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## THE PRIMARY DATING EVIDENCE FOR EARLY MINOAN SEALS

The dating of Cretan Bronze Age seals necessarily involves many stylistic judgements, for three reasons: seals are often found in tombs with a wide range of date, especially those from the EM to MM large communal tombs; often they are chance discoveries with no known contexts; thirdly, being durable objects, they may have been made at a time earlier than that of their find contexts.

Although, therefore, style is often necessary as a criterion of dating, it is not the primary criterion. This is provided by stratified or homogeneous deposits, although of course a seal in a pure deposit might still be earlier than the deposit. So the problem of dating the Early Minoan seals of Crete, the contexts of which often have a wide range, takes the form: how early can this or that seal shape or design possibly be? The purpose of this article is to set out the evidence, most of which is new, regarding seals from the earliest firmly dateable contexts. These contexts are Early Minoan II. Thus, whatever the shape or design of these seals, howsoever elaborate, we can say on indisputable grounds of stratigraphy that they belong to the earliest period. It is further suggested that only in this way can a reliable dating sequence be built up and the necessary stylistic judgements be based. In spite of the paucity, as yet, of EM II evidence, some interesting conclusions emerge.

The dating of the Early Minoan period is based on the pottery sequence. Whatever length is given to the period as a whole<sup>1</sup> it is clear that EM I, II and III are separate and distinguishable periods<sup>2</sup>.

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<sup>1</sup> c. 3000—2000 B. C. according to the writer, *Minoan Stone Vases* 1969, 2, 106. For the long chronology cf. Hood, *BICS* 13, 1966, 110; Renfrew, *Kr. Khron.* 1964, 130.

<sup>2</sup> Evans, *PM* I 56—126; Pendlebury, *The Archaeology of Crete*, 1939, 47—93; Alexiou, *Kr. Khron.* 1961/2, 88—91; Warren, *Kr. Khron.* 1965, 14—28 (some of the material classed as EM I, e.g. Vasilike, Palaikastro and Zakro, is EM II. See

### Early Minoan I:

No seals or sealings have yet been found in pure EM I deposits. Since there are several substantial deposits of this period<sup>3</sup>, it looks as though seals were not then known in Crete, on present evidence.

Sir Arthur Evans assigned a few seals with "rude linear pictographs and signs" to EM I, "if only for the reason that more developed types of the same class are associated with remains of the succeeding epoch"<sup>4</sup>. This is a stylistic evaluation, since none of the seals in question come from pure EM I contexts. It may be that Evans will turn out to have been correct, but there is no contextual evidence for him at present. It should be noted that his stylistic dating is based on a hypothesis of unilinear progression, from rough and simple forms to "more developed"<sup>5</sup>.

### Early Minoan II:

There are thirteen seals, and impressions on clay of two more, from pure EM II contexts. Two further seals come from EM I—II deposits, one in the tomb at Krasi<sup>6</sup>, the other with EM I—II sherds at Mochlos<sup>7</sup>. Either of these might of course be of EM I manufacture, and any or all of the thirteen might be survivals from EM I, but the evidence of the proveniences of the thirteen weighs against these possibilities.

The fifteen seals are set out according to site and shape in the following table.

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also n. 9 below); Weinberg, in *Chronologies in Old World Archaeology*, R. W. Ehrich ed., Chicago 1965, 306—308; Zoes, *Eph. Arch.* 1965, 53—67; Πεπραγμένα τοῦ Β' Διεθνoῦς Κρητολογικοῦ Συνεδρίου, Athens 1968, 141—156; Hood, see n. 1. The periods and chronology are discussed in detail by the writer in a study now in preparation of the Early Bronze Age of Crete.

<sup>3</sup> Knossos (EM I well) — Hood, n. 1: Lebena (Tomb II, lowest level) — Alexiou, n. 2; *ILN* 6. 8. 1960; Hood, *SPHS/BSA Arch. Rep.* 1959, 19—20; *BCH* 84, 1960, 841—846. The deposits from Pyrgos (Xanthoudides, *AD*, 1918, 136—170) and Kyparissi (Alexiou; *Kr. Khron.* 1951, 275—294) are mainly EM I.

<sup>4</sup> PM I 68. Followed by Pendlebury, *op. cit.* 53

<sup>5</sup> See also PM I 93 on the difficulties of contexts with wide date ranges: "It is therefore advisable provisionally to assign the seals showing the highest artistic development to the succeeding EM III period".

<sup>6</sup> Marinatos, *Arch. Delt.* 12, 1929, 102—141. No pottery from the tomb is demonstrably later than EM II. For the seal, p. 123 and Fig. 16

<sup>7</sup> Seager, Mochlos 1912, 109 and Fig. 54; Kenna, *Cretan Seals* 1960, Fig. 18

	Stamp	Cylinder	Conoid	Hemisphere	Ring	Vertical disk
Krasi	1					
Lebena	3		1		1	1
Mochlos		2				
Myrtos	5			1		
	9	2	1	1	1	1

There are two impressions of the same engraved face (probably from a stamp seal) on a clay sealing from Myrtos<sup>8</sup> (Fig. 1, Pl. I) and a single impression on a clay loomweight from Palaikastro<sup>9</sup>.

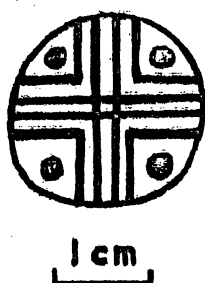


Fig. 1

The most productive sites are Lebena and Myrtos. At Lebena one of the five circular tombs excavated by St. Alexiou, Tomb II A, contained two clear levels, separated by a layer of sand<sup>10</sup>. The lower level was EM II, the upper MM I A. In the lower level the excavator had the good fortune to find six seals and one steatite foot amulet<sup>11</sup>. Although there was a thick EM I level in the adjacent

<sup>8</sup> Warren, ILN 17. 2. 1968, 25. Fig. 8

<sup>9</sup> Eccles, BSA 40, 1930/40, 49, No. 41 and Fig. 27. For the context, Dawkins, BSA 10, 1903/4, 202. In Kr. Khron. 1965, 18—19 I followed the excavators and dated this lowest pocket of material to EM I (cf. Dawkins, Unpublished Objects from Palaikastro 1923, 4—5). The lowest deposit is in fact EM II (like the material above but to one side of it). The design of concentric semicircles on the jug, BSA 10, 201, Fig. 3a, is purely EM II; this and the other jug are both flat-based (not round-bottomed as in EM I) and white on red is found in EM II at Myrtos.

<sup>10</sup> Alexiou, n. 2

<sup>11</sup> One of the seals is Alexiou, ILN 6. 8. 1960, Fig. 18. Another, HM 2010, is a twin of *ibid.* Fig. 7 lower right (from the upper, MM I A, level of Tomb II A). HM 2006 is very close to one from Tomb I (Hood, SPHS/BSA Arch. Rep. 1958, 16, Fig. 23a). The foot amulet is ILN *ibid.* Fig. 7 top left. I am greatly indebted to Dr Alexiou for his generous permission to study the Tomb II A seals *in corpore*, in advance of final publication.

Tomb II, no seals were found in it; they begin in the levels above when EM II pottery came in. Tomb II A, with its seals, was first built in EM II. It looks therefore as though seals first came into use in this period at Lebena.

The six seals are<sup>12</sup>:

1. HM 2005. Cylinder with hammer-head handle (therefore classed as a stamp seal). Incised square hatching on base with two concentric circles towards the centre. Ivory. Cf. cylinders with handles, Matz, *Die frühkret. Siegel* 1928, Pl. XI 3, 9, 14 (Haghia Triadha tholos). The handle of No. 14 is reminiscent of a hammer head.
2. HM 2006. Ring seal with bezel. Square hatching on bezel. Brown serpentine. For its shape, cf. Matz loc. cit. Pl. IX 17 (Siva); Hood, SPHS/BSA Arch. Rep. for 1958, 16, Fig. 23a (Lebena, Tomb I).
3. HM 2008. Bottle-shaped stamp or signet with double-headed animal. Square hatching on circular base. Ivory. Cf. closely Money-Coutts, BSA 36, 1935/6, 97, 101, and Fig. 21, 10 and Pl. XIV 10 (Trapeza). Cf. for bottle shape n. 17 below. Back-to-back, double-headed animals, n. 22 below.
4. HM 2009. Disk cut off on one edge, perforated near circumference opposite this edge, so worn as an upright disk. Incised lines, possibly meant as animals, on both faces. Blue/black steatite.
5. HM 2110. Conoid. Small holes over sides. S-scroll on base, surrounded by border of small holes. Alexiou, ILN 6. 8. 1960 Fig. 7 right, is a slightly larger twin, from the upper, MM I A, level of the tomb. Dark blue serpentine.
6. HM 2011. Winged creature (height 1.5 cm only). Fine square hatching on the narrow base. Ivory. ILN, *ibid.* Fig. 18.

At Myrtos the six seals (Pl. II) and the clay sealing (Pl. I) were found in the destruction deposits of the settlement, dated to the end of EM II, c. 2200 B. C. Five, including two unfinished, were stamp seals, the sixth (Pl. II No. 3) hemispherical. Materials and designs are indicated below. There was no trace of EM I at Myrtos, and the unfinished seals prove manufacture in EM II. One finished and one unfinished stamp (Pl. II Nos. 1 and 2) are very close in shape, and there need be no doubt that all the Myrtos seals were

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<sup>12</sup> HM (Herakleion Museum) numbers are given so that correlations can easily be made with the forthcoming first volume of HM seals in CMS.

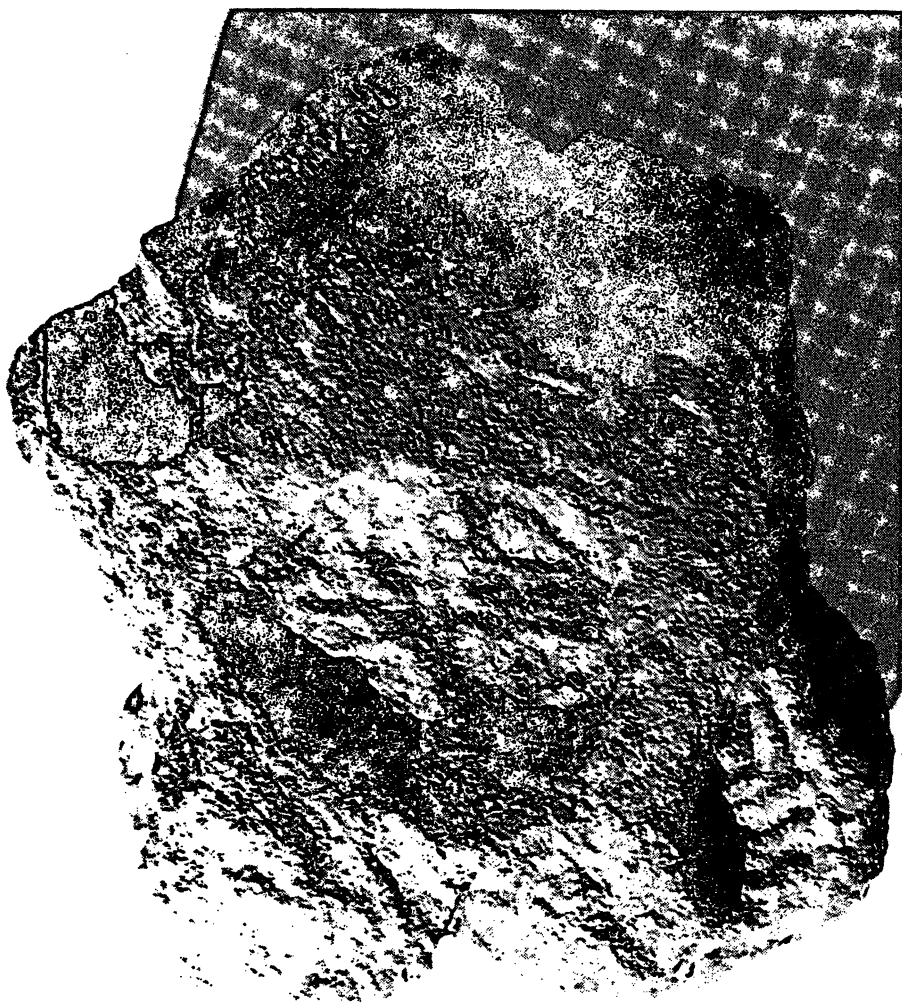
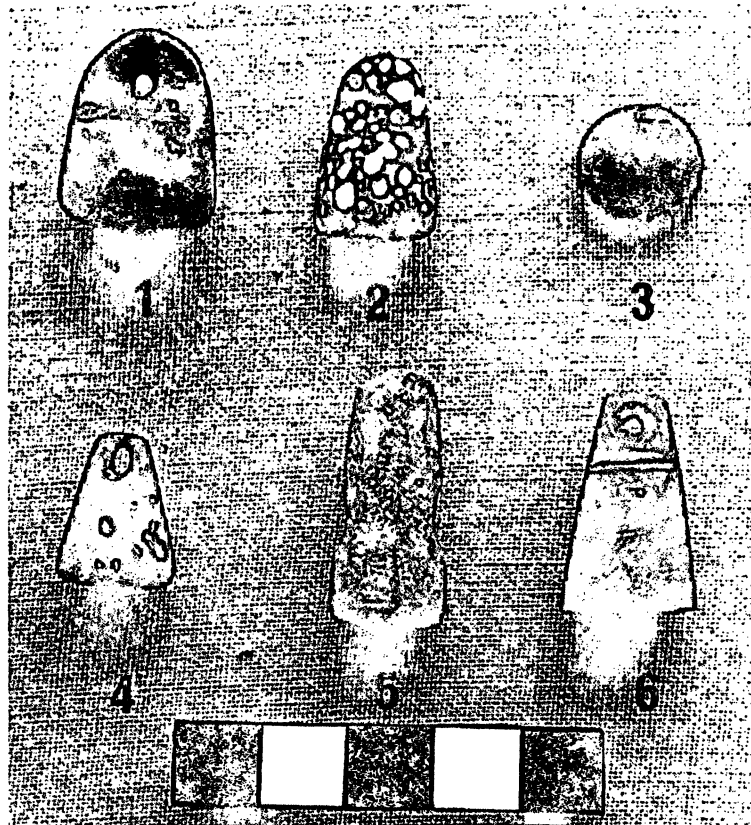
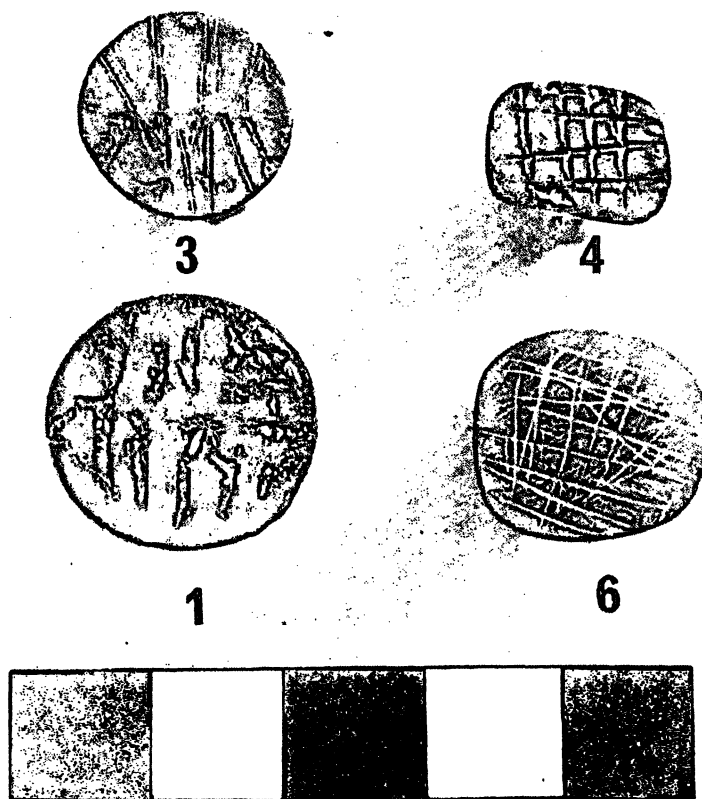


Plate I

Clay Sealing from Myrtos (EM II)



a



b

Plate II  
EM II Seals from Myrtos

made on the site in EM II. The impressions on the clay sealing (Pl. I) are not from the surviving seals, so we can be sure that at least one more seal was in use at the time.

Mochlos produced one limestone cylinder with EM I—II sherds, and there was also an ivory cylinder from Tomb VI<sup>13</sup> where the only pottery was EM II<sup>14</sup>. The Palaikastro loom-weight with its impression was stratified in an EM II deposit in the town; there is no EM I horizon at that site.

The designs on the seals and seal-impressions are as follows:

	Krasi	Lebena	Mochlos	Myrtos	Palaikastro
Angle-filled					
cross	1			1	
Cross with circle					
in each quadrant			1		
Square hatching		4		1	
S-scrolls with					
border of dots		1			
Triangles with					
hook terminals					1
Triquetrals			1		
Vertical and					
horizontal					
interlocked bars			1		
Irregular linear					
patterns		1		3	

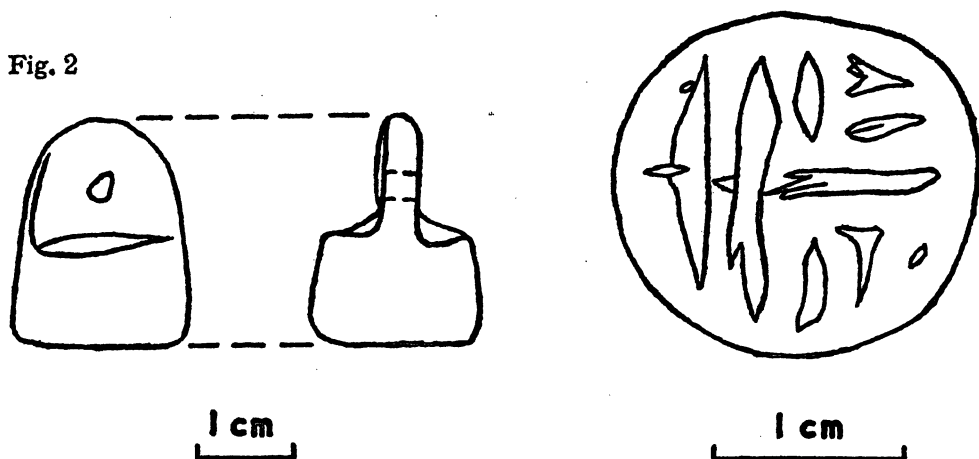
Most of these are simple, self-explanatory designs. Five, however, are more elaborate. The impressions on the Myrtos sealing are from an angle-filled cross with a circle in each quadrant (Fig. 1, Pl. I), and are more complex than the plain cross with circles from Mochlos. One may compare the clay seal-impression from Trapeza, with additional lines and a border of circles, published by Money-Coutts in BSA 36, 1935/6, 96, Fig. 21, 17. The Lebena conoid has an elliptical field with an S-scroll and border of dots, the Palaikastro

<sup>13</sup> Seager, loc. cit. 55 and 105, No. VI 26, and Figs. 24—25; Kenna, Cretan Seals 16—17 and Figs. 23—24

<sup>14</sup> Seager, loc. cit. 52—53 and Figs. 22—23. Cf. Money-Coutts, BSA 36, 1935/6, 95; and Warren, Kr. Khron. 1965, 22. The design on vase VI 21 is paralleled on a sherd at Myrtos (EM II), as is the jug shape.

impression comprises hook- or scroll-terminating triangles (not symmetrically worked out), and the Mochlos ivory cylinder incorporates interlocking triquetrals on one face and interlocking bars with additional circles on the other.

Fig. 2



The irregular linear pattern on one of the stamps from Myrtos (Fig. 2., Pl. II No. 1) may possibly consist of simple symbols or signs, and would thus belong to Evans's primitive linear class<sup>15</sup>. This would place the beginning of that class in Early Minoan II. The Myrtos seal is further evidence for an east/central bias in the distribution of the group (Arvi, Kalo Khorio, Myrtos, east or central Crete, with two or three from Haghios Onouphrios in the Mesara and possibly HM 2009 from Lebena above). The seals are all of the softest materials, clay, serpentine and steatite, and are engraved with a sharp point, probably a piece of obsidian. It remains a possibility, as Evans suggested, that we have here the very first stages on the way to writing in Crete, that is, deliberate if roughly engraved signs with some intended scribal value. On the other hand we may be dealing simply with decoration. The matter remains speculative.

The materials of the EM II seals can be simply listed: ivory 4 (3 Lebena, 1 Mochlos); limestone, white, 1 (Mochlos); serpentine 3 (2 Lebena, 1 Myrtos); steatite 5 (1 Krasi, 1 Lebena, 3 Myrtos). Also from Myrtos come two unfinished seals, one of creamy, grey-brown banded tufa (Pl. II No. 5), the other of amygdaloid basalt, a pretty purple-maroon in colour, with white calcite inclusions (Pl. II No. 2). Save for ivory, imported from Egypt or Syria/

<sup>15</sup> Evans, SM I, 1909, 115—118

Palestine, all the materials are Cretan. Beach pebbles of amygdaloid basalt are common along the Myrtos coasts, while the other materials were used for stone vases<sup>16</sup>.

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This evidence of what seal types and designs were in use already in EM II, the earliest period when seals are attested, is of great interest. It severely damages the view that there is a progression from simple to elaborate in EM glyptic. Already in EM II, together with simple stamp and cylinder shapes, exquisitely carved animal seals like the double-headed figure (monkeys?) and the squatting, winged creature from Lebena were in use. The former seal suggests EM II manufacture in the cases of the closely similar ivory from the Trapeza cave and another comparable ivory seal from Marathokephalon (see n. 22). The elaborately made and highly distinctive hammer-head handle is also found now at Lebena. Perhaps the two bottle-shaped signets from Mochlos<sup>17</sup>, respectively EM II—III and EM III in context, and the Sphoungaras ring (EM II—III)<sup>18</sup>, with their hammer-head handles, were also made in EM II. In design, too, we find considerable variety in this earliest phase; alongside simple hatched patterns are found the angle-filled cross at Krasi and Myrtos and the more elaborate schemes noted above. We cannot say yet whether the complex compositions of animals in circular procession found on the Mesara ivories began in EM II, but an impression of one of these from an EM III level at Knossos is to be noted (see Hood, n. 1).

On present evidence, then, we find a remarkable variety in shape and design right from the beginning, even more remarkable in view of the small number of pieces fixed contextually in EM II. Future discoveries may enable developments within EM II to be determined. Clearly, several different schools were at work. Stamp seals or signets were almost the only types being made at Myrtos. At Lebena there was more variety, two animal seals, one hammer-head stamp, a ring, and the upright disk. A primitive linear school was probably located somewhere in east/central Crete. The Myrtos seal carvers used only local stones, whereas ivory was imported at Lebena, as it was on many other south Cretan sites.

<sup>16</sup> On the materials and their sources see Warren, *Minoan Stone Vases* 1969, 126—127, 138—141.

<sup>17</sup> Seager, *loc. cit.*, 34, No. II 42, and Fig. 11. Seager, *AJA* 13, 1909, 280, Fig. 3

<sup>18</sup> Hall, *Excavations in Eastern Crete. Sphoungaras*, 1912, 53, Fig. 25 B

The seals and seal-impressions clearly dateable to EM II form only a small part of the Early Minoan corpus. It is of course highly probable that some of the examples from the rich mixed EM II—MM I contexts at Haghia Triadha, Arkhanes, Koumasa, Lebena Tombs I and II, Marathokephalon and Platanos were made in EM II. The parallels noted for the Lebena seals from Haghia Triadha, Siva, Trapeza and Lebena itself are so close that an EM II date can be assigned to them with confidence. The fine animal pieces also suggest that others from wider contexts might go back to the earliest period. The dove sheltering her young from Koumasa has a quadruple spiral design on the base, closely parallel with spirals on the earliest Minoan stone vases belonging to the first part of EM II<sup>19</sup>.

The long, exquisite tradition of Minoan seal carving seems to have begun in EM II, and high quality and variety are found from the beginning. Was the craft a local invention in this period, was it wholly introduced, or was it begun under external influences? The first and second possibilities are contradicted by the evidence. We may conclude that it was not wholly introduced, since Early Minoan glyptic displays many differences from Early Helladic (Lerna EH II)<sup>20</sup>, Anatolian Early Bronze and Egyptian Old Kingdom styles. Friedrich Matz has worked out the fundamentally different principles of composition in Crete, Anatolia and Egypt<sup>21</sup>. But equally there was no purely local invention in EM II, since indisputable Egyptian and Anatolian features are found<sup>22</sup>. Ivory

<sup>19</sup> Warren, *Kr. Khron.* 1965, 7—14, and Pls. A, B, Γ, Fig. 2

<sup>20</sup> The elaborate designs on contextually placed EM II seals parallel, though not in richness, the mainland work of EH II Lerna. The Early Helladic material, like the Minoan, is firmly fixed in Early Bronze 2 (cf. Caskey, *Hesperia* 29, 1960, 289, 292—293, 299—300; Sakellariou, *Kr. Khron.* 1961—1961, 80). Both are part of the evidence for the greatly increased cultural richness of this period.

<sup>21</sup> Matz, loc. cit. 35—37 (Egypt, axial composition), 78—79 (Anatolian-Hittite Rundkomposition), 139—149 (Minoan Rundkomposition)

<sup>22</sup> A few from many examples: from Egypt, the squatting ape (Xanthoudides, *The Vaulted Tombs of Mesara* 1924, Pl. XIII, 1040; Petrie, *Abydos* II, 25 and Pl. VI 50—61, 64, 65), animal protomes placed back to back (Zervos, *L'Art de la Crète* 1956, Pl. 199 left (Platanos), 206 left (Marathokephalon, not Kalathiana)), sphinxes back to back (Petrie, *Button Seals and Design Scarabs* 1925, Pl. I, O 1—5, cf. B 1, B 2). From Anatolia, many shapes such as the bottle-shaped stamp or signet, hammer-head handle, gable, ring, and cylinder with handle (Matz, loc. cit. 63—67). Among motives the angle-filled cross is by far the commonest design in West Anatolia in the Early Bronze Age. It many have spread from there to Crete and the Cyclades (Fischer-Bossert, *Arch. Delt.* 22, 1967, 74, Fig. 5, 10) and the Greek

for making the seals was certainly imported, from Egypt or Syria/Palestine. It is probable therefore that Early Minoan II (2600 to 2200 B. C.) traders<sup>23</sup> saw seals and other trinkets like foot amulets in foreign ports and brought back the idea and sometimes the material (ivory) for local manufacture. Soon afterwards they brought scarabs from Egypt<sup>24</sup>, whose earliest clear contexts are Middle Minoan I A<sup>25</sup>.

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Mainland (Caskey, *Hesperia* 25, 1956, Pl. 44d, Lerna III). For its distribution in Anatolia (19 sites), D. H. French, *Anatolia and the Aegean in the Third Millennium B. C.* (Unpublished Ph. D. dissertation, 1968, in the British School at Athens Library), 117—119, 421—429 and Fig. 102. See also Money-Coutts, *BSA* 36, 1935/36, 96—97 and n. 2 (North Syrian parallels) on the example from Trapeza.

<sup>23</sup> Note also the importing of Egyptian stone vessels into Crete in this period, Warren, *Minoan Stone Vases* 106.

<sup>24</sup> Warren, *Kr. Khron*, 1965, 34. Add one from Arkhanes, Sakellarakis, *ILN* 26. 3. 1966, 32.

<sup>25</sup> From Gournes, Pendlebury, *Aegyptiaca* 1930, Pl. I Nos. 17—18; and Lebena Tomb II A, upper level, HM 1997 (Alexiou, *Kr. Khron.* 1961/62, 91)