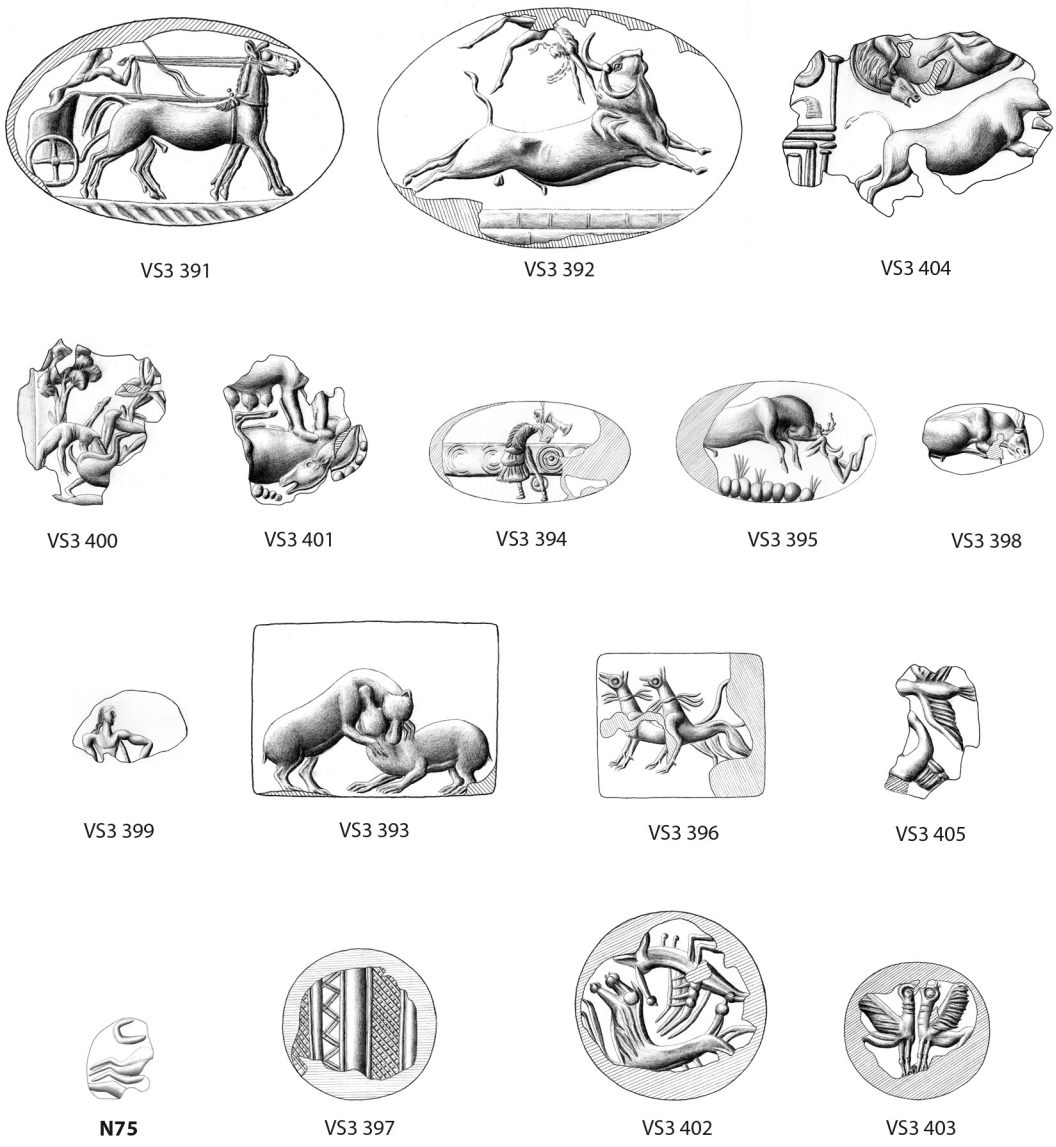


Fig. 62. The array of seal motifs attested on the clay nodules from Rooms D18a–b and NPP 64; scale 3:2 (*CMS* Archive).

images, including bull-leaping; animals and mythical creatures fighting or running. As a matter of fact, there is only one seal with a non-figurative motif, a so-called tectonic motif, datable on stylistic grounds to MM II–III. The fact that the seals were undoubtedly Minoan products reinforces the view that the sealings themselves originated in Crete.

The various motifs considered here are grouped according to theme.[496] A detailed commentary on every aspect of the iconography is, however, beyond the scope of primary pub-

496 Three motifs that appear on fragments too small to allow any statements are omitted: part of an animal's body on **N10**; two animal feet (?) on **N62**; a body part on **N68**.

lication such as this. Since we are dealing with nodules imported from Crete, the motifs have little to do with Theran or Cycladic iconography, and are of greater relevance to the Minoan repertoire. Nevertheless, as will be discussed at the end of this chapter, the seals used to stamp nodules jointly seem to display motifs that are inter-related and inter-dependent. This necessitates both a study of the individual motifs and a broader appreciation of their thematic interconnections.

A Chariot Scene

The impression of a gold ring of original dimensions c. 3 × 1.85 cm depicting a chariot scene is attested on three sealings as the sole impression (*Fig. 63*).[497] A 'box' chariot with a four-spoked wheel and a charioteer mounted in it travels from left to right;[498] two horses draw the chariot with a draught pole that has a triangular traction system.[499] The charioteer, a male figure, does not appear to wear any clothes. He is shown leaning forward intensely, a pose suggestive of speed, holding the reins in his left hand and a whip in his right, with which he spurs on the horses. Curiously the motion of the horses seems fairly sedate — the pose resembles an extended trot — and is rather at odds with the urgency and tension conveyed by the charioteer's stance and use of whip. Great attention is paid to the detailed rendering of the horse's equipment: both a girth and a neck-strap are shown, and the yoke saddle is decorated with tassels; the harness ends in a cheek-strap, on which blinkers are attached. The horses' manes also appear to be braided.

The first representation[500] of a chariot scene in the Bronze Age Aegean occurs on a *nodulus* found in the Eastern Temple Repository of the Knossos palace and shows a charioteer in a wagon pulled by a pair of griffins (*Fig. 64, left*);[501] the date of this deposit is thought not to be very distant from that of the Akrotiri impressions.[502] We see chariot scenes next on stone grave *stelae* from Grave Circle A at Mycenae (Shaft Grave V).[503] These are interpreted as war scenes: in all instances, the charioteer carries a sword or a dagger; in two instances he confronts a person on foot, who also holds a sword; in another instance, a person, clearly a warrior, covered by a figure-of-eight shield is lying under the hooves of the horse.[504] Yet another such scene occurs on a gold ring found in Shaft Grave IV in Grave Circle A:[505] two charioteers, one of which is equipped with bow and arrow, ride in a chariot that curiously lacks a pole to join it to the two horses running in front; the men are out hunting, since they

497 Doumas 2000b, 59, motif A: 'chariot race'; *CMS* V Suppl. 3 no. 391.

498 The chariot would have travelled from right to left on the seal face.

499 The terminology follows Crouwel 1981.

500 A clay model of a wagon from Palaikastro dating to EM III–MM I is the first evidence for wheeled vehicles in the Aegean (Crouwel 1981, 54–56, pl. 49; 2005, 39, pl. IIIa).

501 *CMS* II,8 no. 193. Griffins pulling a chariot also appear on a golden seal ring from Antheia in Messenia, dated on stylistic grounds to LH II–IIIA1 (*CMS* V Suppl. 1B no. 137).

502 Pini (1990, 52) dated the sealings recovered from the Temple Repositories to 'the beginning of the LM period'. He has since lowered their dating to a definite LM I (*CMS* II,8 p. 8). The controversy surrounding the date of these deposits, whether earlier in the Neopalatial period or as late as Pini suggests, does not alter the fact that the sealings found there represent the only known assemblage of sealings assigned between the Akrotiri finds and securely-dated Protopalatial deposits.

503 Karo 1930, 168–72; Crouwel 1981, 59, 119–21, pls. 35–39.

504 Younger 1997, *passim*, where a number of *stelae* with chariot scenes are discussed.

505 Crouwel 1981, 59, 121–22, pl. 10; *CMS* I no. 15.

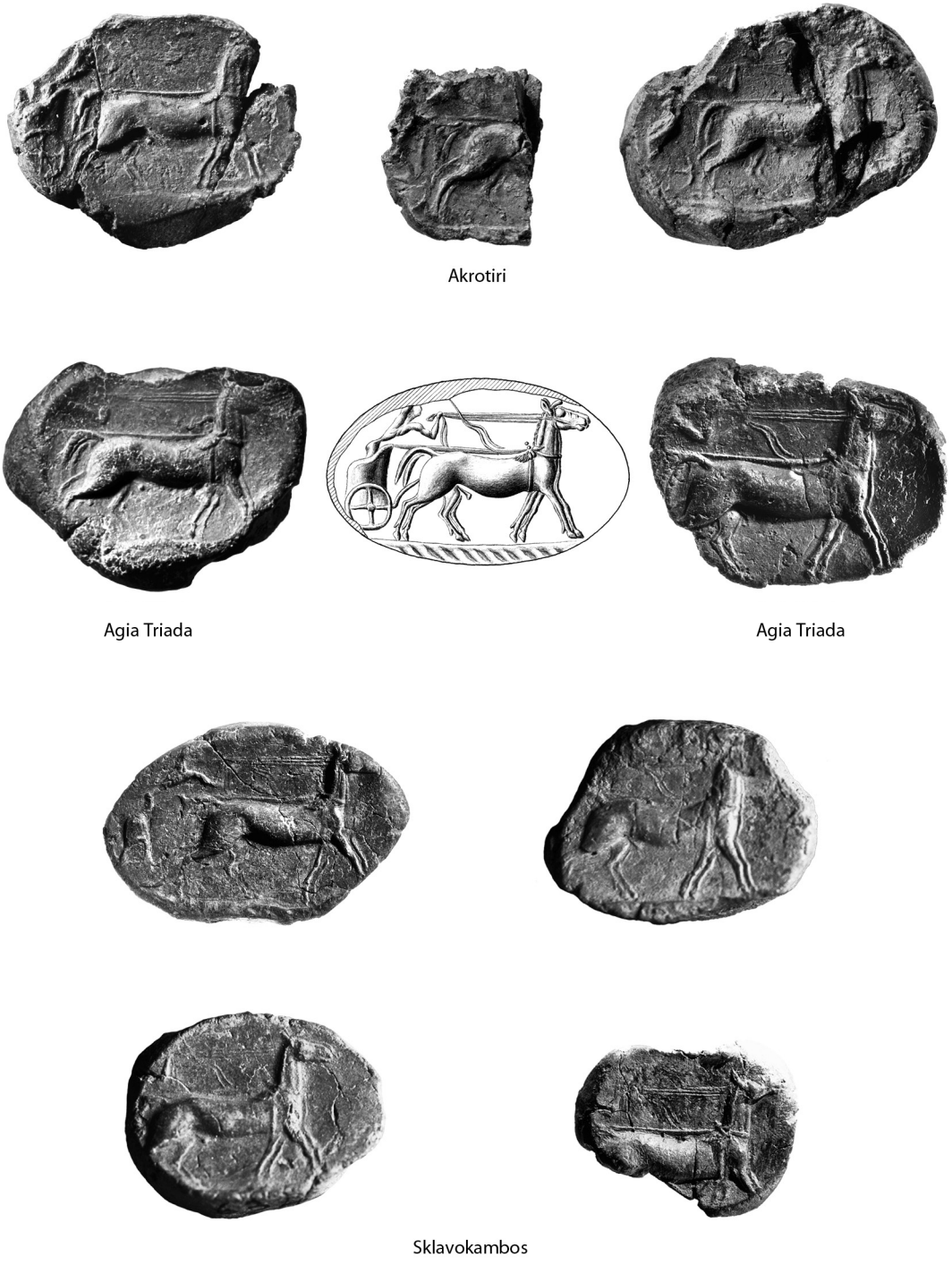


Fig. 63. Seal impression with a chariot scene; attested on nodules **N1**–**N3** from Akrotiri (*CMS* V Suppl. 3 no. 391), two nodules from Agia Triada (HMs 516, 591 = *CMS* II,6 no. 19) and four nodules from Sklavokambos (HMs 632–635 = *CMS* II,6 no. 260); scale 3:2 (Akrotiri Excavations Archives/*CMS* Archive/Archaeological Museum of Herakleion).

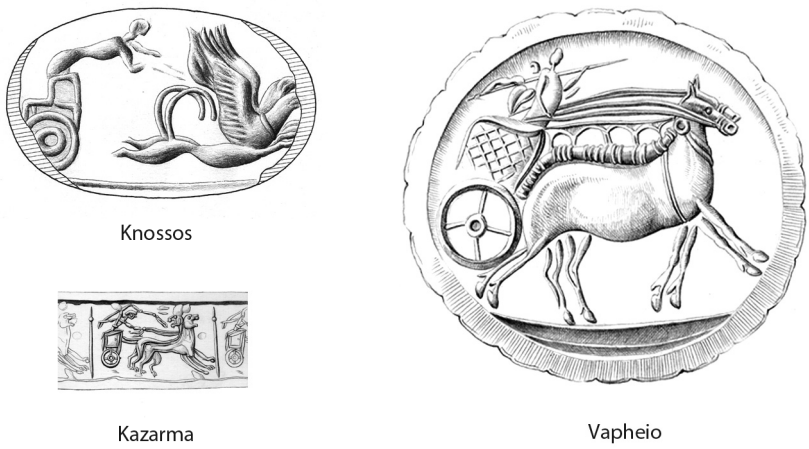


Fig. 64. Seals and seal impressions with chariot motifs: *CMS* II,8 no. 193 (Knossos Temple Repositories); V no. 585 (Kazarma, Argolid); I no. 229 (Vapheio, Lakonia); scale 3:2 (*CMS* Archive).

take aim at a deer. The landscape elements — 'hanging rockwork' and a wavy groundline which turns into the trunk of a stylized tree[506] — suggest open countryside or woodland.

A scene more akin to the Akrotiri impression occurs on a cylinder seal from the tholos tomb at Kazarma in the Argolid that dates to LH IIA. This too shows a single charioteer whipping the pair of draught animals; but here the vehicle is drawn by lions, one with its head turned back (*Fig. 64, middle*).[507] An agate lentoid from the Vapheio tholos, also datable to LB I–II on stylistic grounds, shows a chariot drawn by a pair of horses, driven by a charioteer and carrying a man holding a spear, either a warrior or a huntsman (*Fig. 64, right*).[508] In this representation the perspective is curious: the engraver depicted the triangular traction system in its entirety, which in profile view would normally be hidden behind the animals. Besides the seals discussed here, very few other seals with a chariot scene have been recovered. The most notable among them are a gold signet ring said to be from Aidonia in Korinthia,[509] a carnelian amygdaloid from 'Knossos'[510] and a rare agate ring from north-central Crete.[511]

These depictions, along with the Akrotiri evidence, are reminiscent of a series of chariot scenes mostly on seals and seal impressions in an area extending from Anatolia to Mesopotamia and Egypt in the second millennium BC.[512] Variations of this theme, together with ample textual evidence regarding chariots and horses, confirm the connection of chariot

506 Krzyszkowska 2010, 181, fig. 17.13b.
507 Crouwel 1981, 59, pl. 9; 122–23; *CMS* V no. 585.
508 Crouwel 1981, 59, 123–24, pl. 11; *CMS* I no. 229. A second seal, a carnelian amygdaloid with a chariot scene, was also found in the Vapheio tomb (*CMS* I no. 230).
509 *CMS* V Suppl. 3 no. 244, dated on stylistic grounds to LB I–II.
510 *CMS* VII no. 87, dated on stylistic grounds to LM II–IIIA1.
511 *CMS* VI no. 285, dated on stylistic grounds to LM II–IIIA1. The chariot is drawn by two wild goats.
512 Littauer – Crouwel 1979, 48–98.

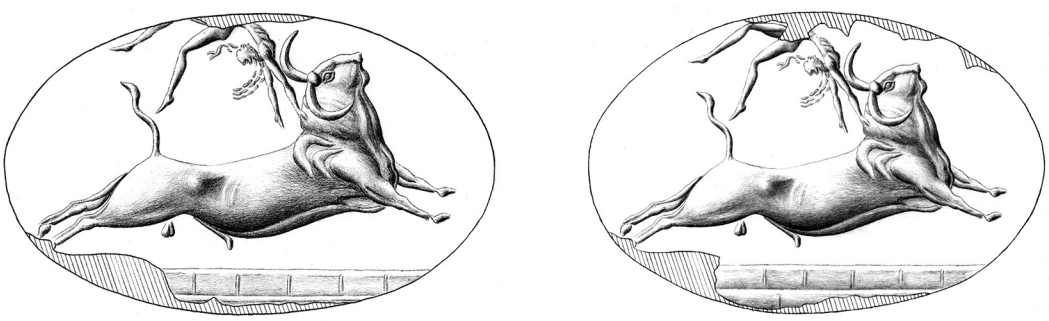
scenes to warfare, hunting and ceremonies. The subject is rendered in much the same fashion in various parts of the ancient world, as attested on seals of early second millennium date, as well as an example from Nuzi in Mesopotamia from the later second millennium;[513] similarities in composition could be due to the circulation of prototypes. Crouwel therefore suggests that the chariot type appearing in the Aegean — as an iconographic motif and in reality — most likely came from the Levant via Crete, from where it was introduced to the Greek mainland.[514] That we are not dealing solely with imported imagery but the introduction of chariots proper is shown by various elements, including idiosyncratic Aegean structural characteristics such as the triangular traction system,[515] which persist in Aegean iconography throughout the LBA.

Impressions apparently coming from one and the same ring as the Akrotiri impressions are attested among the stamped nodules recovered at Agia Triada[516] and Sklavokambos,[517] both sites with extensive destruction layers dating to LM IB (*Fig. 63*).[518] Until the discovery of the Akrotiri sealings, the examples from Agia Triada and Sklavokambos were considered among the earliest representations of chariots in the Minoan-Mycenaean periods. However, the ring that produced the Akrotiri-Agia Triada-Sklavokambos impressions had evidently already been manufactured in LM IA, in a period sometime between the dates of the Knossos Eastern Temple Repository and the Mycenaean Shaft Grave era. In the Akrotiri impression the actual chariot box is clearly preserved and, in addition, the groundline is more distinct than in the Agia Triada and Sklavokambos impressions. The groundline is seemingly created by a slightly concave line with oblique shallow lines.[519] There is nothing in the background to indicate the setting of the scene, be it the natural or urban environment.

Apart from the example of a sealing from the Eastern Temple Repository and the matching set of seal impressions from Akrotiri, Agia Triada, and Sklavokambos that are to be traced back to the same ring, only one other seal with a chariot scene is attested to have stamped a sealing. Its impression occurs on a nodule from Archive Room 8 at Pylos and depicts a charioteer standing in a horse-drawn chariot, in front of which is a man grasping a lion by its throat.[520]

The chariot scenes on the few Minoan seals and the even fewer Minoan and Mycenaean sealings preserved to date offer no clues as to the occasion depicted. The scenes could be connected to a battle, hunting, ritual procession, or an athletic activity such as races.[521] These activities can usually be deduced from specific paraphernalia, such as weapons, bows, or the substitution of griffins for horses; here, however, all accompanying evidence is missing.

513 Littauer – Crouwel 1979, pl. 32.
514 Crouwel 1981, 148–49; updated discussion, Crouwel 2005.
515 Crouwel 1981, 62–63, 90–96.
516 HMs 516, 591 = *CMS* II,6 no. 19.
517 HMs 632–635 = *CMS* II,6 no. 260.
518 Krzyszkowska 2005a, 190, no. 370.
519 It is possible that this is not an actual representation of the terrain, but a framing border with ornamental wavy lines, thus copying a wall painting (Blakolmer 2010, 92–96).
520 *CMS* I no. 302; Pini *et al.* 1997, 13, pl. 8, no. 22.
521 Crouwel 1981, 145.



VS3 392

Fig. 65. Seal impression with a bull-leaping motif (left: *CMS* V Suppl. 3 no. 392; right: drawing adapted by A. Karnava).

Bull/Bovine Iconography

A large number of sealings from the D18b hoard carry motifs depicting bovines, in most cases bulls. Two different bull-leaping scenes are attested,[522] one in which the leaper jumps over the bull[523] and a second in which the leaper or catcher is in front of the bull, grabbing or trying to grab the animal by its horns (*Fig. 65*).[524] A bull appears in a *couchant* pose[525] and a bovine comes under attack by a lioness (*Figs. 68, 69*);[526] lastly, two bovines appear next to a building (*Fig. 70*).[527] The total specimens bearing one or the other of these five motifs are 53 and make up nearly 77% of the nodules found at Akrotiri.

bull-leaping scene: a leaper somersaulting over a bull

The first of the two bull-leaping scenes comes from the largest seal face attested among the Akrotiri sealings with original dimensions c. 3.3 × 2.44 cm; the ring was used for the stamping of at least 41 different sealings either as the sole operator, or together with two other seals in alternate pairs, which makes it the most frequently used seal among the Akrotiri sealings.[528] In view of new nodule joins that materialized after their inclusion in *CMS* V Suppl. 3,[529] the scene can now be further completed and enhanced.[530] The new joins also increase the original seal face size from 3.2 × 2.2 cm to 3.3 × 2.44 cm (*Fig. 65*).

The impression shows a bull in flying gallop from left-to-right in a paved, open area;[531] the animal's sex is clearly indicated and one of its horns is twisted towards the ground, a

522 On bull-leaping in seal iconography: Evans 1921b; Younger 1976; 1995. More broadly, Shapland 2013.
523 *CMS* V Suppl. 3 no. 392.
524 *CMS* V Suppl. 3 no. 395.
525 *CMS* V Suppl. 3 no. 398.
526 *CMS* V Suppl. 3 no. 401.
527 *CMS* V Suppl. 3 no. 404.
528 Doumas 2000b, 59, motif B: 'bull-leaping'; *CMS* V Suppl. 3 no. 392.
529 See above, pp. 82–83.
530 **N15** augmented the groundline, **N24** augmented the bull-leaper's body.
531 The bull would run from right to left on the seal face.

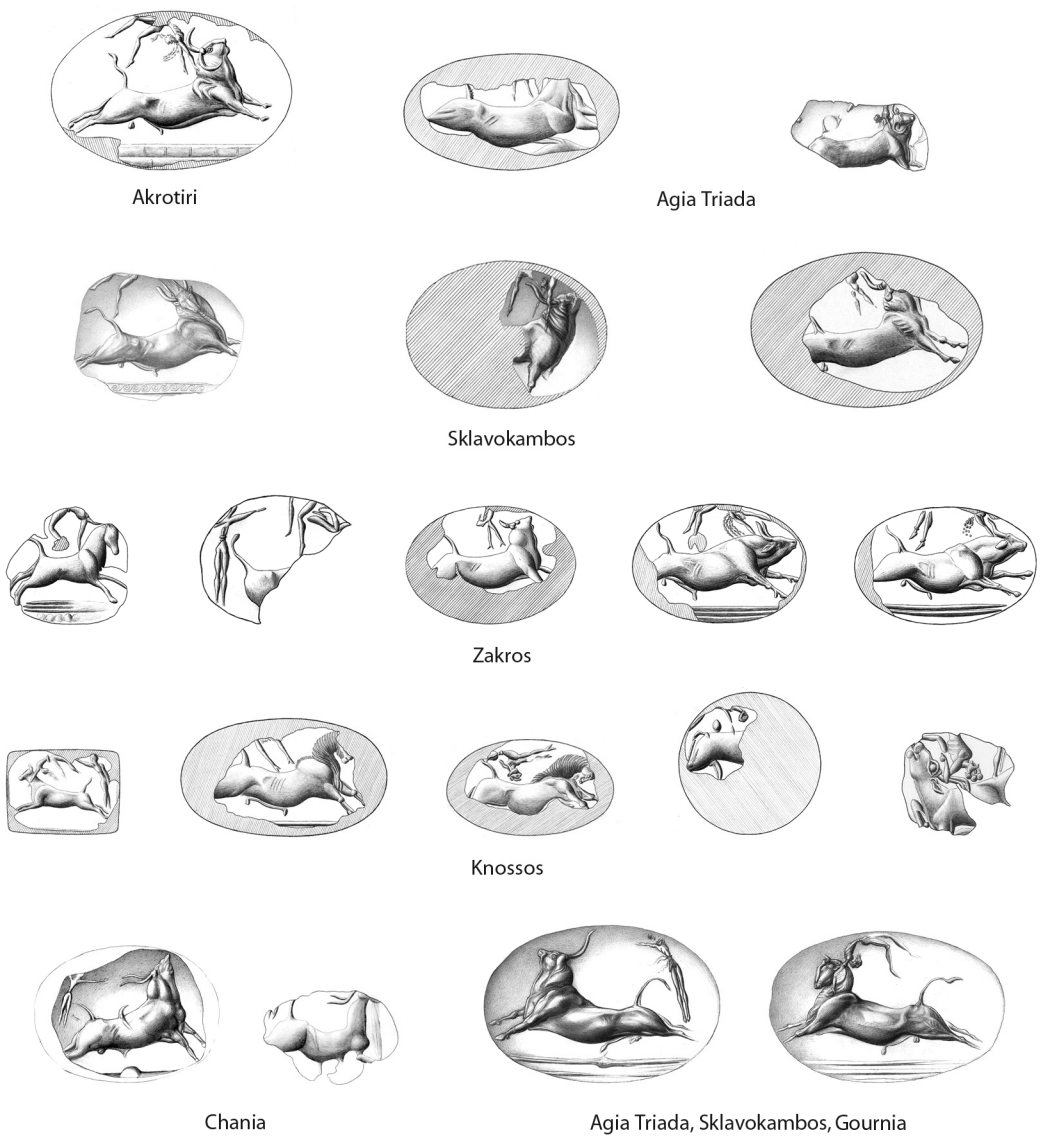


Fig. 66. Different seal impressions with bull-leaping motifs (from top left: *CMS* V Suppl. 3 no. 392; II,6 nos. 41, 42, 256, 257, 258; II,7 nos. 34, 35, 36, 37, 38; II,8 nos. 221, 222, 223, 224, 225; *CMS* V Suppl. 1A nos. 171, 172; II,6 nos. 43/161/259/II,7 no. 39; II,6 nos. 44/162/255); scale 1:1 (*CMS* Archive).

peculiarity uniquely attested on this seal. A bull-leaper has already executed a somersault over a bull and is about to land on his feet behind the animal. The leaper has long braids, a characteristic he shares with bull-leapers on other seal impressions of the same theme, and distinctive hair locks that spring from the top of his head, but the part of the sealing where his loincloth would be is missing. Parallels for this hairstyle can be seen in Akrotiri on the Boxing Boys Fresco from Building Beta (B).[532] In this fresco, this hairstyle is associated

532 Doumas 1992, 79–81.

with young boys who have presumably entered puberty[533] and could also be indicative of a person going through a rite of passage.[534] The miniature size of the bull-leaper's head does not, however, allow us to say whether or not the leaper has a shaven head. If not, then the closest parallels for his hairstyle can be seen in bull-leaping scenes attested in wall paintings, as in the Taureador Frescoes from Knossos.[535] No supplementary motifs are attested on the seal impression.

Surviving seals with bull-leaping scenes derive from contexts that date to the Mycenaean period.[536] Recently a gold ring with a bull-leaping motif was retrieved from a LH IIA tomb in Pylos, Messenia.[537] But the motif is primarily known from numerous seal impressions, where it is rendered in a comparable manner; they are attested at Agia Triada,[538] Gournia,[539] Sklavokambos,[540] Zakros, Knossos,[541] and Chania (*Fig. 66*).[542] Its repetition lies at the heart of discussions concerning the so-called replica rings and look-alike seals.[543] More interesting still is the fact that two different seals which share this theme were responsible for the production of multiple sealings that ended up at different Cretan sites, namely Agia Triada, Sklavokambos, Zakros and Gournia (*Fig. 66, down*).[544]

The different versions of this theme share a number of characteristics. The scene always contains the same elements: the running bull, a bull-leaper or two, and an indication of the ground;[545] no other decorative elements are ever present. The chief differences lie in the rendering of the bull's head, which is usually in profile but also frontal, and the position of the leaper(s). The repetition provides compelling evidence that these representations go back to a common source, whether an archetypal signet ring or the scene in a different medium, such as wall painting.[546]

The surviving examples of sealings with bull-leaping scenes found throughout Crete indicate that at least 17 sizeable metal rings were in the service of administrative functions between LM IA, attested at Akrotiri, and LM IB, attested in various sites on Crete.[547] There is, however, no way of telling whether the examples found in LM IB levels derived

533 Davis 1986, 401; Doumas 2000a, 972–73.

534 Koehl 1986.

535 Evans 1930, 209–32.

536 Some that render the topic with an evident degree of faithfulness to their LM prototypes: *CMS* V Suppl. 1B no. 135 (Antheia, Messenia); VI no. 336 (Archanes).

537 Davis – Stocker 2016, 637–39, no. 1, fig. 9.

538 *CMS* II,6 nos. 41–44.

539 *CMS* II,6 nos. 161, 162.

540 *CMS* II,6 nos. 255–259.

541 Zakros: *CMS* II,7 nos. 34–39. Knossos: *CMS* II,8 nos. 221–225 (no. 221 was found in the Eastern Temple Repository and is the impression of a cushion; nos. 222, 223 are obviously Mycenaean).

542 *CMS* V Suppl. 1A nos. 171, 172.

543 Hallager 1996, 207–13; Krzyszkowska 2005a, 182–84; Pini 2006; Tsangaraki 2010a; Weingarten 1983b, *passim*; 1986b, 289–93. See discussion in Chapter 4, pp. 186–94.

544 *CMS* II,6 no. 43 (Agia Triada) = II,6 no. 161 (Gournia) = II,6 no. 259 (Sklavokambos) = II,7 no. 39 (Zakros). Also: *CMS* II,6 no. 44 (Agia Triada) = II,6 no. 162 (Gournia) = II,6 no. 255 (Sklavokambos). The illustration in Krzyszkowska 2005a, 190, demonstrates the matter more clearly.

545 The ground is absent on the impression from the Eastern Temple Repository (*CMS* II,8 no. 221).

546 Blakolmer 2010, 92–93, where the possibility of the theme having been copied from a wall painting is examined.

547 *CMS* V Suppl. 3 no. 392 (Akrotiri); II,6 nos. 41, 42 (Agia Triada); II,6 nos. 256, 257, 258 (Sklavokambos); II,7 nos. 34, 35, 36, 37, 38 (Zakros); II,8 nos. 221, 222, 223, 224, 225 (Knossos); *CMS* V Suppl. 1A nos. 171, 172 (Chania); II,6 nos. 43/161/259/II,7 no. 39 (multiple impressions on sealings found at Agia Triada,

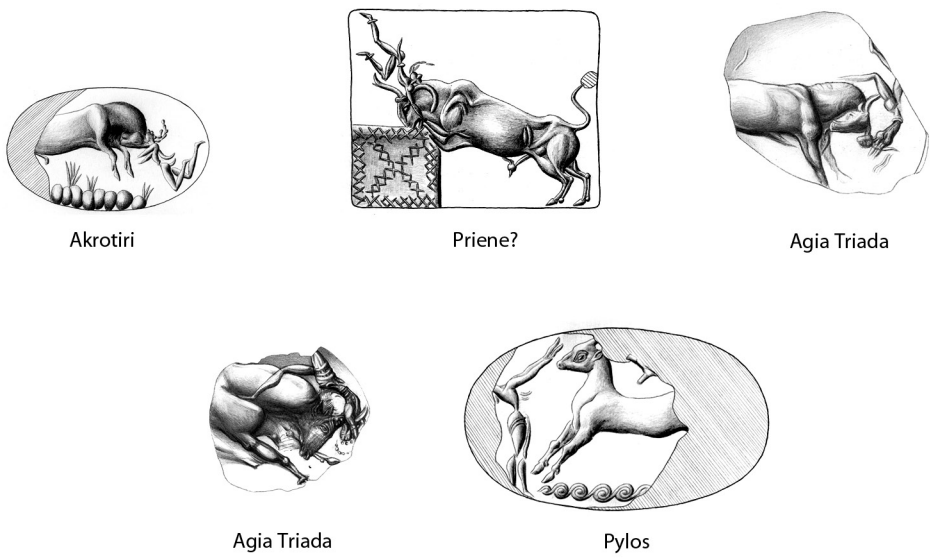


Fig. 67. Seal impressions and a seal with bull-leaping/grappling motif (from left: *CMS* V Suppl. 3 no. 395; VI no. 181; II,6 nos. 39, 40; I no. 305); scale 3:2 (*CMS* Archive).

from rings in simultaneous use, since the sealings were found in archival deposits and we lack any information regarding the time-scale involved. Moreover, one cannot, exclude the possibility that, much like the chariot scene ring that was manufactured in LM IA but also stamped sealings found in LM IB deposits, other sealings from such deposits may have also been stamped by seals which were manufactured in LM IA.[548] What could be of some significance is the fact that the large bull-leaping ring, which appears to dominate the Akrotiri batch, is not attested in any of the LM IB destruction deposits, and may no longer have been active at this time.

BULL-LEAPING/GRAPPLING SCENE: A LEAPER/CATCHER CONFRONTING A BULL

The second bull-leaping scene comes from a small-sized gold ring with original dimensions estimated as c. 1.7–1.8 × 1–1.1 cm (*Fig. 67, left*); the impression is attested nine times on sealings always together with another specific seal.[549] It depicts a different phase in bull-leaping from that shown on the previous ring: the moment when the leaper is face-to-face with the animal. An alternative interpretation is that the scene depicts the capture of an animal for later use in bull games.[550]

Sklavokambos, Zakros and Gournia); II,6 nos. 44/162/255 (multiple impressions on sealings found at Agia Triada, Sklavokambos and Gournia).

548 This last thought, Krzyszkowska, pers. comm.

549 Doumas 2000b, 61, motif E: 'bull-leaping'; *CMS* V Suppl. 3 no. 395. The other seal is *CMS* V Suppl. 3 no. 396.

550 Krzyszkowska 2014, 345. Given the exceptional setting of the scene, a rural environment (see further below), this interpretation sounds more plausible.

The seal face shows a bull in right profile, charging toward a bull-leaper or a bull-catcher; the animal's sex is clearly indicated. The man is rendered in left profile, has long braids and probable hair locks on the top of his head, and wears a loincloth; his knees are bent and he confronts the bull directly at close-quarters. It is not clear whether the animal has wounded the man with his horns, but the leaper's hands are visible and free.

At the bottom of the seal face there is an indication of the location where the action is taking place, namely a rocky landscape with vegetation; incidentally, this is a unique setting for such an activity.[551] This particular scene clearly illustrates that already in LM IA a standardized Minoan iconography was in existence, where individual motifs intermingled and were combined without particular reference to the event *per se*. A typical bull-leaping or bull-catching scene, which, when attested on seals and seal impressions, takes place in a structured environment that is usually a paved space, is here represented in a rocky landscape, a clear indication of the natural environment.

One of the most noteworthy examples of this scene occurs on a seal said to come from Priene in Turkey, datable on stylistic grounds to MM III–LM I (*Fig. 67*).[552] As at Akrotiri, the man confronts the bull and tries to catch it by the horns, though here the animal leans its forelegs and muzzle against a built structure. The motif is attested in a slight variation in two separate seal impressions from Agia Triada (*Fig. 67*),[553] where the man appears at the initial stage of leaping rather than confronting the bull. The Akrotiri seal impressions constitute the earliest attestation of this motif.

A number of seals[554] and sealings[555] dating to the Mycenaean period display the same motif, albeit executed in an increasingly stylized manner. Several centuries after the Neopalatial period it appears again on an administratively active seal at Pylos: in this case the man stands with arms outstretched as if attempting to stop the charging bull; a groundline is a running spiral frieze, common in wall painting (*Fig. 67, right*).[556] The topic was apparently worthy of a Minoan administrative seal and continued to be so in Mycenaean administration.

The motif occurs in later periods in various artistic media, including one of the Vapheio cups.[557] The confrontation of humans that are usually armed with wild and large-sized animals seems to have been a favourite theme in Minoan glyptic, one which apparently promoted human bravery and force against nature and its representatives.[558]

551 Krzyszkowska 2010, 177.

552 *CMS* VI no. 181.

553 *CMS* II,6 no. 39: single-hole hanging nodule; *CMS* II,6 no. 40: two-seal flat-based nodule.

554 *CMS* I nos. 95, 137 (Mycenae, chamber tombs); I Suppl. no. 35 (Lykosoura, Arcadia); II,3 no. 105 (Kalyvia Kainourgiou); VI no. 344 (probably from Mirabello); VII no. 100 (unknown provenance).

555 Both from Knossos: *CMS* II,8 nos. 228, 229, two-hole hanging nodules, the second with a Linear B inscription.

556 *CMS* I no. 305.

557 On the 'violent' cup, presumably of Mycenaean manufacture, where the scene of the 'charging bull' in a rocky landscape can be found (Davis 1977, 25, 43, 390, figs. 7, 12, 17). Davis suggests that the scene depicts a 'round-up of bulls for ritual purposes, perhaps for the bull-leaping', but in view of finds such as this impression, her statement that 'forceful representations' are not attested in Minoan art, is unjustified (Davis 1977, 36, 40). See also, Blakolmer 2007, 32, figs. 1–3.

558 Krzyszkowska 2014, *passim*.

THE *COUCHANT* BULL

A single bull that is probably depicted lying on its side is encountered in an impression of a hard stone seal, presumably an amygdaloid, the preserved part of which is only 1.1 × 0.7 cm (*Fig. 68*). The seal was only used on one of the Akrotiri sealings, together with another uniquely attested seal.[559]

The bull can be seen in right profile[560] and has open jaws; no other decorative motif is visible on the preserved part of the impression. The pose is fairly common for various animals and hybrids that appear on Minoan seals: goats, lions, griffins, boars. *Couchant* bulls often appear in pairs, seemingly resting quietly. The popularity of the pose can perhaps be explained on artistic grounds, since an animal's bent and crouched legs are suitable for circular or oval seal faces. When additional animals appear in a composition with a recumbent animal, the latter is sometimes being attacked and grabbed in the neck. The half-open muzzle of the bull in this instance could be indicative of pain and the recumbent pose may have been excerpted from a bull-hunting scene. The fact that recumbent animals are sometimes shown with their heads turned back, as if to see if they are being followed, or have been speared, further reinforces the impression that the motif of the *couchant* animal derives from representations of hunting scenes.[561] A parallel for the bull's rendering and expression can be found again on the Vapheio cups.[562]

A LIONESS ATTACKING A BOVINE

A further scene involving a bovine is preserved on a fragment of a unique single-hole hanging nodule (*Fig. 69, left*).[563] The impression comes from a hard stone seal; the preserved part of the scene measures 1.2 × 1.15 cm and the original dimensions of the seal are estimated as c. Ø 1.5–1.6 cm.

A female lion with three prominently shown teats[564] is attacking a bovine, apparently with success. The victim lies on its back with its hind-legs above the belly and its head contorted backwards, indicating intense agony and a struggle; the lioness rests its front paws on the bovine's chest. A rocky landscape is indicated in a summary fashion. Although only a small part of the scene is preserved, most of the bovine is visible, suggesting that the lioness had not yet bitten her prey but stood in a triumphant pose atop it.

Lions attacking animals such as bovines, agrimia etc., is a popular theme in Minoan glyptic,[565] and appears in various combinations. One or more lions are shown charging against a single victim; several phases of the attack are also depicted, from chasing the

559 Doumas 2000b, 61, motif H: 'couchant bull'; *CMS* V Suppl. 3 no. 398. Its pair is *CMS* V Suppl. 3 no. 399.

560 The bull would have been seen in left profile on the seal face.

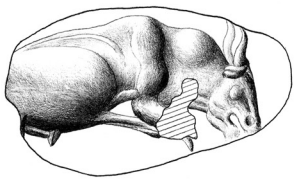
561 Krzyszkowska 2014, 345.

562 Davis 1977, on both the 'violent' and the 'quiet' cups, see above, n. 557.

563 Doumas 2000b, 63, motif L: 'lioness attacking animal'; *CMS* V Suppl. 3 no. 401.

564 Compare the pronounced indication of animal teats on a sealing from Knossos (*CMS* II,8 no. 342). Also: female lions share a number of iconographical features with female griffins, teats being a case in point (e. g. *CMS* I no. 271, Myrsinochori-Routsi; II,3 no. 219, Avdou); yet griffins generally do not appear in bellicose or violent circumstances such as this one.

565 Pini 1985, 153. The lion as prey is also present in Minoan and Mycenaean glyptic (Krzyszkowska 2014, 346).



VS3 398

Fig. 68. Seal impression with the motif of a *couchant* bull (*CMS* V Suppl. 3 no. 398) (*CMS* Archive).

Akrotiri Zakros Malia Knossos Myrtos-Pyrgos

Fig. 69. Seal impression with the motif of a lioness attacking a bull (*CMS* V Suppl. 3 no. 401; II,7 no. 102; II,1 no. 419; II,8 no. 362; II,6 no. 234); scale 3:2 (*CMS* Archive).

victim to catching and biting it. All these variations are found on seals,[566] but seals with these themes were also used for sealing (*Fig. 69*).[567] In most scenes the action is captured at the moment when the lion actually bites its prey; on the Akrotiri sealing the moment shown is immediately after the attack is over and the victim is clearly beaten. An exact parallel for this specific moment is found on a seal impression on a roundel from Myrtos-Pyrgos (*Fig. 69*).[568]

The scene finds parallels not only in seal iconography, but also on other media.[569] Most famously, lions hunting a bull against the backdrop of exotic palm-trees appear on a gold sheet from Shaft Grave III at Mycenae.[570] From the same site, a dagger shows a lion hunting

566 One lion, one victim: *CMS* I nos. 251 (Vapheio), 286 (Myrsinochori-Routsi); II,3 no. 44 (Knossos); V Suppl. 1B no. 140 (Antheia, Messenia). More than one lion surrounding the prey: *CMS* II,4 no. 202 (Dictaean Cave); VI no. 372; XII no. 251.

567 All instances fall under the theme *Tierüberfall*: *CMS* II,7 nos. 100–102 (Kato Zakros). Numerous examples are found at Knossos, where the combination of two bulls-one lion also appears (*CMS* II,8 nos. 334–363). An interesting instance is the impression of a hard stone lentoid on a clay stamp seal (*Tonstempel*; see *CMS* II,8 pp. 81–83) from the Malia *Dêpot hiéroglyphique* (*CMS* II,1 no. 419). A similar stamp clay seal is found at Knossos (listed immediately above: *CMS* II,8 no. 362).

568 *CMS* II,6 no. 234, although the drawing appears in *CMS* as 'uncertain'.

569 Marinatos (1928, 110) thought that he recognized the motif in a relief wall painting at Knossos, but the surviving evidence cannot corroborate his suggestion. Evans underwent numerous changes of heart on the matter, also on account of Marinatos' reconstruction (Evans 1935b, 537–38).

570 Karo 1930, 59–60, nos. 119, 120, pl. XXXIII.

five gazelles, one of which he has caught and bites in the neck.[571] The bitten gazelle with head turned back abnormally and in agony belongs to the same iconographic *topos* (pattern) as that on the Akrotiri impression. Recently it has been suggested that some fragments of wall paintings from Tell el-Dabʿa in Egypt portray a pride (?) of lions attacking a bull.[572]

While we are not short of relevant comparanda after LM I, until recently it has been difficult to determine whether lion attack scenes existed prior to the Akrotiri example.[573] Pini thought that such scenes were absent in MM II–III iconography; certainly hunting scenes existed during that period, but they seemed to involve dogs chasing prey, not lions.[574] Akrotiri has now provided evidence for one of the earliest depictions of lion aggression in the form of a clay lentoid flask from a level corresponding to MM IIIA in central Cretan terms; the vessel bears the inverse relief of a feline clawing a bovine in flying gallop, a scene set in a rocky landscape.[575]

A BUILDING AND TWO BOVINES

Finally, two bovines appear next to a built structure in a poorly understood scene (*Fig. 70*).[576] The unique impression probably derived from a large gold ring; the preserved part of the impression measures 2.4 × 1.6 cm.

The impression shows on the left part[577] a two-storey building with columns on the ground and upper floors, in all probability a cult building. On the upper floor there are two partially preserved motifs which could be 'floating' objects; one of the two recalls a stylized 'sacral knot'. The remainder of the seal surface was taken up by two bovines. One is shown in right profile running away from the building; above it, the second bovine lies on its back, contorted unnaturally, with its hind-leg twisted across its body and with its lowered head turned back in agony. Since we are not lacking a large portion of the original seal surface, we may safely assume that no other figures would have been present.

The poses of the bovines, where one bovine is running for its life and the other has already succumbed to an absent enemy, remind us of an animal attack scene. But on Minoan seals these usually include an indication of a natural setting, where the action would take place and no buildings are to be seen. Built-structures with columns, especially two-storeyed ones, are usually found in cult scenes, where human participants, both male and female, with raised arms sometimes bring offerings towards the building. In the few instances where animals are associated with buildings, they accompany humans and are clearly subdued by them,[578] or have assumed a heraldic role (*Fig. 70*).[579]

571 Karo 1930, 95–97, no. 394, pls. XCIII, XCIV.
572 Marinatos 2012.
573 Shapland 2010a, on the changes of lion iconography in Crete throughout the Bronze Age.
574 Pini 1985, 154, referring to *CMS* II,5 no. 284 (Phaistos); II,8 no. 353 (Knossos 'Hieroglyphic Deposit').
575 Knappett – Nikolakopoulou 2008, 19 no. 34, fig. 17, with a parallel from Anemospilia in central Crete, on which only a bull is depicted.
576 Doumas 2000b, 63, motif O: 'building and bulls'; *CMS* V Suppl. 3 no. 404.
577 Which would have been on the right-hand side of the scene on the original seal.
578 *CMS* I nos. 119 (Mycenae) and 292 (Pylos); II,8 no. 256 (Knossos).
579 *CMS* I no. 123 (Mycenae); II,8 no. 328 (Knossos).

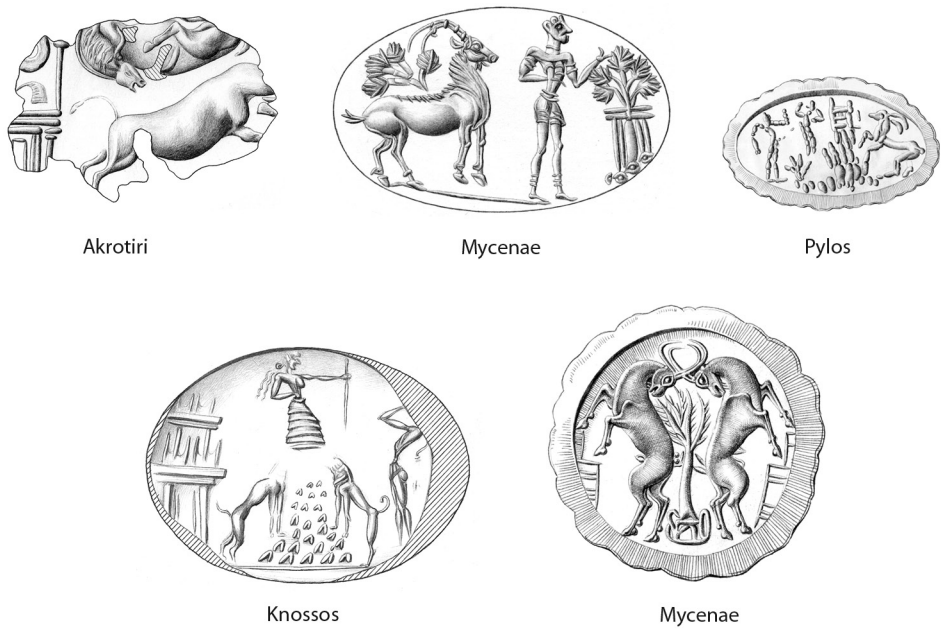


Fig. 70. Seal motifs with buildings and animals (*CMS* V Suppl. 3 no. 404; I nos. 119, 292; II,8 no. 256; I no. 123); scale 3:2 (*CMS* Archive).

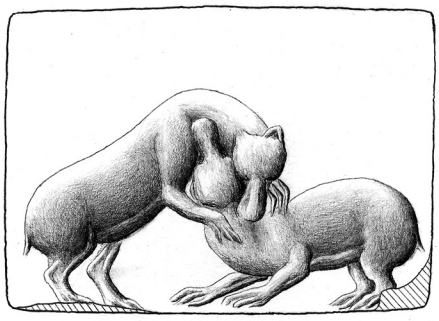
Other Animals in Pairs

Apart from the abundant bull/bovine iconography, other animals, namely dogs and birds, appear in various seal impressions. A pair of fighting dogs[580] and another of standing ones[581] were engraved on two cushions, which were used on numerous sealings found at Akrotiri; we have no means of establishing whether or not the presence of the two pairs of dogs as motifs was accidental.[582] Except for dogs, a possible pair of birds appears on a single impression.[583]

pair of fighting dogs

A hard stone cushion was the second most frequently used seal for stamping the Akrotiri nodules, since 31 nodules bear its impression.[584] In all verifiable cases, i. e. except when the nodule was too fragmentary, it accompanies the large ring with the bull-leaping scene.[585] The seal bore the motif of two fighting dogs and originally measured c. 2.15 × 1.4–1.5 cm (*Fig. 71*).

580 *CMS* V Suppl. 3 no. 393.
581 *CMS* V Suppl. 3 no. 396.
582 The question posed already in Dionisio *et al.* 2014, 124.
583 *CMS* V Suppl. 3 no. 405.
584 Doumas 2000b, 59–61, motif C: 'animal device'; *CMS* V Suppl. 3 no. 393.
585 *CMS* V Suppl. 3 no. 392.



VS3 393

Fig. 71. Seal impression with the motif of fighting dogs (*CMS* V Suppl. 3 no. 393) (*CMS* Archive).

The dogs are shown at the moment when they bite each other's necks. They occupy the centre and the lower part of the seal face, but the upper half remains unusually empty; there are no supplementary decorative motifs in the background, nor any indication of a setting for the action, whether it was a natural or urban environment. A single ear is shown on one dog only; the animals have very short, almost non-existent tails, which is rather unusual in Minoan iconography, where dogs usually have a short or bigger, curly tail.[586]

The dog appears quite frequently in Minoan iconography, either as the single motif on a seal face or accompanying a human or other animals including other dogs in later periods. Dogs are usually shown in profile, frequently with their head turned back; a dog's head in profile, mostly with its mouth half-open and a characteristically protruding tongue, is a frequent motif in the Protopalatial period.[587] A possible symbolic role of the dog as a guardian on seals has also been postulated.[588]

Several representations of dogs, showing either one or two animals, with minimal or no indication of the background, occur among the Agia Triada seal impressions.[589] Three impressions in particular show two dogs attacking each other, portrayed in a manner roughly comparable to the example from Akrotiri.[590] On all three the dogs are very close to each other, but are not yet touching; in two cases they assume a heraldic position facing each other and appear completely symmetrical, whereas in one instance they are on top of each other. The same poses as the Agia Triada dogs are usually adopted by lions,[591] but also bovines or goats,[592] or boars.[593] Lions on seals facing the perimeter of the seal face are strongly reminiscent of the Parading Lions Group seals that date to EM III–MM IA.[594]

586 Some soft stone MM seals only show such short tails: *CMS* III no. 197; VI no. 42 (Malia); IX no. 1.
587 *CMS* II,5 nos. 299, 300 (Phaistos); II,8 nos. 37, 38, 75 (Knossos).
588 Dimopoulou 2010.
589 *CMS* II,6 nos. 75–80.
590 *CMS* II,6 nos. 77–79; all three presumably came from metal signet rings; two are attested on a roundel and a flat-based nodule as the sole seal impression.
591 *CMS* I Suppl. nos. 93a, 94a; II,3 nos. 347, 348; III nos. 399–403; V no. 493; VII no. 90; VIII no. 79; IX nos. 134, 143; X nos. 155–157; XI no. 307.
592 *CMS* III no. 435; V no. 318; IX nos. 131–133; X nos. 294, 295; XI nos. 59, 186; XIII no. 132.
593 *CMS* V Suppl. 3 no. 220.
594 Yule 1981, 208–09; Sbonias 1995, 89–99.

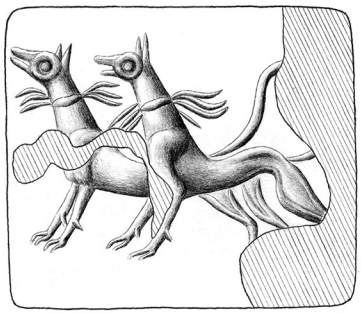


Fig. 72. Seal impression with the motif of a pair of dogs (*CMS* V Suppl. 3 no. 396) (*CMS* Archive).

Nowhere else are dogs shown biting each others' neck, but the theme does occur with other animals and hybrids: lion and bovine;[595] lion and deer;[596] dog and deer;[597] griffin and bovine/goat;[598] griffin and boar.[599] The use of cavalier perspective to depict an animal's head is usually reserved for the lion attacking a helpless victim. On the Akrotiri sealings both dogs are attacking and biting, and their heads both appear in cavalier perspective.

An interesting parallel for the interlinked dog's heads at Akrotiri occurs among the Phaistos seal impressions: in the centre of the composition two lions are inverted and face in opposite directions while their hindquarters are interwined.[600] Apart from this seal no close parallels exist.

PAIR OF STANDING DOGS

Another pair of dogs appears on a hard stone cushion with original dimensions estimated as c. 1.5 × 1 cm (*Fig. 72*).[601] The cushion was used to impress thirteen flat-based nodules, always collaborating with the small metal ring with the bull-grappling scene, except in one instance, when it collaborated with a circular hard stone seal with a 'tectonic' motif.[602]

The impression presents two dogs, one standing behind the other, looking to the left.[603] Both dogs wear collars, from which some sort of curled bands (ribbons [?]) wave in the air, extending either side of the necks. Both dogs are prick-eared, have a narrow muzzle, a slender build and sickle-shaped tails. The tail of the rear animal is fairly prominent and might instead be a kind of leash. There are no supplementary ornaments or any indication of the setting of the scene. Minoan seals frequently picture pairs of animals posing in the same

595 An attack scene attested many times, among which: *CMS* II,4 no. 80; V Suppl. 1B nos. 93, 94; VII no. 115a, no. 260 (a bovine or a goat); VIII nos. 121 (a bovine or a goat), 154 (unidentified animal); IX no. 142; X nos. 127–129, 131, 219, 241, 253, 271; XI no. 170.

596 *CMS* VI no. 374.

597 *CMS* VI no. 399.

598 *CMS* X nos. 125, 126; XII no. 228.

599 *CMS* II,3 no. 25b.

600 *CMS* II,5 no. 283.

601 Doumas 2000b, 61, motif F: 'pair of dogs'; *CMS* V Suppl. 3 no. 396.

602 Always with *CMS* V Suppl. 3 no. 395; except once with V Suppl. 3 no. 397.

603 The dogs on the seal face would have been looking to the right.

direction one behind the other; these include horses in chariot scenes and birds.[604] For the sake of symmetry their heads are sometimes turned in different directions, with one usually looking back, thus filling the empty space above the animals' backs.

Collars are quite common in representations of dogs on Minoan seals, but are also worn by griffins,[605] lions,[606] and even goats[607] and a Minoan Genius.[608] In all likelikhood the addition of a collar implies a tamed, domesticated animal; in this respect, it is noteworthy that griffins and lions may also be depicted with one. A peculiar feature on the motif from Akrotiri are the curled bands or ribbons; in other instances a single extension from the collar probably signifies a leash.[609] An impression from Zakros provides the only example of a collar similar to those at Akrotiri.[610] Whether the adornment of these dogs indicates a special occasion is unclear, since there is no indication of any background setting. It is possible, however, that collars signify hunting dogs: a similar dog with a collar is shown barking at a potential prey on a chalcedony cushion from Archanes.[611]

The dogs on the Akrotiri impressions are reminiscent of representations of Egyptian Middle Kingdom *tesem*-dogs (*tsm*: hunting dogs). The name was applied initially to a specific canine breed, a medium-sized greyhound with upright ears and curled-up tail that appears almost exclusively in Predynastic and Old Kindgom iconography. From the First Intermediate Period onwards more breeds began to be represented in Egyptian iconography, as evidenced by the so-called *Hundestele*, where five dogs of different types appear.[612] In the Middle Kingdom, a period more relevant to our Neopalatial example, *tsm*, which became the generic term in Egyptian vocabulary for 'dog',[613] could have upright, half upright or lop ears and curled-up or sickle-shaped tails.[614] The slender build of the Akrotiri dogs in combination with their upright ears and the sickle-shaped tails strongly recalls Middle Kingdom greyhounds.

FLYING BIRD(S)

The animal world is represented in the Akrotiri sealings by yet another species, birds. Parts of two birds are attested on a fragmentary impression, which measures 1.2 × 1.15 cm (*Fig. 73*).[615] The impression may have originated in a round-faced seal, possibly a lentoid. Despite the fact that the material of the original seal cannot be determined with certainty, the

604 For chariot scenes where two horses draw a chariot, see above pp. 117–20. For birds: *CMS* I no. 273 (Myrsinochori); II,3 nos. 142, 179, 307, 351–353; II,8 no. 172 (Knossos); IV no. 265 (Sklavi); V Suppl. 1B no. 57 (Asine); VI no. 461 (Kalo Chorio).

605 *CMS* I nos. 171, 196, 223, 473; II,8 nos. 193, 194; V no. 584; V Suppl. 3 no. 245a; X no. 170; XII no. 301.

606 *CMS* V Suppl. 1B no. 77; IX no. D13; X no. 135.

607 *CMS* II,3 no. 40; V Suppl. 1B no. 65.

608 *CMS* V no. 440.

609 *CMS* II,6 no. 76; II,8 no. 248; VII nos. 66, 115; XI no. 316.

610 *CMS* II,7 no. 65.

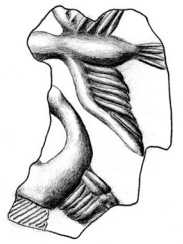
611 *CMS* VI no. 180, dated on stylistic grounds to MM III–LM I.

612 The *Hundestele* is an honorary stone *stele* set up for Intef II, pharaoh of the 11th Dynasty, in Thebes, on the occasion of the 50th anniversary of his reign; the ruler is depicted with five dogs, all of which have names (Arnold 1976, 52–56).

613 Goldwasser 2002, 91–110.

614 *EncAE*, 302, *s.v.* 'fauna, domesticated'.

615 Doumas 2000b, 63, motif P: 'flying bird'; *CMS* V Suppl. 3 no. 405.



VS3 405

Fig. 73. Seal impression with the motif of flying birds (*CMS* V Suppl. 3 no. 405) (*CMS* Archive).

composition makes hard stone or metal seem likely. The seal had been used on a two-seal flat-based nodule, which is, however, missing its second impression.

The scene includes parts of two birds flying with outstretched wings; one has a contorted neck, either turning to the back or its side. No supplementary decorative motifs are present in the background. The possibility that the second fragmentary 'bird' with the contorted neck might have been a winged creature instead, such as a griffin pursuing the first bird, cannot be excluded.[616] The presence of additional creatures is also conceivable.[617]

Two birds appear fairly frequently on Minoan seals, but they are mostly depicted in profile. They also accompany other members of the animal kingdom, including spiders, fish and dolphins, as well as mythical creatures, such as the griffin. They are rarely pictured with humans and, when they are, the occasion seems exceptional, to judge from the clothing of the latter.[618] A lentoid from Mycenae shows two birds flying in roughly the same direction, although facing opposite directions;[619] a more distant parallel where two flying birds are shown in different poses occurs on a 'talismanic' lentoid.[620] Stylistically similar is the motif that apparently depicts two flying birds attested on a roundel from the *Dépôt hiéroglyphique* in the Malia palace, which dates to a mature phase of the MM III period.[621]

Lion and Griffin/Sphinx Iconography

Other than bulls/bovines, a female lion, dogs and birds, a second lion in conjunction with a mythical creature makes its appearance among the Akrotiri sealings.[622] The creature, a

616 The actual attack scene includes a lion and a bird: *CMS* I Suppl. no. 75; II,7 no. 240 (Zakros). Griffins are attested together with birds on the same seal faces: *CMS* V Suppl. 1B no. 101 (Nauplion Museum); VI no. 269.

617 In the commentary to *CMS* V Suppl. 3 no. 405 it was suggested that there were originally at least three birds; see also *CMS* V Suppl. 1B no. 139 (Antheia, Messenia).

618 *CMS* I no. 233b (Vapheio); II,3 no. 170 (Knossos); II,4 no. 125 (Knossos); VI no. 318 (Knossos); VII no. 134; IX no. 154. In some of these the human is depicted as a 'Master of Animals'.

619 *CMS* I no. 151.

620 *CMS* X no. 248.

621 *CMS* II,6 no. 169 (Malia); for the dating of this deposit, see Chapter 4, n. 854.

622 *CMS* V Suppl. 3 no. 402.

VS3 402

Fig. 74. Seal impression with the motif of a lion and griffin (*CMS* V Suppl. 3 no. 402) (*CMS* Archive).

griffin or sphinx, is found again on yet a different impression.[623] The preserved hindquarters of a third animal on a third sealing point to a lion, a griffin or even a dog.[624]

LION AND GRIFFIN

The unique direct sealing from Room D18a bears the impression of a round seal face with the motif of a lion and a griffin;[625] the impression probably derived from a hard stone lentoid, which originally measured c. Ø 1.6–1.7 cm (*Fig. 74*).

A female lion and a female griffin, both with comparable indications of teats, are placed *tête-bêche* (head-to-tail). The two of them are running and the griffin's wings occupy the centre of the composition. In Minoan seals this composition usually involved animals of the same species, including fish or birds, in order to maintain symmetry;[626] lions also seem to have been a popular choice. Here, however, besides the fact that the lion is slightly larger in size than the griffin, we are dealing with two different species; symmetry is somehow only maintained by the fact that the griffin has the body of a lion. A comparably awkward rendering of the same two creatures was attempted on certain seals,[627] where they are shown head-to-head and tail-to-tail. Further examples of lions and griffins are also seen in different poses on seals and sealings,[628] but also other artistic media.[629]

The way the creatures are rendered — with small drill borings for the tips of their tails, their eyes, the end of the lion's muzzle, the tips of their teats, the curls on the griffin's wings; with vertical strokes for the lion's mane; with pronounced body contours — recalls the description applied to seals attributed to the so-called Jasper Lion Master, thought to have

623 *CMS* V Suppl. 3 no. 403.

624 Fragmentary seal impression on **N75**.

625 Doumas 2000b, 63, motif M: 'lion and griffin'; *CMS* V Suppl. 3 no. 402.

626 An exception appears on a seal with a griffin with open wings and a bovine depicted *tête-bêche*: *CMS* XII no. 228.

627 *CMS* II,3 no. 25a (Knossos); II,7 no. 97 (Zakros).

628 *CMS* I no. 510; III no. 503a; VI nos. 392, 393; VII nos. 116 (with a bull in their midst), 198; IX no. 148; XI no. 244 (two lions).

629 On the head of a golden pin: on one side, a pair of griffins rotate around the pin's head hole (their heads turned to the periphery), and on the other a pair of lions is carved (their heads towards the hole): Karo 1930, 78 no. 274, pl. XXXII.

VS3 403

Fig. 75. Seal impression with the motif of heraldic griffins/sphinxes (*CMS* V Suppl. 3 no. 403) (*CMS* Archive).

been produced at Knossos in LM I.[630] However, the composition lacks the symmetry and meticulous craftsmanship of the hard stone seals that bring seals together in the aforementioned group. An unusual feature is the way the griffin's wings are rendered, with four vertical strokes[631] and three horizontal which are connected to them with small drill borings. The earliest parallels for these simple wings are to be found among the Phaistos sealings, but the closest parallel is a seal impression from Agia Triada, which shows, however, more technical dexterity and precision than the Akrotiri specimen.[632]

Although no close parallels can be found for this motif, its overall characteristics, like the drill borings and strokes, allow us to place it within LM I seal production; its crude aspect, which admittedly stands out from the rest of the seals that were used for the Akrotiri sealings should not be seen as a criterion for earlier dating.

HERALDIC GRIFFINS/SPHINXES

Two griffins/sphinxes appear in another unique impression, which derived from a hard stone lentoid and is suggested in the *CMS* to have originally measured c. Ø 1.3 cm *(Fig. 75)*.[633] The seal was probably used on a flat-based nodule, but the nodule is fragmentarily preserved and it is not clear whether it bore just this one impression or more.

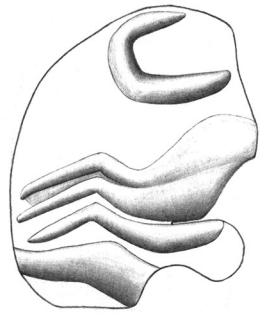
The two heraldic mythical creatures in profile are either griffins or sphinxes. The creatures are standing or sitting on the back legs and are placed antithetically front-to-front, in a composition that occurs frequently in Minoan glyptic. Another element — altar, column, tree, building, or even a probable divine figure in epiphany pose — is often placed between frontally-juxtaposed creatures; but they are also commonly depicted without anything in between them, in an apparently minimalist approach. When an element intervenes, the creatures seem to accompany it in a venerating or protective pose.

630 Younger – Betts 1979; Younger 1983, 119–20.

631 *CMS* II,5 nos. 317–318 (Phaistos): griffin wings with four and three simple almost straight strokes respectively; II,6 no. 265 (Sklavokambos): with three strokes; XI no. 6: with three strokes; V Suppl. 2 no. 67 (Elateia): with five strokes.

632 *CMS* II,6 no. 99: with nine strokes and drill borings.

633 Doumas 2000b, 63, motif N: 'heraldic griffins'; *CMS* V Suppl. 3 no. 403.



N75

Fig. 76. Seal impression on *nodulus* **N75**, running lion/griffin/dog (*CMS* Archive).

The particular composition is used with all kinds of creatures, such as animals, fish, birds, humans and mythical creatures. It can be seen as early as MM IIB in the Phaistos sealings, on which animals and mythical creatures are already portrayed.[634] The composition is encountered until the end of Mycenaean glyptic, when mythical creatures in lavish guise and intricate decoration prevail. Its most famous representation is the monumental sculpture of two lions facing a column in the Lion Gate at Mycenae.

A RUNNING LION/GRIFFIN/DOG

Nodulus **N75** bears part of an impression which is unique among the remaining Akrotiri nodules or in the corpus of Aegean seals and seal impressions in general. The fine craftsmanship of the motif, the oval shape and the size of the impression suggest it originated from a small-sized metal ring. The preserved part of the seal impression measures 0.58 × 0.73 cm and the original stamping surface would have been 1–1.1 × 1.7–1.8 cm (*Fig. 76*). It is probably safe to assume that more than half of the original stamping surface is now lost: it is either gone altogether, or it did not fit on the *nodulus* in the first place.

The preserved fragment shows the rear part of an animal in flying gallop running from left to right;[635] the rear legs and a curly tail are clearly visible. The curly tail is a standard convention for lions, but also appears on griffins, since they too have a lion's body. In addition, dogs were sometimes shown with curly tails. Below the running animal there appears to be an indication of the terrain, indicated by an undulating zone;[636] alternatively, it could be a small animal chasing after its prey, but the large size of this feature makes the former explanation more plausible.

The flying gallop is a pose usually reserved for animals that participate either as pursuer or prey in attack and hunting scenes. A number of lions and griffins run across the seal face while actually being pursued or simply as isolated motifs. The latter may have been

634 *CMS* II,5 nos. 282 (lions [?]), 323 (bird-men).

635 The animal would have been running from right to left on the seal surface.

636 Compare: *CMS* I nos. 10 (Mycenae), 15 (Mycenae), 252 (Vapheio); II,6 nos. 15, 57, 70, 72, 94 (Agia Triada), 282; II,7 nos. 42, 71, 101 (Zakros); II,8 no. 298 (Knossos); V no. 498 (Agia Irini, Kea); V Suppl. 1A no. 154 (Chania); V Suppl. 1B nos. 57 (Asine), 76 (Mycenae), 139 (Antheia, Messenia); VI nos. 178, 180 (Archanes); X no. 261.

Fig. 77. Seal impression with the motif of a procession (*CMS* V Suppl. 3 no. 394) (*CMS* Archive).

extracted from larger attack or hunting scenes, since the frenetic running rhythm does imply pursuit. In addition, landscape elements on LM I seals frequently relate to hunting scenes, as well as to possible combat scenes.[637] Apart from the attack and hunting scenes a pair of griffins in flying gallop is shown pulling a chariot on a sealing from the Knossos Eastern Temple Repository.[638]

More Human Iconography

Other than the human figure, notably the male figure, appearing in a chariot scene, also in bull-leaping and bull-grappling scenes, more males appear among the Akrotiri seal impressions. A man participates in a cultic procession,[639] a male torso is partly preserved on an impression,[640] and a third man takes part in what was likely a hunting scene.[641]

part of a procession

Among the impressions at Akrotiri there is one that clearly relates to the realm of cult. A so-called procession scene is impressed on two nodules, presumably coming from the oval bezel of a metal ring with original dimensions estimated as c. 1.8 × 1.1 cm (*Fig. 77*).[642] In both instances the other seal impression attested on the nodule derives from the large signet ring with the bull-leaping scene.

A man stands in three-quarters left pose and wears or carries either a robe or a 'sacral knot'.[643] He also wears ankle boots, seems to have short hair, and holds a double axe.

637 Krzyszkowska 2010, 177.
638 *CMS* II,8 no. 193. See here *Fig. 64, left*, and previously pp. 117, 120.
639 *CMS* V Suppl. 3 no. 394.
640 *CMS* V Suppl. 3 no. 399.
641 *CMS* V Suppl. 3 no. 400.
642 Doumas 2000b, 61, motif D, 'procession'; *CMS* V Suppl. 3 no. 394. See also Chapter 4, pp. 210–13, and Concluding Remarks, pp. 218–19.
643 It was first recognized and named as such by Evans (Evans 1921a, 430–35). Also named a 'ritual dress' or a 'sacred garment' at times; recently named as 'cloak knot' (Crowley 2013, 355–56).

Behind the man there is a wide, horizontal band decorated with running spirals, a possible imitation of the frieze of wall painting.[644]

The 'sacral knot' is usually found on seal faces as a supplementary motif floating in the background.[645] In some few instances it is worn by men who participate in processions, apparently of ritual character.[646] In one procession a man carries a double axe, while a tassled object, which is probably a 'sacral knot', floats in front of another participant.[647] The scene implies that one of the participants in the procession was actually carrying the knot. Comparable scenes depict: a woman who carries a double axe on her shoulder with the 'sacral knot' placed in front of her;[648] two men carrying the 'sacral knot';[649] several men hugging a person carrying the 'sacral knot';[650] a procession of two figures, one holding (or preceded by) a 'sacral knot', the other carrying a double axe.[651]

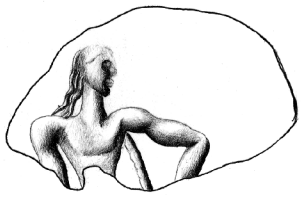
It has been suggested that the combination of a double axe with a 'sacral knot' first appears at the transition from MM III to LM I, the date to which the 'Hieroglyphic Deposit' in the palace of Knossos is now assigned.[652] The exact circumstances in which these processions took place escape us. The carrying of a double axe and a 'sacred knot', however, can be seen in the wider frame of processions that involve transporting cult equipment, as opposed to procession scenes where goods necessary for festivities, such as foodstuffs and sacrificial animals, are carried.[653]

MAN

The upper half of a male torso appears on a partially stamped impression.[654] The impression is found on a two-seal flat-based nodule and it most likely derived from a metal signet ring, the original dimensions of which cannot be estimated from the small size of the preserved fragment: 1 × 0.7 cm (*Fig. 78*). The impression was accompanied by another impression made from a hard stone seal, in all probability an amygdaloid, with the motif of a *couchant* bull.[655]

The male torso is depicted frontally, with the man's right hand directed downwards, and his left hand bent either clutching his waist or holding a rod (a staff [?]) reaching as far as his arm pit. The man's head is depicted in right profile and he has long braids.[656] He does not appear to be clothed from the waist up, but a loincloth probably covered his pelvis.

644 Blakolmer 2010, 93–94. For further analysis and a 3D model of how this male figure would stand in front of the frieze of a wall painting, see Günkel-Maschek 2012, 117, fig. 1.
645 Among others: *CMS* II,6 no. 4 (Agia Triada); II,7 no. 7 (Zakros); V Suppl. 1B no. 142 (Antheia, Messenia); VI no. 336 (Archanes).
646 *CMS* II,6 nos. 7, 11 (Agia Triada).
647 *CMS* II,7 no. 7 (Zakros).
648 *CMS* II,3 no. 8.
649 *CMS* II,3 no. 145 (Malia, dated to MM III–LM I).
650 *CMS* II,6 no. 7 (Agia Triada).
651 *CMS* II,7 no. 7 (Zakros).
652 Krzyszkowska 2005a, 115–16.
653 Blakolmer 2008, 259.
654 Doumas 2000b, 61, motif I: 'man'; *CMS* V Suppl. 3 no. 399.
655 *CMS* V Suppl. 3 no. 398.
656 On the original seal face the man would have been looking left.



VS3 399

Fig. 78. Seal impression with the motif of a man (*CMS* V Suppl. 3 no. 399) (*CMS* Archive).

One cannot be sure that the man is standing, since men in similar positions are also seen walking.[657]

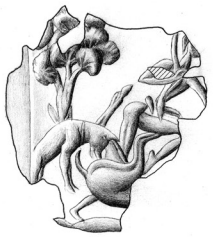
The rod could belong to a spear, which men are quite often seen carrying on Minoan seals; but placing a spear under one's armpit is certainly not practical. There are a few seals where men are depicted carrying staffs of unknown function under their armpits. In a unique representation a man bends slightly while holding a staff.[658] Two more men appear in two nodules from Zakros probably holding a similar staff;[659] one also appears to have long braids and is involved with other participants in a scene of unclear nature.[660] A man in front of a bull is also attested leaning against a staff.[661] Finally, on another sealing a naked woman with long hair and curls on the top of her head appears to be leaning against a staff.[662]

Whether the staff defines the actions in which the individuals engage is hard to say. Their common characteristic, when visible, is that they have long hair and even curls atop their heads, an observation also valid for the woman uniquely shown with a staff. As previously discussed in connection with the bull-leaper in the large bull-leaping scene, long hair, at times braided, characterizes young boys/women who have presumably entered puberty and undergo rites of passage.[663] Whether the figures on seals and sealings, including the Akrotiri example, shown with long hair and staffs are also undergoing a rite of passage[664] is a matter of conjecture.

SCENE AT A TREE

A part of a hunting scene, of preserved dimensions 1.3 × 1.35 cm, is depicted on an impression that most probably came from a sizeable metal ring (*Fig. 79*);[665] if so, then we could be

657 *CMS* V Suppl. 3 no. 288 (Portes, Achaea).
658 *CMS* V Suppl. 1A no. 338, a seal of dubious authenticity however.
659 *CMS* II,7 nos. 3, 4.
660 This scene is much discussed because of its uniqueness: Levi 1925–26b, 159; Marinatos 2007; more recently, Koehl 2016, 123–28.
661 *CMS* II,8 no. 233 (Knossos).
662 *CMS* V Suppl. 1A no. 143 (Chania).
663 Davis 1986, 401; Doumas 2000a, 972–73.
664 Koehl 1986; 2016.
665 Doumas 2000b, 61, motif K: 'scene at a tree'; *CMS* V Suppl. 3 no. 400.



VS3 400

Fig. 79. Seal impression with the motif of a scene at a tree (*CMS* V Suppl. 3 no. 400) (*CMS* Archive).

missing up to two-thirds of the scene, which probably extended on both sides of the preserved part. The ring was used once on a flat-based nodule, on which it is the sole impression attested.

In what appears to be a natural setting, defined by a tree at the back and an uneven groundline, a dog is biting the rear part of a fallen victim, a buck or goat, while a man looks away to the right, probably pursuing another animal that is not visible here. It is possible that another man was also present and that both were attacking the missing animal.[666] The dog wears a collar and the man, wearing nothing but a belt, is holding something, conceivably a shaft or bow, over his shoulder. To the left of the impression[667] there is a flat recession of the seal face; the feature is not easily explicable, but may have served to divide the seal surface into segments for yet another scene.

Hunting scenes most often involve a hunted animal and one or more dogs in pursuit or having already caught their prey. Men also appear, sometimes in full gear carrying spears and figure-of-eight shields. The lion hunt is a popular Minoan topic but other scenes include the hunting of boars or bucks. The human presence is implied even in scenes when an animal appears alone with a spear on its back. Animals lying on their backs appear only in hunting or sacrificial scenes.

Naturalistic trees are not encountered very often on Minoan seals. Most tree depictions are reduced to tree branches and do not serve as integral elements in the scene. However, entire trees are sometimes depicted on sizeable gold Neopalatial rings with multi-figured scenes,[668] some of which were also used for stamping administrative documents.[669] Some of these scenes qualify as 'ritual' and, at times, the tree is situated in the middle of the action, echoing Evans's theory of 'tree cult'.[670]

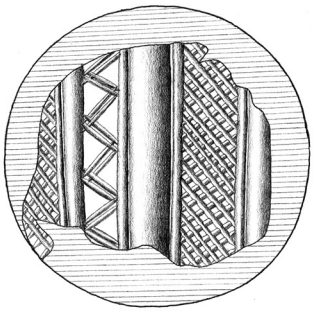
666 Compare *CMS* XI no. 165.

667 Which would have been to the right on the original seal face.

668 Krzyszkowska 2010, 178–80.

669 *CMS* I nos. 17 and 119 (both Mycenae), 219 (Vapheio); II,6 no. 5 (Agia Triada); V Suppl. 1B no. 114 (Aidonia); VI nos. 279 (Mycenae), 280 (Knossos); IX no. 29.

670 Evans 1901.



VS3 397

Fig. 80. Seal impression with a 'tectonic' motif (*CMS* V Suppl. 3 no. 397) (*CMS* Archive).

A Unique Geometric Pattern: 'Tectonic' Motif

A well-known motif, the 'tectonic' motif, is attested once on a two-seal flat-based nodule.[671] The impression came from a hard stone seal with a round, convex face suggested to have originally measured c. Ø 1.3–1.4 cm (*Fig. 80*).

The time frame within which this motif is attested on Minoan seals is usually defined as MM II–III.[672] The term 'tectonic' motif — as opposed to the older name 'architectural'[673] — refers to a mixture of linear patterns that supposedly imitate building parts,[674] although this is often hard to discern.[675] Certain hard stone samples are masterpieces of detail and the intermingling of vertical, horizontal and diagonal lines shows how well seal engravers had mastered the then new techniques of hard stone engraving.

Some 126 seals are listed in the online *CMS Seal Database* as belonging to this style group; examples in hard stone constitute the majority with 70 pieces. Hard stone seals were also used on seven sealings,[676] one of which is under discussion here. 'Tectonic' motifs appear in 54 soft stone seals; an additional four soft stone seals had a sphragistic use.[677] A

671 Doumas 2000b, 61, motif G: 'architectural design'; *CMS* V Suppl. 3 no. 397.

672 Krzyszkowska 2005a, 86–87; Pini 2007.

673 Krzyszkowska 2005a, 86–87.

674 Evans 1921a, 564–65.

675 *Pace* Yule 1981, 145–46. At p. 173 the author discusses the process of 'pictorialization' ('the process in which the originally abstract motif is transformed into a representation of an object to which it bears some similarity', see Furumark 1939, 34–51), and uses the 'tectonic' motif as the most characteristic example. In agreement with the interpretation that sees building parts as the model, Schiering 1984.

676 *CMS* II,8 no. 94: on a one-seal flat-based nodule from the Eastern Temple Repository (round surface); *CMS* II,8 no. 95: on a two-hole hanging nodule with Linear A inscription from the North-East House in Knossos (cushion seal impressed twice); *CMS* II,8 no. 99: on a one-seal flat-based nodule from Knossos (impressed by a cushion, more specific findspot unknown). The 'tectonic' seal impressions from Phaistos appear to me to have been impressed by hard stone seals (*CMS* II,5 nos. 242–244, all with round seal faces).

677 All were found in Knossos. *CMS* II,8 nos. 93: a cushion impressed a one-seal flat-based nodule (Eastern Temple Repository); 96: a round-faced seal stamped a pithos (Magazine of the Medallion Pithoi); 97: a round-faced seal impressed a one-seal flat-based nodule ('Hieroglyphic Deposit'); 98: a cushion impressed a one-seal flat-based nodule ('Hieroglyphic Deposit').

metal discoid,[678] and a discoid probably made of breccia, which is a medium-hard stone, are also encountered.[679] The discoid is the leading shape on which this motif occurs, followed by cushions and amygdaloids.[680] The findspots and dating of most examples suggest that the motif first appeared and probably peaked in MM II, but it continued into MM III.

The distribution map of 'tectonic' seals with secure provenance and dating includes sites such as Chania in western Crete, Agia Irini Kainourgiou, Kamilari and Koumasa in the Mesara, Gournes Pediados, Malia and Viannos in central-eastern Crete. 'Tectonic' seals were also among the seals that circulated beyond Crete, in sites such as Agia Irini in Kea and Miletus. A number of these survived for many years after their production as heirlooms, such as one from the LM III cemetery of Armenoi near Rethymnon.[681]

Sealings with impressions of 'tectonic' seals are already attested in the *Archivio di Cretule* at Phaistos,[682] they occur among the impressions from the 'Hieroglyphic Deposit' at Knossos,[683] and are also found in the Knossos Eastern Temple Repository.[684] The latest example from Crete seems to be a single-hole hanging nodule with a Linear A inscription, which was found in the North-East House at Knossos.[685] According to the dates assigned to the respective contexts, it appears that these seals had an administrative use in Crete from the MM II period continuing into MM III. The Akrotiri seal impression appears to be the latest verified use of such seals for administrative purposes (LM IA), with the seal approaching the status of an heirloom.

If the distribution maps of seals and sealings with the 'tectonic' motif are combined, they appear to coincide only in the Mesara. It is, however, remarkable that in the Neopalatial period only Knossos has examples of both hard and soft stone seals with 'tectonic' motifs in administrative use. With regard to the Akrotiri sealing, it is also noteworthy that none of the previously attested 'tectonic' impressions on sealings ever 'collaborated' with another seal in stamping a document. The Akrotiri sealing shows that one such seal 'worked' together with a hard stone cushion depicting two standing dogs in order to produce a sealing;[686] it is interesting that the cushion also changed 'partner' and is found together with a metal (gold [?]) ring bearing a bull-grappling scene.[687]

678 *CMS* II,1 no. 404.

679 *CMS* II,2 no. 323.

680 Yule 1981, 50–54: Discoids; Pini 2007, 228.

681 Also: *CMS* II,1 nos. 5 (Agia Irini Kainourgiou), 146 (Koumasa), 404 (Gournes Pediados); II,2 nos. 9, 11, 18 (Kamilari), 81 (Malia), 200 (Viannos); V nos. 488, 492 (Agia Irini, Kea); V Suppl. 1A no. 57 (Malia); V Suppl. 1B no. 237 (Armenoi); V Suppl. 3 nos. 106 (Chania-Splantzia), 498 (Miletus).

682 *CMS* II,5 nos. 242–244.

683 *CMS* II,8 nos. 97, 98.

684 *CMS* II,8 nos. 93, 94.

685 *CMS* II,8 no. 95 (*GORILA* II no. KN Wb 33). The findspot is confirmed through Gill's localization of the Knossos sealings, where this sealing is described as 'seal impression suggestive of the period of the Zakros sealings' and the date given is MM III–LM I (*CMS* II,8 pp. 107, 127). The same date is given by Evans (1922, 321).

686 *CMS* V Suppl. 3 no. 396.

687 *CMS* V Suppl. 3 no. 395. See further Chapter 4, pp. 203–08.

DISCUSSION: MINOAN SEALINGS AT AKROTIRI

The Akrotiri sealings offer a unique opportunity for a full archaeological, typological and iconographical investigation. Firstly, they constitute the only Neopalatial sealings for which we possess detailed depositional data; for this reason, it was opportune to contextualize and assess their situation within the settlement of Akrotiri. This is not to say that what is valid for Akrotiri also applies to Crete; one of the goals of this investigation has been to pinpoint the similarities and differences with the corresponding evidence from Crete, so as to comprehend and evaluate the situation. As in every archaeological assemblage, however, gaps in evidence exist and there is always a degree of subjectivity in the way we view and interpret relevant evidence.

Secondly, the excellent state of preservation of the sealings themselves, assisted by the fact that they did not undergo any firing process, allow a number of valuable typological observations, which go beyond the information gained so far by evidence retrieved in Crete. Some of this information is discussed in Chapter 4, since it helps provide a more general understanding of Neopalatial sealings and administrative procedures.

Thirdly, the iconographic evidence offered by the Akrotiri sealings, together with comparanda from Crete, available through the printed volumes of the *CMS* and its electronic version, the *CMS Seal Database* available through *Arachne*, enhances our understanding of the repertoire and encourages extremely detailed study. The comparisons and hypotheses presented here have benefitted greatly from the systematic documentation of Aegean glyptic by the *CMS*; certain observations regarding iconography are only possible now, more than 100 years after the first Minoan sealings were found in Crete, only because of the existence of the *CMS*.

The following discussion results from the combined insights gained because of the factors mentioned above. In the present chapter the focus has been on the sealings themselves and their role at Akrotiri; their broader significance and possible interpretations are reserved for Chapter 4.

The Findspots of Sealings at Akrotiri

The sealings were found in three different localities at Akrotiri; two of these are, however, adjacent rooms of the same building unit (*Fig. 43*). As previously stressed, the contexts of the two rooms and the sealings themselves do not allow us to make a specific connection between the unique sealing and the Linear A tablets in Room D18a on the one hand, and the hoard of sealings in Room D18b on the other. Still, it would probably be wrong to ignore the fact that the two rooms belong to the same building unit, Delta-East; the unit is fully excavated, we therefore have a relatively complete picture of its architecture, dating, contents and organization.

Since one more sealing was recovered elsewhere in the settlement and appears to have originated in yet another building, we can at least eliminate the possibility that Delta-East was somehow special or unique at Akrotiri: there appears to be no reason to exclude future retrieval of sealings from different parts of the settlement. The majority of buildings brought to light so far at the site seem to have been residential buildings, which also hosted craft activities. Some of these may have been practised at a level that could, *muta-*

tis mutandis, be termed industrial, with weaving being a case in point; another activity posited for certain rooms of these buildings is that of exchange hubs. The only building (among the excavated ones) that stands out on the basis of architectural, iconographical and archaeological evidence in general is Xeste 3, which seems to have functioned on both a 'public' as well as a 'ceremonial' level.

Delta-East, despite its small size, has the characteristics of a residential building. It follows the architectural arrangement of the other typical, two-storey urban buildings and exhibits architectural autonomy from the rest of Complex Delta (Δ) with its own entrance. As far as interior arrangements are concerned, it has a mill-room, which is evidence that food preparation took place there. One of its ground-floor rooms was decorated with wall paintings, an exceptional instance at Akrotiri; but it is impossible to say whether this distinguished it from other residential buildings, which all had a room with wall paintings on their first floor.

THE SEALINGS AS PARTS OF PRODUCT EXCHANGE TRANSACTIONS

There is one facet, however, of building unit Delta-East, that has not been addressed by previous research so far, namely a further, potential function as a centre for product exchange. An argument in favour of such a function would be the impressive quantity and variety of objects stored hastily in Room D18a as well as in Room D2. Both these rooms seem not to have been damaged by the devastating pre-eruption earthquake and they therefore served as emergency storerooms. Assuming that, aside from structural autonomy, the building unit was also functionally autonomous from the rest of Complex Delta (Δ), our best bet is that the stacked objects derived from within the same building unit, with the sole potential source of the objects being Room D21. Room D21 was the focal point of circulation for the ground floor of the whole unit and its largest room with a central column. But it was also the one that functioned as a contact point with the outside world, since it was provided with a large window in a fashion similar to Rooms D16 in Delta-South and A1 in Complex Alpha (A). It was also the first ground-floor room to be accessed after one entered the building; a similar pattern can be observed for Room D16 and Room A1, with the only difference being that in those units a small space immediately after the entrance hosted milling installations. In the case of Delta-East the mill-room D18a was accessed after one passed through Room D21; access to Room D21 was therefore unmediated after one entered the unit. But the division of Room D18 into two 'compartments', one of which served as a mill-room, was an architectural arrangement introduced after the SDL; the original location of the unit's mill-room, if different from the present, is therefore unknown. It is also of importance to note that Delta-East had a relatively restricted size, thus interior arrangements may have been conceivably dictated by the absence of adequate space.

On this basis, the sealings in Room D18b and the Linear A tablets found together with a sealing in Room D18a could have been among the original contents of Room D21 and were put into the adjacent rooms when it was being cleared. This explanation seems plausible in view of the improbable micro-contexts in which these administrative documents were found: the sealing hoard was in a mill-room, and the tablets with the lone sealing inside an *asaminthos* ('bathtub'). But a rushed rearrangement of the rooms' contents on the ground floor after a strong earthquake could account for their unlikely whereabouts.

An explanation that sees Room D21 as a centre of exchange, in which sealings and tablets were assigned roles, would ideally be further accentuated by the discovery of the isolated *nodulus* in a box together with a balance set and weights elsewhere in the settlement (*Figs. 49–52*). The weighing set indicates that some kind of product exchange took place; in such circumstances the *nodulus* could scarcely have been accidental. However, the *nodulus* is altogether a different kind of sealing from the types of nodules found in Rooms D18a and D18b, and it bears the impression of a seal otherwise unattested at Akrotiri (*Fig. 61*). Thus a connection between the sealings of Room D18 and the *nodulus* found in the box with weighing set cannot be posited on the basis of the sealings themselves.

THE SEALINGS AS ARCHIVAL DOCKETS

The potential involvement of sealings with product exchange transactions does not preclude other functions for the same sealings. A role purported for all the sealings in Room D18b is an archival one. The question is not only whether a room of a building served as an archive, assuming an exclusive function of that sort can be posited for any room, but whether the sealings had assumed their final role as archival dockets.

The question of what constituted an archive in the second millennium BC Aegean is a complex one. Archives, in the sense of rooms to which this specific function was assigned, are thought to have existed already in Protopalatial Crete at Petras, Malia, Phaistos and Monastiraki.[688] Script documents and/or sealings are believed to have been kept and/or made on the spot in specific rooms; in the cases of Phaistos and Monastiraki, the main function of the archival room would have been the collection of sealings, which at Monastiraki were not even accompanied by Linear A tablets.

Linear A tablets appear to indicate that the recording as well as the storing of financial transactions was carried out in different localities within a settlement during the Neopalatial period, a suggestion seemingly valid for some of the larger sites.[689] At minor sites it is thought that emphasis was placed on registrations in storerooms and workshops; if archival spaces had existed, they await discovery. The concept of 'minor archives' has even been proposed, where a few tablets are found together with a restricted number of other administrative documents[690].

Archival rooms are also known from the Mycenaean period, as rooms where Linear B tablets were kept, sometimes together with sealings;[691] no exclusive sealing archives are thought to have existed in the Mycenaean world. More refined observations have been offered for archival rooms in the palace of Knossos, where different scribes were active in different localities of the palace, leading to their characterization as an 'office' rather than

688 Petras: Tsipopoulou – Hallager 2010; Malia: Poursat 1990b; Phaistos: Fiandra 1968; Monastiraki: Kanta – Tzigounaki 2000.

689 Hallager 1996, 32; Schoep 1999b, 205–06.

690 Hallager 1996, 32.

691 In Pylos: Blegen – Rawson 1966, 92–100. In Knossos: Olivier 1967. *Pace* Driessen 1994–95, 244–45, who considers clay tablet deposits as 'pre-archives', temporary collections of administrative data that were destined to be transferred to other media, probably of perishable material.

a simple storage area.[692] It has been suggested that Archive Room 7 at Pylos also served as 'the office of the tax collector', but its principal use was that of tablet storage.[693]

The retrieval of bronze hinges with the sealings in Room 18b can be compared to other findspots of bronze hinges in Crete and the Greek mainland. It appears relatively safe to suggest that sealings were kept in boxes within the archives, a suggestion which makes sense on account of their small size; sealings would have easily been misplaced or lost if not gathered in a container. This observation is valid for the flat-based nodules, but could also have applied to hanging nodules, assuming they were not, or no longer, attached to the commodities themselves.

Regarding the existence of wooden boxes in association with sealings, a further suggestion can be extracted from the Akrotiri sealings. Since the stamped nodules had come to Akrotiri from elsewhere, it is very likely that they were also transported in a box or boxes. In truth, we have absolutely no idea how frequently or in what quantities sealings were dispatched: they could have reached Akrotiri singly or in groups with different shipments joining previously-sent nodules in a box, or they could have arrived all together. The suggestion that sealings could also have been transported in boxes is further reinforced by the retrieval of a *nodulus* inside yet another wooden box, which also contained a balance set.

A last note is reserved from what was observed in previous studies, but seems to also be verified by the Akrotiri evidence, namely the possibility that flat-based nodules, the prevailing variety of nodules among the Akrotiri batch, were most likely left unopened upon arrival.[694] As much as such an assumption defies our logic by undermining their presumed purpose of existence (documents dispatched with a written text that was not meant to be read [?]), there are parallels from the ancient world which demonstrate that such a practice was not unheard of. The most pertinent parallel appears to be that which is attested in southern Mesopotamia during the Old Babylonian period (c. 2000–1600 BC) and refers to a practice of enclosing clay tablets in a clay 'envelope', which would subsequently be stamped. The tablet contained information of legal nature (such as contracts) and was kept enclosed in the envelope until a dispute arose, in which case it was opened and consulted.[695]

A similar function has been posited for hollow, clay balls of various sizes containing clay counters or tokens, recovered in various areas of Mesopotamia from the mid-fourth millennium BC onwards; these bear seal impressions on their exterior and have also been termed as 'envelopes'. They are thought to represent an early administrative device, one that could be opened by breaking if the contents were contested.[696]

692 Olivier 1967.

693 Blegen – Rawson 1966, 92–93.

694 See above, p. 94.

695 Renger 1977; Leemans 1982, where the importance of witnesses to the transaction is stressed, who sometimes certified to the contents of the document by stamping with makeshift seals, manufactured on the spot for the occasion.

696 The theory was promoted by Schmandt-Besserat (1992), but has been contested in its details; see more recently Woods 2010.

The Function and Role of Sealings at Akrotiri

The Cretan sealings retrieved at Akrotiri testify to almost all Minoan Neopalatial sealing types: flat-based nodules, single-hole and two-hole hanging nodules, direct nodules and *noduli* (*Figs. 56–61*). Only roundels are absent, but whether this is accidental or not is unknown. The retrieval of these Cretan sealings at Akrotiri constitutes *de facto* evidence either that these sealing types were intended for dispatch from one site to another, or that sometime after their manufacture they were candidate travellers. At present there is nothing to suggest that their dispatch from Crete to Thera was an exceptional phenomenon, since the sealings themselves present nothing out of the ordinary compared to their counterparts retrieved in Crete.

The examination of their findspots at Akrotiri indicates, however, that the sealings could have served more than one role: besides travelling documents, either self-sufficient or accompanying travelling goods, they may have participated in product exchange processes, and they finally seem to have assumed an archival role. It appears, therefore, that there could be many answers to questions regarding the character and function of these sealings, and that the biographies of these objects cannot be covered by a single explanation.

flat-based nodules and technical observations

Previous research, conducted primarily during the 1980s, i.e. the decade before the Akrotiri sealings were discovered, concluded that flat-based nodules were in fact document sealings: they were made solely for attachment to folded leather documents. Almost from the outset, there was no doubt that the process involved thin, folded pieces of leather. The Akrotiri evidence makes abundantly clear that the folded piece of leather could not have contained anything (hence the rejection here of the misleading terminology 'packet sealings'). Instead the piece of leather was simply folded onto itself several times.

The repeated examinations and exhaustive photographic documentation of the Akrotiri flat-based nodules by the author have lead to a number of observations pertaining to the technical side of the nodules' manufacture (*Figs. 54–56*). By counting from the Malia palace deposit that dates late into MM III, where the first securely-dated flat-based nodules appear, the Akrotiri flat-based nodules were probably produced within the first 100 years of flat-based nodule history in Crete, and are thought to precede the main bulk of the comparable Cretan evidence by some 80–120 years. Nonetheless they already attest to a standardization in how they were made, which was by no means simple or self-evident. Allowing for minor differences from one example to the next, not unexpected in hand-made objects, the fact is that they were all made according to certain principles. These manufacturing principles seem to be well established and fairly strict, since some of the nodules are like identical siblings; such a result which can only be achieved if the manufacturing process is: a) taught; b) obligatory; c) established because it already has a history.

The question as to whether sealings were made by the person/people that stamped them is so far unresolved. When two stamping partners are involved, or even three, as is often the case at Zakros, we must assume that the nodule itself could only be made by a single person. So it was either one of the stamping partners, or some other individual responsible

for folding the piece of leather, then placing the layers of clay on top and around the sides of the folded piece of leather, while continuing to wind the string, and finally inviting the stamping partners to execute their duty. In addition, the role of the person who had written on the piece of leather in the first place is in no way detectable in the sealing process.

This entire small 'ritual' was very repetitive, supporting the view that the process of making nodules was taught. Much like the manufacture of clay tablets, as well as writing itself, presuppose the existence of scribal school(s), the know-how for making clay sealings seemingly belonged to some sort of taught process. Stamping *per se*, of course, especially if guided by someone experienced in how clay behaves and dries, did not require any particular level of technical expertise or intellectual capacity. But if we assume that stamping implied a certain degree of administrative responsibility, even the stamping partners could not have been mere instruments in the process: they would have had to know how and why the process functioned.

The second element that derives from the technical observations on the flat-based nodules is that the manufacturing process was repetitive probably because the system in which it functioned was strict in its requirements. If someone is responsible for the same tedious and, in all probability, monotonous process, the only reason to be careful and precise in its repetition is that this is exactly what is required of them. This is why the Minoan administrative system has repeatedly emerged in this study as meticulously organized: the Akrotiri evidence shows a full-fledged system functioning accurately in its smallest details.

An additional observation concerns the size of the documents that were attached to a flat-based nodule. The Akrotiri evidence demonstrates in a number of cases the full extent of the folded piece of leather. By combining observations from nodules **N4**, **N18**, **N21** and **N24** it is evident that the leather document was folded at least twice in different directions. In this respect, the largest folded piece of leather present at Akrotiri measured 2.3 × 1.5 cm and was kept under nodule **N24**, therefore the leather piece would have been 4.6 × 3 cm when unfolded. One of the smallest pieces of leather attested measured 0.8 × 1.2 cm, measured under nodule **N48**, therefore it would have been 1.6 × 2.4 cm when unfolded.

Consequently, the sizes of the original leather documents appear to have been quite small. Depending on the size of the signs written on them in ink, the texts recorded could not have been lengthy.[697] These dimensions of text carriers are, however, reminiscent of contemporaneous Linear A tablets (*Fig. 119*); thus the leather documents, before folding, would have been comparable in size to clay tablets.[698] Although we will probably never recover any of the leather documents that were sealed by the flat-based nodules, it is not unreasonable to think that the contents may have been comparable to those on clay tablets, namely texts of a financial nature in tabular arrangement. The limited size of the leather documents rules out extended texts, such as legislative and legal documents, contracts, letters, poetry or literature and the like. Whatever these documents recorded, the texts were certainly extremely succinct and even telegraphic, much like those on Linear A tablets. What is probably beyond doubt, although equally non-verifiable, is that the texts on leather were written in Linear A.

697 *Pace* Perna 2017, who suggested through experimental methods that even lengthier texts could have been accommodated.

698 Hallager (1996, 137–45) discusses various possible leather sizes ranging from 'even smaller than the average size of a Linear A tablet' to 'large pieces of parchment'.

With regard to the size of the documents, this seems to correspond to the size of the flat-based nodules placed on top of them, as well as the size of the seals used: somehow they seem to have been interrelated. Since the starting point for the whole process was in fact the piece of leather, it could be that it was the leather document with its specific size and, therefore, its specific text length capacity that dictated the rest.

Another point for discussion is how and if the subtypes of flat-based nodules, as defined so far in the literature, are meaningful or useful when it comes to understanding and analysing flat-based nodules. The typologies devised in previous studies have provided little help in the present study, since they fail to address vital questions regarding flat-based nodules, including what each type represents. The existing typologies are correct in that they recognize certain repetitive traits in the manufacture of flat-based nodules, but do not offer satisfactory interpretations for their occasional presence or absence. For this reason an altogether different approach was adopted here; the results will be set out in Chapter 4, since they proved useful for understanding Neopalatial flat-based nodules in general.

THE REMAINING CATEGORIES OF NODULES AT AKROTIRI

Single-hole hanging nodules have always been considered as archival documents (*Fig. 57*). The discovery of nodule **N69** among the hoard of clay nodules in Room D18b at Akrotiri appears to confirm this assumption, since it is difficult to see the documents accumulated there as having any other function. There is no way of telling from the Akrotiri evidence whether this nodule had, at an earlier point in time, served another purpose, namely as a tag, as is often suggested in previous research. In archives elsewhere the seals used to stamp single-hole hanging nodules have also been used on other kinds of sealings, namely roundels, two-hole hanging nodules and flat-based nodules. The Akrotiri material offers no assistance on the matter of potential overlaps between the first two categories: no roundels have been found at Akrotiri, and the unique two-hole hanging nodule found is missing its impressed part; and as far as flat-based nodules are concerned, the seal used for stamping the unique single-hole hanging nodule at Akrotiri is not attested on any other nodule at Akrotiri or elsewhere. Yet the apparent overlap between impressions on single-hole hanging nodules and flat-based nodules evidenced in Cretan archives is of major importance: the evidence from Knossos and Agia Triada shows that the same seals could be used on both varieties, with some of the seals used for the flat-based nodules being indicative of a high administrative status.[699] So, although the impression on the Akrotiri single-hole hanging nodule does not coincide with that on any flat-based nodule, it cannot be excluded that it represented the certification of a transaction by a high-ranking official. The fact that the partially preserved impression on this single-hole hanging nodule derived from a hard stone seal with an intricate figurative scene could be of some significance in this respect.

Very little can be said about the unique two-hole hanging nodule **N70**, especially since it is missing the seal impression (*Fig. 58*). Basically, the only fact that can be stressed is its actual presence at Akrotiri among the nodules from Room D18b. The information in previous research is not very helpful either towards understanding its eventual function or degree of importance.

699 See Chapter 4, pp. 192–94, 203–10 and *Figs. 106, 112*.

The remarkable typological similarity of the direct sealing **N74** with another one retrieved at Agia Triada reinforces the idea of the uninterrupted, and probably quite conservative, continuity in administrative practices between LM IA and LM IB (*Figs. 59, 60*). In addition, the fact that the specimens from Akrotiri and Agia Triada were both made by following exactly the same sequence of movements, which produced the exact same shape of a nodule, also supports the idea of a taught manufacturing know-how, as previously suggested for flat-based nodules. Moreover, the discovery at Akrotiri of a direct sealing that was apparently made elsewhere definitively puts to rest the unfounded assumption that direct Neopalatial nodules were solely intended for on-site procedures, as believed for their presumed predecessors, the Protopalatial direct sealings.

Lastly, we have *nodulus* **N75**, a stamped clay nodule with no means of attachment to an object or cord, a 'sealing that sealed nothing' (*Fig. 61*). Although the *nodulus* is regarded in the literature as a token that changed hands, it appears to be implicitly treated in publications as an archival, therefore local, document wherever it is found. But the example from Akrotiri was found in a context that has little to do with archiving: it seems that the *nodulus* was required in a transaction that involved the weighing of products, which were possibly in the process of being exchanged. If the *nodulus*, according to the interpretations offered so far, functioned as some sort of token, i. e. as evidence of some kind of exchange, the next question is how this evidence worked. The piece was evidently prepared elsewhere, since it also seems to be made of non-Theran clay, and arrived at Akrotiri as such, to be given out probably in exchange for some product. Alternatively, it may be that the *nodulus* had already changed hands and had been collected by someone who was in possession of the box and the balance set. Either way we must accept that what made this simple clay lump valuable and, in all probability, recognizable, was the seal impression, which served as a guarantee for someone not present at the transaction. At a future instance the person receiving the token would have to redeem it where its face value, based on the impression, would be understood, or even claim some compensation from the original seal holder. In any case the *nodulus* was probably redeemable within the confines of a system where Minoan administrative insignia were known and valued.[700]

An alternative explanation is the possibility that the *nodulus* was not meant to change hands, but was meant to guarantee or authenticate something merely by showing it.[701] Again, this presupposes that the seal impression was recognizable and trustworthy, but this prerequisite was probably valid for any system that made use of seals for administrative purposes. Instead of the seal bearer travelling and being present at all potential transactions of interest, the seal bearer could provide assistants or representatives with a token of his authority, namely the impression of his seal on a clay lump, to be shown when and if necessary.[702]

700 See also the discussion in Panagiotopoulos 2015, 279–81.

701 Krzyszkowska 2005a, 163.

702 Specific evidence for such function of stamped objects as a sort of passport comes from the Persepolis Fortification tablets (early fifth century BC). Such a pass, a stamped clay document, is named *halmi* in Elamite and *miyatukka* in Persian (Lewis 1994, 27).

The Iconography of the Sealings

The sealings retrieved at Akrotiri were a minimum of 69 specimens and they testify to the use of 19 different seals (*Fig. 62*). In accordance with Neopalatial sealing deposits in Crete, the Akrotiri evidence testifies to the recurring use of a limited number of seals on numerous sealings. Again, it should be stressed that we are missing all information on the time span involved in the formation of such sealing deposits, and are thus in no position to evaluate properly what precisely the repetitive use of certain seals means. For the sealings retrieved in specific deposits in Crete and regarded as evidence of on-site administrative procedures, such repetitive use has been interpreted as an 'intensive' model of seal use, presumably exercised by resident seal owners; minimal use of seals in the same deposits has been viewed as the result of incoming sealings.[703] Even if valid at Knossos, for which the theory was proposed, it cannot be applied here, since all sealings found at Akrotiri are, by definition, incoming. Alternative explanations should therefore be sought for the seemingly frequent use of some seals and the seemingly rare use of others, most notably explanations that will also allow for the randomness of preservation of materials in the archaeological record.

All seals are Minoan Neopalatial products; eight most likely came from metal rings, in all probability gold,[704] and seven were made of hard stones;[705] in one case the original material, whether metal or stone, cannot be determined.[706] The quality of craftsmanship is outstanding in most instances and the seals would have ranged among the finest examples of Minoan Neopalatial glyptic. The metal rings were all used for flat-based nodules, except for one that was used on the *nodulus*; the unique single-hole hanging nodule and the unique direct nodule bore the impressions of stone seals, still of no lesser artistry. Most seals used for the Akrotiri sealings bore figurative motifs, as was typical of Neopalatial output, where 'ornamental' motives had all but disappeared; only one seal is decorated with an abstract, geometric design, a 'tectonic' motif.

Akrotiri attests to the impressions of a metal signet ring, in all probability gold, with a chariot scene. The very same ring was subsequently used to stamp flat-based nodules recovered at Agia Triada and Sklavokambos in Crete, both destroyed in LM IB (*Figs. 63, 106*). It is known, therefore, that this ring was used in Minoan administration between LM IA and LM IB, if not continuously, at least repeatedly. Whatever the significance of the chariot scene as a seal motif, it gives the impression of rather limited usage. On present evidence at least, apart from this particular ring — attested through impressions at Akrotiri, Agia Triada and Sklavokambos — only one other, bearing a griffin-drawn chariot, is known

703 The theory proposed in Weingarten 1988, 11–14; the more recent discussion on the matter in Panagiotopoulos 2014, 43–44.

704 'Chariot scene': *CMS* V Suppl. 3 no. 391; 'bull-leaping': *CMS* V Suppl. 3 no. 392; 'bull-leaping/grappling': *CMS* V Suppl. 3 no. 395; 'building and bovines': *CMS* V Suppl. 3 no. 404; 'galloping lion/griffin/dog': **N75**; 'procession': *CMS* V Suppl. 3 no. 394; 'man': *CMS* V Suppl. 3 no. 399; 'scene at a tree': *CMS* V Suppl. 3 no. 400.

705 'Couchant bull': *CMS* V Suppl. 3 no. 398; 'lioness attacking bovine': *CMS* V Suppl. 3 no. 401; 'animal device': *CMS* V Suppl. 3 no. 393; 'pair of dogs': *CMS* V Suppl. 3 no. 396; 'lion and griffin': *CMS* V Suppl. 3 no. 402; 'heraldic griffins/sphinxes': *CMS* V Suppl. 3 no. 403; 'tectonic design': *CMS* V Suppl. 3 no. 397.

706 'Flying bird': *CMS* V Suppl. 3 no. 405. The three remaining are too fragmentary to allow any such evaluation.

from a sealing in the Eastern Temple Repositories. In other words, only two rings with the chariot theme are known to have been administratively active in the Neopalatial period.

The discovery of seals depicting chariot scenes in Mycenaean contexts, particularly those of early Mycenaean phases, points to the establishment and consolidation of a Mycenaean 'character' from the Shaft Grave period onwards. This was assisted by, *inter alia*, the selective appropriation of an ideology-laden and emblematic Minoan visual vocabulary;[707] the exclusive status of chariot scenes in Minoan Crete would fit this picture. The importance of the theme is further highlighted by its attestation on a sealing at Pylos, at a time quite distant from the influence of Minoan Neopalatial glyptic. Also notable is the Mycenaean afterlife of the theme, when it was further diffused into wall paintings and pottery.[708]

The limited edition of rings with chariot scenes for administrative purposes stands in stark contrast with the ubiquity of bull-related themes in both Minoan Neopalatial glyptic and among the Akrotiri sealings: five different rings with bovines, most of which were bulls, were responsible for the impressions of a staggering 77% of the Akrotiri sealings (*Figs. 65–70*). But it is also worth stressing that six different motifs, all coming from metal rings, included another frequent theme, namely the human, male figure (*Fig. 62*); betweem them, these seals stamped a non-negligible 76 % of the Akrotiri sealings. The latter percentage concurs with the numbers extracted from previous studies, which established a special relationship between figural motifs on metal rings, i. e. human figures or deities in human guise, with flat-based nodules, such as the overwhelming majority of the Akrotiri sealings are.[709]

The most impressive bull-leaping scene derives from the largest metal signet ring used for the Akrotiri sealings. Its bezel measured 3.3 × 2.4 cm and is among the largest Minoan metal rings known to have existed and used for administrative purposes (*Figs. 65–66*). We cannot say whether the administrator who used this signet ring was more important than others on account of the high number of impressions (s)he generated, but (s)he was certainly one of the busiest and versatile at the time.[710] Its particular theme is well known through multiple impressions of some 17 different seals from sites around Crete: Agia Triada, Gournia, Sklavokambos, Zakros, Knossos, Chania; i. e. from virtually all the sites where Neopalatial sealings have been found. According to the evidence to date, the specific ring responsible for the Akrotiri impressions was not used for sealings found elsewhere; but two extremely similar bull-leaping rings impressed sealings that were found in the same contexts at Agia Triada, Gournia and Sklavokambos, and one that was found in the Zakros palace (*Fig. 66*).[711] The bull-leaping theme was, therefore, one of the most extensively and persistently copied for Neopalatial administrative purposes. It was not as 'exclusive' as the chariot scenes, at least not on present evidence, but its repeated copying was undoubtedly

707 A complex process which has been examined in different sets of material remains, such as mortuary practices and architecture (Voutsaki 1999; Wright 2006).

708 Krzyszkowska 2005a, 140–41.

709 Tsangaraki 2010b, 371, fig. 6.

710 The variant frequencies of seal impressions have prompted Militello to posit different roles for the people who handled them in the Protopalatial Phaistos deposit (2000, 227–28), and Relaki to ponder on their possible different types of authority (2012, 307).

711 See Chapter 4, pp. 192–94 and *Fig. 106*.

meaningful.[712] Among the Akrotiri material, impressions from a small-sized metal ring, probably of gold, with the motif of a man trying to grapple a bull is also attested (*Fig. 67*). Other seals bore further bovine iconography: a *couchant* bull from a hard stone seal, a motif which could have been extracted from a broader attack or hunting scene (*Fig. 68*); a lion attacking a bovine, one of the earliest attestations of lions pursuing other animals, such as bovines, gazelles, agrimia, etc. (*Fig. 69*); and two bovines next to a two-storey building, a combination of a built environment with bovines both unique and peculiar (*Fig. 70*).

From the rest of the animal kingdom, a hard stone cushion with the motif of two fighting dogs is attested (*Fig. 71*). Another hard stone cushion bore a pair of standing dogs looking in the same direction (*Fig. 72*). The impression of a metal or stone seal has two flying birds with open wings (*Fig. 73*). Three more seals attest to a lion, as well as lion-inspired mythical creatures: a lion and griffin (*Fig. 74*); a pair of heraldic griffins or sphinxes (*Fig. 75*); and the rear half of a running animal, which may have been a lion, a griffin or a dog to judge by its curling tail (*Fig. 76*).

A cult scene came from a small metal ring (*Fig. 77*): a man wearing either a robe or a 'sacral knot' holds a double axe and stands in front of a frieze of running spirals. The man accords with a series of processional scenes in Minoan iconography, in which the participant(s) carry cult equipment. Another solitary male figure occurs; the circumstances in which he appears are unclear, but he holds a staff under his armpit (*Fig. 78*). The last of the male figures is involved in a complex hunting scene, in which a dog bites its fallen prey, while the man turns his attention toward what could be another victim (*Fig. 79*).

The only seal with a non-figurative theme among those used for the Akrotiri sealings bears a 'tectonic' motif (*Fig. 80*). This type of motif appears to have peaked primarily at the late Protopalatial–early Neopalatial period; hence the seal could be regarded as slightly 'antique' given the date of Akrotiri hoard. Indeed this is the only seal which may predate LM I, unlike all others used on the Akrotiri sealings.

712 In the modern scholarly subconscious the bull-leaping motif is so closely associated with Minoan culture, that its discovery in contexts outside the Aegean immediately brings to the fore comparisons with the Minoan world; see Syrian seals (Collon 1994), Egyptian wall paintings (Morenz 2000), and, more recently, bull-'dancing' on an early Hittite relief vase from Hüseyindede Tepesi in central Anatolia (Sipahi 2001). See also further below, Chapter 4, pp. 190–92.