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The Roman Baths of Mylopotamos: a Distribution Study

Nielsen, in her study of bathhouses of the Roman Empire, noted that the joint province of Crete and Cyrenaica yielded only seven baths, all in Cyrenaica, and that Crete did not have sufficiently preserved examples. Yet, from even a preliminary study of the published records it can be established that over 50 bathhouses were constructed on Crete between the 1st and 4th centuries AD. This constitutes a substantial amount of bathhouses in an area with no obvious Hellenistic prototype for such an architectural format.

Indeed, there are few eparchies on Crete where no Roman bath can be found; Lassithi, for example, is most unusual in its lack of bathing establishments. By contrast, the eparchy of Mylopotamos demonstrates a notable concentration of Roman baths, a profusion which cannot even be matched in the hinterlands of Gortyna, the capital of the joint province of Crete and Cyrenaica.

In the Mylopotamos region Romanising baths have been found at Eleutherna, Stavromenos, Chamalevri, Alpha and Plaka Kalis. Bath-
houses have also been recorded at Sybritos and Vizari, which lie to the south of the modern boundary of the eparchy, but can be better understood in terms of a wider catchment area. The aim of this paper is to explain the dynamics behind this significant concentration. To this end, I have chosen to explore the predominant type of heating system which the baths of the group exhibit since it is primarily this common feature which fastens the group together.

The heating system in question involves the application of terracotta spacer pins (the πεταλίες απαντικές) to secure a series of large flat tiles parallel to the main architectural walls (fig. 1). This effectively creates a wall cavity to facilitate the circulation of hot air from the hypocaust of the bath. In both the Praetorium Baths and the Megali Porta Baths at Gortyna, cavities for the application of spacer pins are found in intervals of 0.54 m - 0.60 m indicating that they must have incorporated the use of bipesalés which are traditionally 2 ft long (0.592 m). Their precise function within bathhouse systems was only fully understood when they were found in situ in the baths at Balboura in Lycia in 1986. In fact, they were first identified in Lycia by Professor James Coulton, after he had been shown examples from Eleutherna by Professor Thanassis Kalpakis.

Prior to this, spacer pins were subject to numerous misinterpretations such as amphora stoppers and vault pins. In the excavation report of the Villa Dionysos, Hayes interprets them as anti-earthquake devices set into vaulted roofs. However, any anti-earthquake qualities attributed to spacer pins are unfounded due to their predominantly structural function, for they are not fundamental to the stability of the structure. Hayes' description of the spacer pins as clay vault-pins is also slightly misleading, as evidence for this is rare, although it is possible for this type of heating method to extend from the walls into the vault. The extension of the spacer pin system into the vaults, in effect creating a sealed heated module, has only been discovered in two baths: in the North Baths at Kyaneai in Lycia and, more recently, in Crete in the Large Baths at Eleutherna. Conversely, the heating of vaults has certainly been attested with other systems such as that incorporating tubuli (box tiles). Of course, the extension of the spacer pin system into

2. Farrington and Coulton 1990, 55.
3. Livadiotti and Rocco 1986/1987, 376-377. Shorter intervals would support tessales which are traditionally 0.26 m long. Farrington notes that the Lycian variety also support bipesalés (Farrington 1995, 103).
5. Professor James Coulton personal communication 2003.
7. Farrington and Coulton 1990, 64.
the vaults of baths may have been common but, unfortunately, the vaulted roofs do not often survive to attest such application.

Hayes maintains that the spacer pins found in association with the Villa Dionysos at Knossos were intrinsic elements pertaining to a vaulted ceiling over the oikos of the villa. Alternatively, it can be argued that the oikos of the Villa Dionysos was not the original context for these spacer pins since they were not found in the main strata associated with the villa, but were confined to the upper fill of its 3rd-century AD destruction deposit. Significantly, it has since been established that public and private baths, located to the south of the villa, were destroyed in the 3rd century AD. The fact that actual spacer pins were discovered during the excavations of the private bath-suite would promote this as the original context for the examples finally located in the upper strata of the Villa Dionysus. It is equally possible, however, that future excavations will uncover a bath-suite within the Villa Dionysus itself since this would be a fitting feature for such an elaborate residence.

At Eleutherna, spacer pins were found associated with the baths below the acropolis (figs 2 and 3). These spacer pins are of varying size but demonstrate a characteristically Cretan form. The fact that the spacer pins from Eleutherna vary in size is not unusual and would not have

affected their application once their length and the neck of the spool head were somewhat consistent, as the shank of the spacer pin would have been invisible when in use (fig. 1)\textsuperscript{12}.

The shape of the Eleutherna examples adheres to a common type found throughout Crete, as exemplified by type C discovered in the baths at Gortyna\textsuperscript{13}. The spool-head incorporates a wide groove to secure the tile in position. The shank of the pin is solid and flares towards its chisel tip (fig. 4), which was trimmed prior to firing.

In the broader hinterland of Eleutherna, the use of spacer pins is attested in the baths of Stavromenos, Chamaevri and Alpha where they were discovered in hypocaustal contexts\textsuperscript{14}. At Vizari the spacer pins which were originally associated with the basilica\textsuperscript{15} should more accurately be related to the nearby baths. Unfortunately, only scanty information regarding the architectural construction of these baths was recorded. The significance of the architectural framework seems to have been eclipsed by the notable character of its associated mosaics, one of which (representing a triumphal motif) constitutes a unique theme within the Cretan mosaic repertoire\textsuperscript{16}. Spacer pins were not recorded from either

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\textsuperscript{12} Farrington and Coulton 1990, 57.
\textsuperscript{13} Livadiotti and Rocco 1986/1987, 359.
\textsuperscript{15} Kaokuphi 1959, fig. 1; Livadiotti and Rocco 1986/1987, 361, n. 7.
\textsuperscript{16} Kaokuphi 1959, pls II' 1 and 2, IA'.
the baths at Sybritos or Plaka Kalis, but it should be noted that their excavations also predate the recognition of spacer pins as a functional element within baths per se, both baths being reported in the 1950s.

The heating system, incorporating the use of the spacer pin, although notably concentrated in Mylopotamos, is not exclusive to this region and represents the characteristic heating system of baths throughout Crete (fig. 5). In addition to the centres in Mylopotamos, spacer pins have been found associated with baths at Gortyna, Knossos, Khania, Aptera, Chersonissos, Malia, Markialos and Lappa, while their production centres have been identified throughout the island.

In the wider Empire, spacer pins have been cited in bath contexts in North Africa, Asia Minor, Israel, Cyprus, and Rhodes. Israel, Cyprus and Rhodes all yielded one site each; the example at Kourion reflects a spatially isolated example, while that of the bath at Quzayr ‘Amra in Israel is chronologically distant, dating to the 8th century AD. In contrast, ten sites are reported from North Africa and fifteen from Asia Minor (eleven of which are from Lycia). It is important to note that these statistics are based on the published accounts and their numbers can be expected to rise with future studies.

The fact that spacer pins are found in such profusion on Crete is significant, as this distribution constitutes a large proportion of the overall corpus recorded in the Empire. Their abundance on the island is especially noteworthy in the light of the fact that they are relatively uncommon within the Roman ambit. Their dispersal throughout the Empire is specific and exclusive as their application has not been found in Italy, northwest Europe or the Levant. Biers, in her account of the baths at Corinth, states that the use of the spacer pin is only common in North Africa, Asia Minor, including Rhodes, and also on Crete, but not elsewhere. Yegül’s report of the use of spacer pins in the Lechaion baths

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17. KIRSTEN 1951; IAAATON 1957.
18. FARRINGTON 1995, 102 and 114, n. 7.
21. The bobbin spacers found in Britain are distinctively different from anything noted in the Eam (WEBSTER 1979, 289, fig. 15.2).
22. BIER 2003, 311.
at Corinth\textsuperscript{23} is actually incorrect, as the original report cites a variant of the technique, using \textit{spacer tubes} and metal pegs. Biers states categorically that \textit{spacer pins} were not used in the Lechaion baths\textsuperscript{24}, a fact which she has recently reiterated in the Corinth Centenary Volume\textsuperscript{25}.

The examples cited in the Zevgolatio baths near Corinth are actually \textit{spacer tubes}, as their illustration would clarify\textsuperscript{26}. Biers notes that the baths at Paleochora in Thrace, the baths at Philippi and also the small baths to the south of the Asklepeion at Dion all use \textit{spacer tubes} which were secured in position with the use of metal pegs\textsuperscript{27}. In fact, \textit{spacer tubes} have a completely distinct distribution from that of \textit{spacer pins}, being found in mainland Greece, with sporadic examples in Spain and France\textsuperscript{28}.

The prolific and diffuse distribution of \textit{spacer pins} on Crete contrasts with their apparent paucity on mainland Greece which would promote direct links between Crete, Asia Minor (specifically Lycia), and to a lesser extent, North Africa\textsuperscript{29}. Examples on Rhodes may reflect an extension of
their distribution in Asia Minor, forming an obvious stepping-stone between Crete and Lycia.

Moreover, the type of spacer pin used in Crete is closely comparable to types in Asia Minor rather than those of North Africa. In particular, the type encountered on Crete is almost identical to the solid chisel-tipped variety found at Balbura in Lycia which could be inserted into any chink in the façade (fig. 4). Like the Cretan variety, the spacer pins from Lycia have a flat solid shank, in contrast to those from North Africa which are notably different.

Not only are the spacer pins in Lycia and Crete similar but they have distinct applications, attesting an entirely separate system. In these catchments the spacer pins tend to penetrate their associated walls, whereas at Mactaris and Tehouda (Algeria) the pins only probe as far as the wall plaster, their adherence being achieved through applied mortar into which they are twisted.

The significance of the similarity between the spacer pins of Lycia and Crete is that the associated heating system may also reflect the type of baths characteristic of these regions. Farrington and Coulton observe that major bath complexes across the Empire almost always incorporated tubuli whereas the smaller baths incorporated the spacer pin. Farrington and Coulton suggest that cost was the main factor in choice of heating system on the basis of the small size of the baths associated with spacer pins, although they allow for the strong influences of local building tradition. Consequently, they associate their use with sites of limited public resources which demonstrated a predilection for simply-constructed heating systems which local artisans could produce, over the more elaborate, even if more efficient, system of tubuli.

There are undeniable economic benefits in using the spacer pin system. Spacer pins could be produced swiftly, effectively and economically on a wide scale on Crete. The whole pin could be thrown in one piece on a potter's wheel and their production has been attested at many of the major amphora production sites, being securely identified at Chersonissos, Tsoutsouros, Dermatons and Gortyna associated with AC1 and AC2 amphora type. This coupling of the manufacture of spacer pins with amphora production sites establishes their manufacture on an intense island-wide scale. The mass-production of spacer pins was guaranteed by the amphora production industry onto which it effectively piggy-backed.

A model reflective of cost alone, however, does not correspond with the use of the spacer pin in the substantial Megali Porta baths which Sanders

30. FARRINGTON AND COULTON 1990, 64.
31. FARRINGTON AND COULTON 1990, 64.
33. FARRINGTON AND COULTON 1990, 67.
34. EMPEREUR, KRITZAS AND MARANGOL 1991, 495.
estimates covered a vast area of 3,600 square meters. The fact that these baths represent thermae located within the capital of the joint province would presuppose a substantial installation. Indeed, Yegul's assessment of the spacer pin system as primitive hardly concurs with the presence of testudines alveolorum and evidence for furnace-boilers in bath installations on Crete availing of the spacer pin system.

Conversely, and in acknowledgement of their presence in the thermae at Gortyna, it could be argued that the popularity of the type is more reliant on areas of influence and the geographical dispersal of the technique throughout the Empire rather than being purely reflective of cost. Therefore, the spacer pin is more truly characteristic of developments in Crete borne of a synthesis of Eastern influence with inevitable variation dependent on the local workforce and the variety of available materials.

Nonetheless, the overall bath distribution of Crete generally demonstrates a correlation between smaller installations (balneae) and the application of the spacer pin heating system. Consequently, it is significant that Farrington and Coulton observe that both Lycia and central North Africa, the two other areas where the spacer pin system was most popular, were occupied in the Imperial period by a large number of relatively small cities. A similar profusion of Roman cities on Crete has been established which would explain the abundance of small baths, and thus the occurrence of spacer pins throughout the island.

DATES FOR SPACER PINS

Considerable confusion surrounds the application of tegulae mammatae in bath contexts. Tegulae mammatae are tiles which are notched in the corners to accommodate clamps or metal pegs (bow-nails). Farrington and Coulton regard the spacer pin as a variant of the tegulae mammatae technique which they view as an earlier system, if not the prototype for the

35. Sanders 1982, 15 and 158.
36. Yegul 1992, 363. The remodelling of the Praetorium baths in the late 3rd and early 4th centuries AD witnessed the addition of testudines alveolorum to two praefurnia servicing caldarium 13 (Di Vita 2000, 144). The testudo alvea was a remarkable device for ensuring that the heated water in hot pools was evenly distributed (Fagan 2001, 107). It was a hollow metal receptacle, which sat directly over the fire in the furnace. It opened into the pool, and by the process of convection, water circulated into it from the pool and, once heated, flowed back out into the pool. Actual examples are known, including copper examples from Cuicul (Djemila) and Banta (Morocco). Despite the scarcity of the device itself, emplacements for it are a regular feature within bath remains (Yegul 1992, 37). The term is found in Vitruvius (V.x.1).
spacer pin method. Farrington exclusively partners metal pegs with the application of *tegulae mammatae* and *tegulae hamatae*, and associates the spacer pin with flat tiles.

Alternatively, Yegul not only associates *tegulae mammatae* with metal pegs but also, although less commonly, with spacer pins. He views the spacer pin system as the earliest system of wall heating and classifies the *tegulae mammatae* system as earlier than that of the *tubuli*. Yet the application of spacer pins in the bath at Quzayr 'Amra in Israel, dating to AD 712-715, attests an unforeseen longevity for the system. Moreover, the fact that *tegulae mammatae* were still in use until the 5th century AD in Athens would suggest that no single type exclusively replaced another.

Nonetheless, it can be deduced with relative certainty that the introduction of the heating technique incorporating spacer pins to Crete occurred in the 2nd century AD. Farrington and Coulton observe that most of the known examples throughout the Empire date to the 2nd century AD. Their presence in Mactaris in Tunisia represents one of the earliest examples, dating to the late 1st century AD.

At Eleutherna, spacer pins were found associated with the 2nd-3rd century baths below the acropolis. Their use at Knossos, Makryialos and Lappa is arguably 2nd century AD in date, while their actual production at Chersonissos, Dermatos, Tsoutouros, Knossos and Gortyna can be dated to the late 2nd or early 3rd centuries AD. The fact that they were being produced in Crete in at least five sites at this stage indicates that they had become a common feature within the Cretan construction repertoire by this time which coincides with an island-wide bath building programme.

At Vizari, the spacer pin should be associated with the 3rd-century AD bath in the area. Kalokyris assigns the bath's mosaic to the last half of the 3rd century AD and transfers this date to the bath building itself. In the Praetorium baths, the spacer pins found in situ in *caldarium* 13 belong to Phase VIII which dates to the end of the 3rd and the beginning of 4th century AD when the baths were remodelled. In fact, the variety of spacer pin cavities in the *caldaria* of the large baths suggests that the system was repaired.

38. Farrington and Coulton 1990, 55 and 66.
42. Young 1951, 283.
43. Farrington and Coulton 1990, 64.
44. Farrington 1995, 102 and 114, n. 7.
47. Kamaikyse 1959, 33-34, pl. II* 1 and 2, IA*; Paaton 1958, 471.
The grouping in Mylopotamos represents the densest inland bathhouse concentration on the island, and, since a public bath, no matter how small, was necessary for civic esteem in the Roman period, as it was in such visible terms that rival cities measured their status, their presence intimates that this inland area was particularly attractive for urban development. Factors, which promote this inland area for urban development (overriding the attractions of a coastal setting where sea trade would provide a lucrative source of income), must be addressed.

Raab is correct in attributing the relocating of some Cretan cities to the coast in the Roman period to a widening of economic parameters. Nonetheless, while the coastal predilection for Roman sites has often been translated in commercial terms, this does not preclude potential for flourishing inland development; the major inland cities of Sybritos and Eleutherna were remarkably developed due to their strategic inland positioning. Baldwin Bowksy has recently argued that Sybritos and Eleutherna enjoyed dominant positions along potential routes of communication between Gortyna and the Diktynnaion. Dedicatory inscriptions indicate that the Diktynnaion was a major source of public funding in the 2nd century AD and a connection with the sanctuary was of benefit to any ambitious Roman city on the island (IC IV.334). Naturally, the benefits were bilateral and the popularity and strength of the cult (sealed through financial attractions) was transmitted to the emperor through the numerous dedications and imperial statuary discovered on the site.

Our best evidence for lines of travel in ancient Crete are the itineraries of the Delphic Theoroi and the Peutinger Table. The fact that both itineraries support a connection between Sybritos and Eleutherna suggests that this ancient route continued in use throughout the Hellenistic period and until the 3rd century AD. The wealth generated along this corridor

48. In Sicily, Wilson cites the difficulties of constructing aqueducts to supply elevated sites, together with the more general inconvenience of life on a mountain (when military security was no longer an issue), as the key factors which led to the gradual decline and ultimate abandonment of most Sicilian hill-towns during the later Republic and early Empire (Wilson 2000, 18).


51. Welter and Jantzen 1951, 116. Curiously, Vermeule has dated the cuirassed statue of Hadrian, discovered on the site, to the reign of Antonius Pius, observing that the statue was without doubt a posthumous dedication (Vermeule 1968, 258).

52. A late 3rd century BC itinerary (Perman 2000, 35)

53. The Peutinger Table is a medieval map that reflects imperial posts of the 3rd and 4th centuries AD.
stabilised the positions of the Hellenistic cities of Eleutherna and Sybritos into the Roman period. By the 3rd century AD these major sites had grown to such a size whereby they could generate small satellite settlements within their hinterlands (as possibly represented by the baths of Vizari and Alpha). Roman cities and towns generated satellite systems of Romanised rural centres in their hinterlands by their very design. This dynamic is a testimony to the success of the Roman model which not only created urban structures but also transformed rural life54. Therefore, the presence of small baths, associated with spacer pins, along the Mylopotamos transit corridor demonstrates the secure development of this artery during the Roman period and the thorough saturation of Roman influence along this strategic avenue (possibly largely achieved through contact with south-west Asia Minor and North Africa).

54. Dyson 2000, 192.
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