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## THE USE OF THE ZAKRO SEALINGS\*

When D. G. Hogarth published the sealings which he had excavated in House A at Zakro,<sup>1</sup> he was naturally most concerned with their, often amazing, iconography. However, he also touched on the question of what they might have sealed, and noted that the clay had retained traces of the material against which they had been pressed while wet. He described, but did not illustrate, these traces – which I call the sealing print – as having:

“a groove on one edge, about [3 mm] deep and a little more wide, scored with straight and oblique scratches. This is the impress of something cylindrical to which the nodule was pressed while still wet. The appearance of the clay in the grooves shows that this object was not textile and it may most reasonably be supposed to have been a reed, perhaps a papyrus stalk.”<sup>2</sup>

The subject rested there for some years. Doro Levi had little to add when he published the sealings from Ayia Triada. He illustrated the sealing prints of just four nodules – two of which indeed resemble those of Zakro – and merely remarked that the fastenings, which he identified as cords, showed how property was secured in antiquity.<sup>3</sup> Arthur Evans, while agreeing that property was protected by sealings at Knossos too, felt that most sealings protected documents, at least in

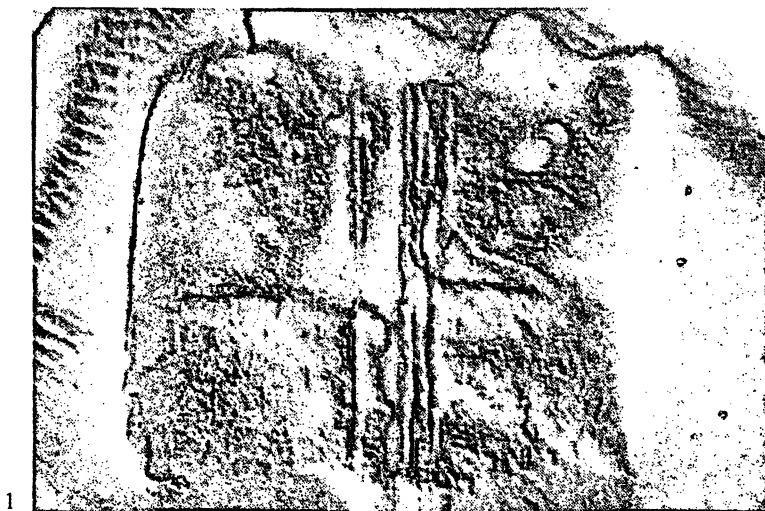
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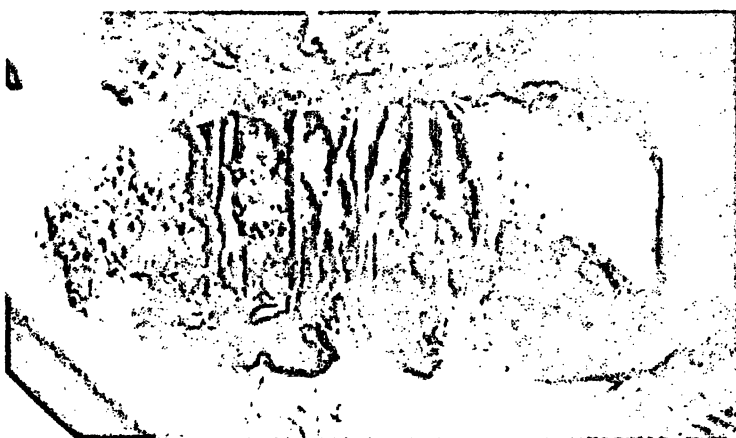
\* This article is based on a chapter in my thesis, “The Zakro Master and his place in Prehistory”, submitted to the University of Oxford in October 1981. I must thank Professor John Boardman, my thesis supervisor, and, especially, Mr. Mervyn Popham, for clues and suggestions for this chapter. Photographs of my plasticine impressions (reproduced here 3:1) were made by the Institute of Archaeology, Oxford, whose photographers I most gratefully thank.

<sup>1</sup> D. G. Hogarth, *The Zakro Sealings*, JHS 22, 1902, 76–93.

<sup>2</sup> Hogarth *op. cit.* (supra n. 1) 76.

<sup>3</sup> D. Levi, *Le Cretule di Haghia Triada*, ASAtene 8–9, 1929, 71. Prints of the Zakro type: fig. 2 b, c (page 72).

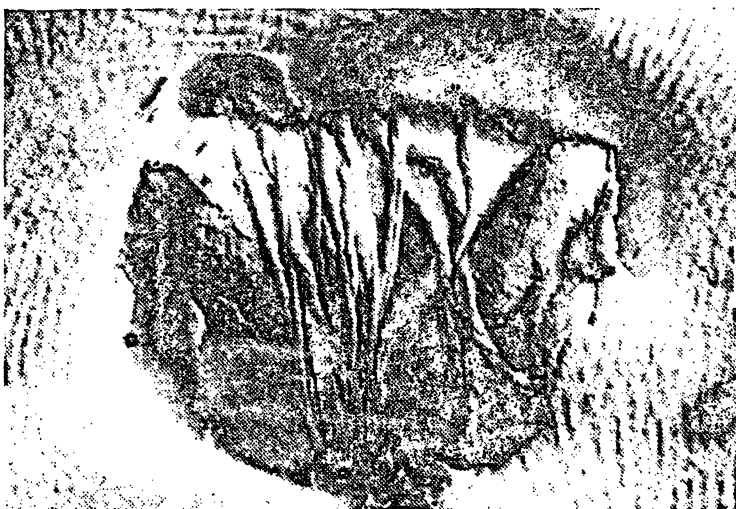




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Plate II

the later Palace.<sup>4</sup> These documents would have been written on parchment, or even on papyrus imported from Egypt; few prints were illustrated, however, and those were of types foreign to Zakro.<sup>5</sup>

Many years after his excavations at Sklavokampo, Marinatos noted the apparent identity of seals impressed there and at Ayia Triada, Gournia and Zakro.<sup>6</sup> This, in his view, was proof of correspondence between the centres or, more likely, between a chief cultural centre (Knossos) and lesser provincial towns. He emphasized that the fineness of the threads which had left their traces in the nodules proved that *only* written documents and not 'commercial parcels' could have been sealed.<sup>7</sup> This viewpoint was adopted by Pope when he studied the countermarked nodules of Ayia Triada. More than two hundred nodules had been found in a gypsum chest next to the Room of the Graffiti: if they had secured ceramic jars or storage vessels, some pottery would have survived; if they had been attached to wooden boxes, these would have been tiny indeed if over two hundred had been stuffed into the chest.<sup>8</sup> These considerations, together with the extreme slenderness of the string round which the nodules had been pressed, persuaded him that these had sealed documents written on some perishable material, either papyrus or palm-leaves.<sup>9</sup>

John Betts, who published six plasticine impressions of sealing prints from Zakro, revised Hogarth's original description. The 'groove' was smoother than reed or papyrus stalk; it was rather the imprint of a rectangular object, a pad perhaps, for protecting the object being sealed,

<sup>4</sup> PM i 638; PM iv 592–598.

<sup>5</sup> PM iv fig. 591, 592; but cf. PM i 679.

<sup>6</sup> S. Marinatos, *Some General Notes on the Minoan Written Documents*, *Minos* 1, 1951, 39–40.

<sup>7</sup> Marinatos did not claim to have found actual traces of papyrus, as has been asserted, but assumed from the fineness of the cords that papyrus had been used.

<sup>8</sup> M. Pope, *Cretulae and the Linear A Accounting System*, *BSA* 55, 1960, 200–210. There is, of course, the possibility that the nodules were discards, already removed from their burdens and 'filed' in the chest. In that case, we could say nothing about the size of boxes, bags, etc.

<sup>9</sup> Arthur Evans (PM i 638, PM iii 423), and many others after him, have quoted Pliny and Diodorus on the early use by the Cretans of palm-leaves as writing-material. This practice, so far to the West, seems to me unlikely in any era. Rather, I suggest that a conflation of two ideas was responsible for the report: first that the art of writing was invented in Crete (Dosiadas the Cretan, Jacoby, *FHG* iii B, 458); second that the expression *phoinikeia grammata* was derived from *phoinix* ('palm'), a speculation that possibly came about through hearsay from India where palm-leaves were indeed the usual writing-material.

or a peg or fastener.<sup>10</sup> The 'scratches' were now seen, correctly, to be the impressions left by very fine cords wrapped around the rectangular object, for they were, indeed, similar to cord-marks observed elsewhere. Fine as they were, however, they could have supported a heavier burden than written documents.<sup>11</sup>

Most recently, Papapostolou, in publishing the sealings found at Chania, meticulously described their sealing prints. He agreed with Betts's description, but argued nonetheless that his sealings had been attached not to containers but to documents within an official archive.<sup>12</sup>

While I was engaged on the administrative study of the Zakro sealings in connection with my thesis, it seemed to me prudent to return to the source and to examine a larger number of sealing prints, in the hope of deciding the issue. In the Ashmolean Museum I made plasticine impressions of twenty-eight Zakro nodules<sup>13</sup> which were given by the Cretan government to Hogarth. Then, in January 1982, I was able to examine the complete body of sealings at the Heraklion Museum, and to make plasticine impressions of selected prints.<sup>14</sup>

Typical prints, showing the smooth objects described by both Betts and Papapostolou, were illustrated in Betts's article (n. 10 above), his Pl. I. Even there, however, their 'smoothness' is misleading. Nearly all examples have, in fact, a slightly rough texture which can be clearly seen in photographic enlargement. Furthermore, most such 'pads' are not flat: their surfaces range from slightly undulating to 'wavy' (Pl. I 1); some are even squeezed out of shape by the pressure of the cords (Pl. I 2). Thus, the rectangular shape is neither smooth nor rigid (as in the case of wood) but most often rough and pliable.

The outline of the object which was actually bound can occasionally be seen up to a depth of 4–5 mm; it may, of course, have been thicker still. A few nodules reveal an object with two or more levels, in laminated fashion, as if folded (Pls. I 3, II 4).

<sup>10</sup> J. H. Betts, *New Light on Minoan Bureaucracy*, *Kadmos* 6, 1967, 23. Hogarth's 'reeds' should not be entirely dismissed, however, as twenty-three of the nodules that were studied do exhibit the imprints of something looking very much like reed.

<sup>11</sup> Betts *op. cit.* (supra n. 10) 23.

<sup>12</sup> I. A. Papapostolou, *Ta Sphragismata tou Chaniou*, Athens 1977, 13–14, 18–19.

<sup>13</sup> I must thank warmly Mr. Michael Vickers, Assistant Keeper of the Ashmolean Museum, for his always generous interpretation of the privilege of access to the collection. The imprints on plasticine made from the nodules recreate of course the shapes of the objects on which they were originally impressed (Pls. I, II).

<sup>14</sup> I am greatly indebted to Professor Dr. J. A. Sakellarakis, Director of the Heraklion Museum, for allowing me to study the Zakro sealings in his care.

The thickness and number of the cord marks vary considerably. Some are no more than threads, but most are about the thickness of household twine; few would be considered at all stout. The thickness of the cord does not seem to determine how well the object needed to be wrapped, for two or three threads were sufficient on some few nodules while veritable bundles of thread occur on others; the twine-size cords vary just as much.

None of the sealing prints shows any sign of woven textile or of wickerwork, or the slightest trace of papyrus.<sup>15</sup> On the contrary, the vast majority of the prints are of the type which we have described: that is, made by rectangular objects, either smooth or slightly rough, naturally stiff but capable of being cut into small strips and folded. Leather or hide, strips of which were folded over and bound, seems the most likely substance:<sup>16</sup> and, indeed, wayward folds and bulges of leather or hide are clearly seen on some prints (Pl. II 5, 6).

Such leather or hide might be thought to have consisted of thongs tied around the sealed object and further bound horizontally with cords for extra security. Why, however, trouble with the thongs? Why not just tie the object with cord? The simplest explanation would appear to be that the sealed object was itself made of leather, and that it was perhaps a pouch or small bag of some kind. Now the natural way to tie such a leather pouch is to gather it tightly at the neck and to bind it horizontally; but on our imprints we see no traces of the pleated folds of a gathered-in neck, so this possibility must be excluded.

Herodotus (V 58,3) tells us that the Ionians call paper "skins" (*diphtherai*), a word that was a survival from antiquity when paper was hard to get and when they wrote on goat and sheep-skins. That the Ionians used parchment is hardly surprising;<sup>17</sup> that their word for it

<sup>15</sup> In truth, the most common Egyptian method of sealing documents would not have left any trace of papyrus either: a cloth or flax cord was tied around the document and this, not the document itself, was sealed. At Zakro, there are forty-seven nodules shaped like triangular prisms which were moulded around a cord or reed, and these could possibly reflect some similar system.

<sup>16</sup> The same conclusion has been reached independently by Dr. Ingo Pini, who announced his results in a paper given at the Fifth Cretological Congress in Ayios Nikolaos, 25.9. – 1.10. 1981. I am delighted to have his valuable confirmation on this important point, though we do not yet agree on its interpretation.

<sup>17</sup> The Ionians would have learnt the use of parchment from the Persians (Diodorus ii 32,4), if they had not already known it. Parchment, or leather, was used as writing-material in mainland Greece by the first half to the 7th century (in Sparta, Archilochus fr. 81 Diehl).

should be embedded in their dialect is perhaps significant, for the expression could conceivably reach back to Mycenaean times (Linear B = *di-pte-ra*).<sup>18</sup>

Might our sealings therefore have secured parchment documents?<sup>19</sup> If we refer to the treatment of mediaeval parchments, we notice three ways in which documents were tied and sealed, any one of which might have left sealing prints such as those observed at Zakro:<sup>20</sup>

1. For closed documents, *sur simple queue*, a strip was cut along the lower margin of the parchment document, nearly across to the far edge; the document was then folded small, the strip tied round, and the seal placed on the strip. This strip has to be cut before the document could be read;
2. *Sur simple queue* for open documents (that is documents intended merely for authentication), as many strips as needed to carry the seals were cut parallel to the lower margin of the document; each strip was secured by one seal (or sometimes more);
3. In the case of pendant seals for open documents, tags of parchment were passed through cuts in the document, and then sealed.

Any of these procedures might have left such traces as are seen in the Zakro clay sealings, which we interpret as the prints of the *strips* which tied the documents, rather than of the documents themselves. One important difference remains however to be explained; why at Zakro are there cord-marks too? We might have supposed that the switch from papyrus to parchment documents would have enabled the user to dispense with cords; for the tie could now be made from the material itself, often cut from the selfsame document.<sup>21</sup> Why should the Zakro documents require both strips *and* cords? The most likely answer is that the sealing was made from clay and not, as

<sup>18</sup> There is no suggestion, however, that *di-pte-ra* had any connection with writing. John Chadwick (The Mycenaean World, Cambridge 1976, 28) quotes the Cypriot use of the word *diphteraloiphos* ("one who paints on skins") to describe a schoolmaster, and remarks that "although papyrus might have been imported from Egypt, skins of some sort are more likely" as Minoan writing-material.

<sup>19</sup> Writing with ink in Linear A is attested by two inscribed cups found at Knossos (PM i 613–614). I use the term 'parchment' merely to describe a skin used as writing-material, and not in order to prejudice the probably unanswerable question of how such skins were tanned and treated.

<sup>20</sup> The sealing of mediaeval documents is discussed in H. S. Kingsford, *Seals* (Helps for Students of History 30), London 1920, 19–20, and R. L. Poole, *Seals and Documents*, ProcBritAc 9, 1920, 319–339.

<sup>21</sup> Poole op.cit. (supra n. 20) 323.

later, from wax. Wax is an oily substance which makes a good bond with parchment, which is itself greasy with animal fats. When melted, wax enters pores and crevices, and forms a coat over tiny hairs, a process which helps it to hold when hard. In contrast, clay is water-based; unbaked, it dries to a brittle, powdery substance, apt to break at the slightest jolt;<sup>22</sup> it has no natural affinity for parchment. In order to overcome this problem of adhesion, it would be practical to fold the strips over several times — thus forming our visible laminations — in order to provide more surface for the clay to cover, and then to bind the strips in place and seal. One or two threads might have been enough to hold the strips in position preparatory to the sealing; but more threads, even bundles of threads, would have provided a better grip for the clay: the clay could then 'bite into' the cords much better than into the strips alone.

If we accept that the bulk, at least, of the Zakro nodules were attached to parchment documents, we seemingly must also accept that quite a large number of such documents were stored at House A.<sup>23</sup> It is however possible that at Minoan Zakro, as in Mediaeval Europe,<sup>24</sup> more than one seal was sometimes affixed to a document. This solution would fall into line with the Zakro habit of stamping many nodules with two or three seal impressions. This practice, and its implications, are, however, the subject of another paper.

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<sup>22</sup> Perhaps it was the poor consistency of unbaked clay which led Hogarth (*op. cit.* n. 1, 76) to suggest that the nodules had been baked "probably intentionally and not by the conflagration which destroyed the house . . ." Hazzidakis, *Tylissos à l'époque minoenne*, Paris 1921, 45 n. 4, also thought that his sealings had been deliberately baked, though he added, not unreasonably, that the purpose of this procedure was a mystery.

<sup>23</sup> Almost 440 nodules, of the 548 which I examined, have prints like those described in this article. Of the rest, forty-seven are triangular prisms (*supra* n. 15), twenty-three are imprinted with "cylinders, grooves or reeds", nine have no sealing prints whatsoever, and thirty are too broken to classify. For a discussion of the shapes and types of the nodules, see Chapter III of my dissertation.

<sup>24</sup> Poole *op. cit.* (*supra* n. 20) 337; M. P. Bond, *An unusual method of identifying seals*, *AntJ* 35, 1955, 225–226.