A TALE OF THREE DRUMS: AN UNFINISHED ARCHAIC VOTIVE COLUMN IN THE SANCTUARY OF POSEIDON AT KALAUREIA

BY

JARI PAKKANEN

Abstract

Three unfinished column drums discovered at the Kalaureia Research Program excavations in 2007–2009 can be shown to have been intended for a monumental Archaic Ionic votive column. All drums have systematic masons' marks on the contact surfaces. The latter parts of the inscriptions indicate the position of the drum in the shaft. Two alternative readings for the first part of the inscription are suggested: the first interprets it as a building instruction and the second as a price indication. The start of the building project took place very likely in the second half of the sixth century BC, and the deposit date of the fill surrounding the blocks indicates that the unfinished project was abandoned in the late sixth century BC. Reconstruction of the column shaft from the known drum dimensions demonstrates that the finished shaft would have been constructed with a slight entasis.

Three column drums of soft limestone were exposed in the eastern part of the Sanctuary of Poseidon during the excavations of the Kalaureia Research Program in 2007–2009.[1] Excavations east and southeast of the Temple were initiated as part of the new campaign in a previously unexcavated part of the archaeological site. The sector is designated Area H, and the drums lie *c*. 20 m southeast of the corner of the Archaic *peribolos* wall of the Temple of Poseidon.[2]

The digital elevation model presents the state of the excavations in Area H from the south at the end of the 2007 campaign (*Fig. 1*): the drums, deposited in a row, are only partially visible, with parts of Drums 2 and 3 covered by Wall 50. In 2007 it seemed that the Archaic terrace wall (W49) covered partially Drum 3, but in the 2009 excavations it became clear that the fill behind the wall has caused it to incline towards the south-east and that D3 is only abutting it. The drums were so close to the ground surface that all have been damaged by routine ploughing of the area. The pottery in the fill around the drums indicates that the blocks were part of an Archaic building project abandoned in the late sixth or early fifth century BC.[3] The continuation of the excavations in 2008 soon brought to light a series of masons' marks on the intended contact surfaces of the drums (*Fig. 2*), and with the blocks more fully uncovered, it was possible to document them in greater detail. Even though the excavations on the north side of the drums were continued in 2009, the drums have never been fully exposed: some of the drum dimensions have therefore been extrapolated and this is also the reason why the drum drawings are partially incomplete.

DOCUMENTATION AND DESCRIPTION OF THE DRUMS

The column drums were measured using a Leica TCR805 total station: more than 6,000 points were taken on the drums with reflectorless laser.[4] A truncated cone was then fitted to the collected data in AutoCAD, and the dimensions presented below are based on these cones and analyses of the total station data: the precision of the principal measurements was checked manually on the drums where possible. *Figure 3* presents the three-dimensional survey lines taken on the drums with the cones rendered semi-transparent. The total station measurements were also used as the basis of the publication drawings carefully executed by Anne Hooton. The data was manipulated in AutoCAD to produce scaled

[1] On the research program in general and for a detailed account of the conducted excavations, see Penttinen & Wells *et al*. 2009, this volume. I owe warm thanks to Alan Johnston, Manolis Korres, Petra Pakkanen, Arto Penttinen, Manna Satama and Berit Wells for their comments on the manuscript. I am also very grateful for the suggestions made by the anonymous referee.

[2] For the position of Area H in the north-east of the archaeological site, see Penttinen & Wells *et al*. 2009, fig. 1, this volume; for the detailed location of the drums in relation to the *peribolos*, see Penttinen & Wells *et al*. 2009, fig. 12, this volume: the drums are situated in the eastern part of H001.

[3] The latest pottery in Block 36 in area H001 is late sixth century BC; on the pottery and stratigraphy in detail, see Penttinen & Wells *et al*. 2009, this volume.

[4] With a reflectorless laser total station it is possible to take co-ordinate points directly on the stone surfaces of the blocks without the need of a prism target. All measurements have been carried out by the author of this paper.

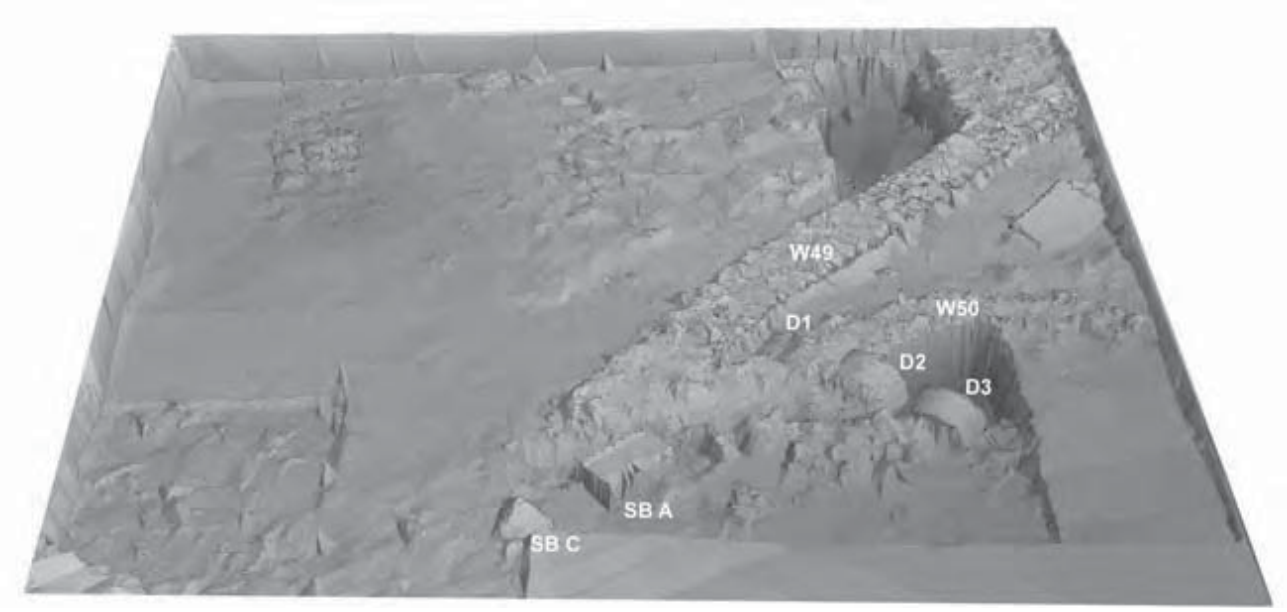

Fig. 1. DEM of Area H at the end of the 2007 excavation season (D = Drum, SB = Statue Base block, W = Wall). By J. Pakkanen.

printouts of the block elevations and plans of each block. These were used as trace patterns for the final drawings.[5]

All the drum surfaces are unfinished. Tool marks indicate that they were worked with a flat chisel. The lack of final finish is best demonstrated by the fact that the top and bottom surfaces of Drums 2 and 3 are not parallel. On Drum 2 the projected variation in the height on different sides of the block is 34 mm and on Drum 3 the measured difference is 4 mm. There are no typical smooth contact bands on the bottom and top surfaces. Following the usual practice in Greek building, the sides of the drums would have been finished only after the erection of the column. Also, perhaps the significantly greater taper on Drum 2 is best explained by the need to leave a greater working margin towards the bottom of the shaft.[6]

Drum 1

Lower diameter: 0.972 m; upper diameter: 0.940 m; height: 0.672 m.
Inscription: TV (or TI/)
IIIIIIII
Inscription on bottom surface of the block. Letter heights: 0.140–0.152 m (first line), 0.082–0.096 m (second line).

Drum 2

Lower diameter: 1.117 m; upper diameter: 1.071 m; height: 0.645–0.679 m.
Inscription: TV (or TI/)
II
Inscription on bottom surface of the block. Letter heights: 0.142–0.146 m (first line), 0.118–0.145 m (second line).

Drum 3

Lower diameter: 1.001 m; upper diameter: 0.972 m; height: 0.663–0.667 m.
Inscription: TVIIIIIII[7] (or TI /IIIIIII)
Inscription on top surface of the block and written from left to right. Letter heights: 0.134–0.146 m (the first letters), 0.084–0.102 m (the seven vertical strokes).

The diameter of the largest drum is significantly too great for it to have been a surplus building block meant for the Temple, and any other substantial building known at the site is ruled

[5] *Fig. 3* gives the documentation situation at the end of the 2008 season: the north sides of the drums were excavated deeper in 2009, and further survey was carried out. The necessary modifications to *Figs. 4–6* were done by the author of this paper based on the total station data.

[6] Drum 2 tapers 46 mm and Drums 1 and 3 clearly less at 32 and 29 mm; for an exaggerated illustration of the drum profiles, see the left side of *Fig. 8*.

[7] The upsilon, if it indeed is one, is very carelessly cut: the separate right half of the letter is parallel with the following seven vertical strokes, but the reading of the two strokes following the T as upsilon could be supported by the two other drums.

out by the Late Archaic deposit date of the blocks.[8] Therefore, the probability that the drums were intended for a monumental freestanding votive column is very high. The retrograde writing on Drum 3 also supports a Late Archaic date for the blocks.

ANALYSIS OF THE INSCRIPTIONS

Perhaps the most likely reading of the inscriptions is that they consist of the letters TV followed by a varying number of vertical strokes. The T is not diagnostic, but the V can give some information on the date of the building project and possibly also the source of the masons who cut the stones. However, based on Drum 3, it is possible to put forward an alternative reading for the first part of the inscription: the first letter tau could also be followed by a iota or a vertical stroke and a slash (/).

The simplified form V of the letter upsilon came to common use in inscriptions on stone during the second half of the sixth century BC. It fell out of favour after *c*. 450 BC when the more complex form Y again gained wide usage.[9] Around the principal centres of the Saronic Gulf, V was the most common form of the letter in Attica *c*. 550–500 BC and in Corinth in formal inscriptions from the early fifth century BC onwards. On Aigina it was used in Archaic and Early Classical inscriptions until *c*. 450 BC and at Megara from *c*. 550 BC onwards.[10] In the eastern Argolid the principal form was Y, though there are some fifth-century examples of inscriptions using a V from Epidauros and Troizen.[11] Therefore, if we take into account that the deposition date of the drums is the late sixth century BC, it is most likely that the workmen responsible for the masons' marks were not local, but, more likely, came from Aigina, Athens or Megara.

An open form of the letter where the slanting sides do not meet at the bottom (\ /) cannot necessarily be classified as belonging to a different script. If it is not intentional, it is most likely a result of careless execution of the letter by the mason. In two of the Kalaureia drum inscriptions the slanting strokes are very close to each other and only on Drum 3 are they clearly separate. I have been able to locate the following further examples of \ /:

1. Early fifth-century stele of Eurybotas from Kolonna at Aigina (*IG* IV 2^2 902; both upsilons).
2. Early fifth-century (*c*. 500–475? BC) bronze vessel in the Asklepieion at Epidauros dedicated by Mikylos (*IG* IV 1^2 136; the upsilon in the name).[12]
3. Early fifth-century funerary stele of Hypsis from Selinous (the upsilon in the name).[13]
4. Gravestone of Hermaios from Aigina (*IG* IV 2^2 857; the upsilon in Κυδονίκο) probably from the second quarter of the fifth century.[14]

Fig. 2. Drums 1, 2 and 3 (from left to right) from south-east in 2008. Photograph by B. Wells.

The interpretation of the second part of the inscriptions on the drums is straight-forward. The vertical hatches indicate the number of the drum in the sequence counting from the bottom of the column. The preserved drums are the second, seventh and eighth (*Fig. 7*). Their physical dimensions correspond to the numbering, so this reading of the inscriptions can be regarded as certain. The system of numbering the order of

[8] The width of the foundation trench of the Temple of Poseidon is 15.2 m (this width is based on new fieldwork carried out at the Temple in 2009; the dimension given in Welter 1941, pl. 31 is significantly less at 14.40 m); for comparison, the Late Archaic temple of Aphaia on Aigina has an overall width of 15.48 m at the euthynteria level and the maximum lower diameter of the facade columns is 1.01 m (Bankel 1993, 8, 113).

[9] Jeffery 1990 (1961), 35.

[10] Jeffery 1990 (1961), 67, 109–113, 116, 133; see also Guarducci 1967, 195, 309.

[11] *IG* IV 1^2 136 (on a small bronze phiale of *c*. 500–475? BC; Jeffery 1990 [1961], 179–180, 182, pl. 34.10); *IG* IV 1^2 142 (on the lip of a bronze lebes from the Asklepieion at Epidauros of *c*. 500–475? BC; Jeffery 1990 [1961] 180, 182); *IG* IV 1^2 46 (stone stele from Epidauros of *c*. 440–425? BC; Jeffery 1990 [1961] 182, pl. 34.17); and *IG* IV^1 760 (stele from Troizen of *c*. 425–400 BC; Jeffery 1990 [1961], 182, pl. 33.6).

[12] Jeffery 1990 (1961), 179–180, 182, pl. 34.10.

[13] Guarducci 1967, 320.

[14] In the illustration of *IG* IV^1 47c the letter is drawn as V, but the photograph in Jeffery 1990 (1961), pl. 17.18 shows that the lower ends do not touch. For the date, see Jeffery 1990 (1961), 113 with further references.

Fig. 3. Axonometric representation of the unprocessed total station data with fitted semi-transparent truncated cones (based on 2008 survey data). By J. Pakkanen.

building blocks with simple strokes has been attested in Greece in the early fifth century BC in the Treasury of the Athenians at Delphi[15] and later in the fifth century in the Propylaia of the Athenian Acropolis (*c*. 437–432 BC). In the case of the Treasury the numbers on the architrave blocks indicate that they were the fifth and eighth blocks at the same level on the south side of the building counting from the south-west corner.[16] At the Propylaia, a column drum is marked with vertical strokes which indicates that it was the tenth drum from the bottom. In this case the use of vertical hatches for numbering has an exact parallel in the system used for the three drums at the Sanctuary of Poseidon.[17]

Short masons' marks are often very difficult to interpret: The first part of the inscription TV could, for example, refer to the group of masons who cut the block or, especially if the column was being built at the same time as the Temple, to the monument for which they were intended. The second part of each inscription, however, relates to the construction of the monument. It is very tempting to interpret the first part as instructions for the builders as well. The first letter, T, could stand for *τομή* (or *τομά* in the Doric dialect): the first entry for the word in *LSJ* is 'end left after cutting, stump of a tree', but it is used, e.g., by Thucydides, for 'stones cut square' (1.93: ἐν τομῇ ἐγγώνιοι). The parallel to a column drum shaped like a section of a tree trunk is too striking to miss. The second letter could be an abbreviation indicating the approximate location of the block, so meant perhaps simply *ὑπερῷα*, 'upper', or *ὑπέργεια*, 'above ground' (*s.v. LSJ*).[18] If the monument was intended to be Ionic, as I will argue in the next section, the first reading *ὑπερῷα* is perhaps slightly more likely: in that case the second letter would indicate that the blocks were meant for the shaft and not for the base or the ground level blocks, and in that sense they were 'upper'. I know of no parallels for this interpretation in masons' marks, so it must remain speculative.

Reading the first part as TI / makes it necessary to look at other possibilities of interpretation. For all these signs there are parallels where they are used for sums of

[15] The traditionally accepted date of the Treasury is *c*. 500 BC, but Cooper 1990, 317–318, convincingly argues that the dedication was made by the Athenians after Marathon 490 BC. Cooper also attributes the numbering of the blocks to a fourth-century-BC repair and reassembly of the building after it had been damaged in an earthquake and not as part of the original construction.

[16] Audiat 1933, 34–35.

[17] Martin 1965, 225–226; Orlandos 1966, 84–85. Numbering by simple strokes is well-attested also in other contexts such as indicating the capacity of vessels: see, e.g., Lang 1956, 2–4.

[18] Both terms are known to have been used in architectural contexts; see the references in Orlandos & Travlos 1986, *s.v.* 'ὑπερῷος' and 'ὑπέργειος'.

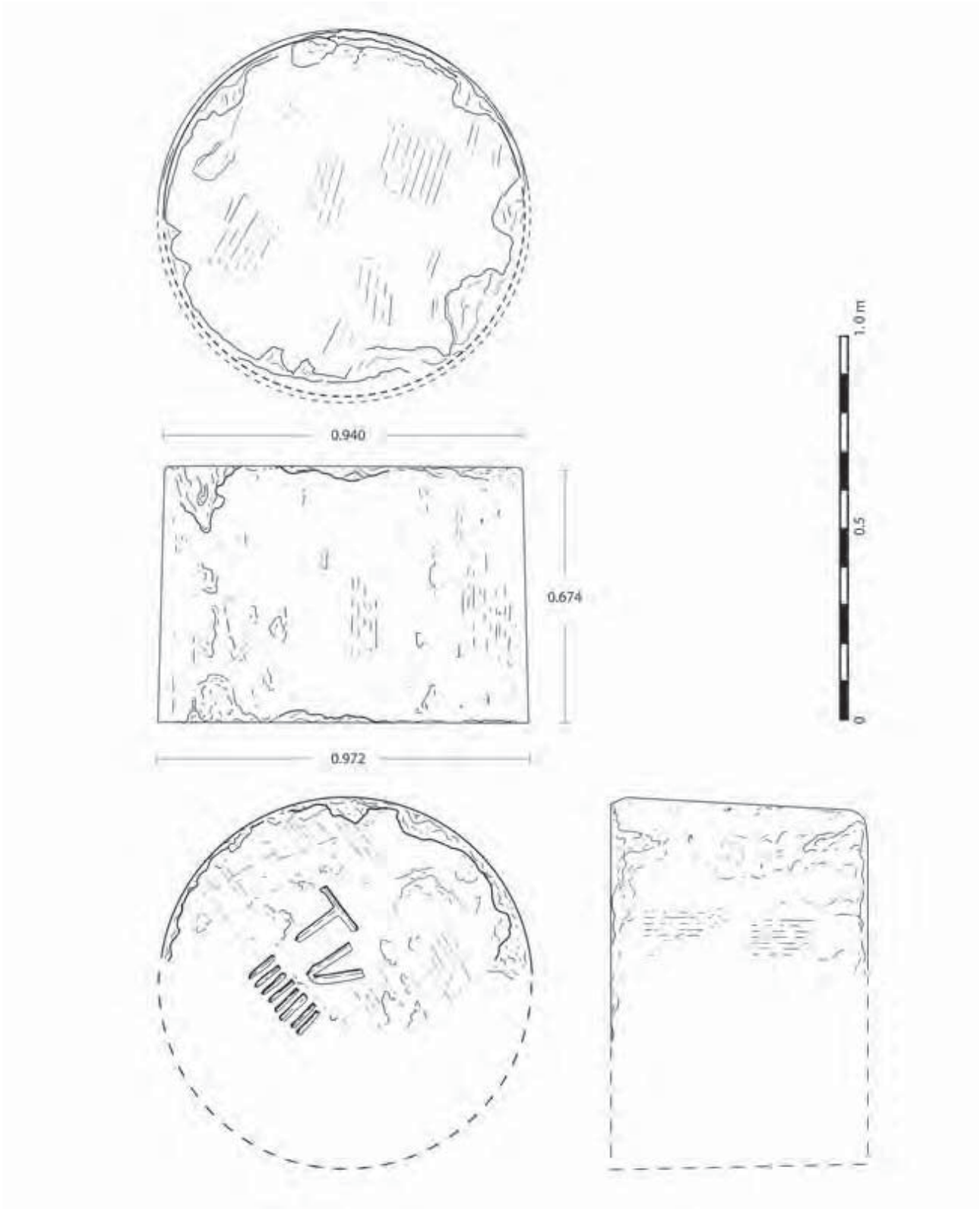

Fig. 4. Drum 1. Scale 1:15. By A. Hooton & J. Pakkanen.

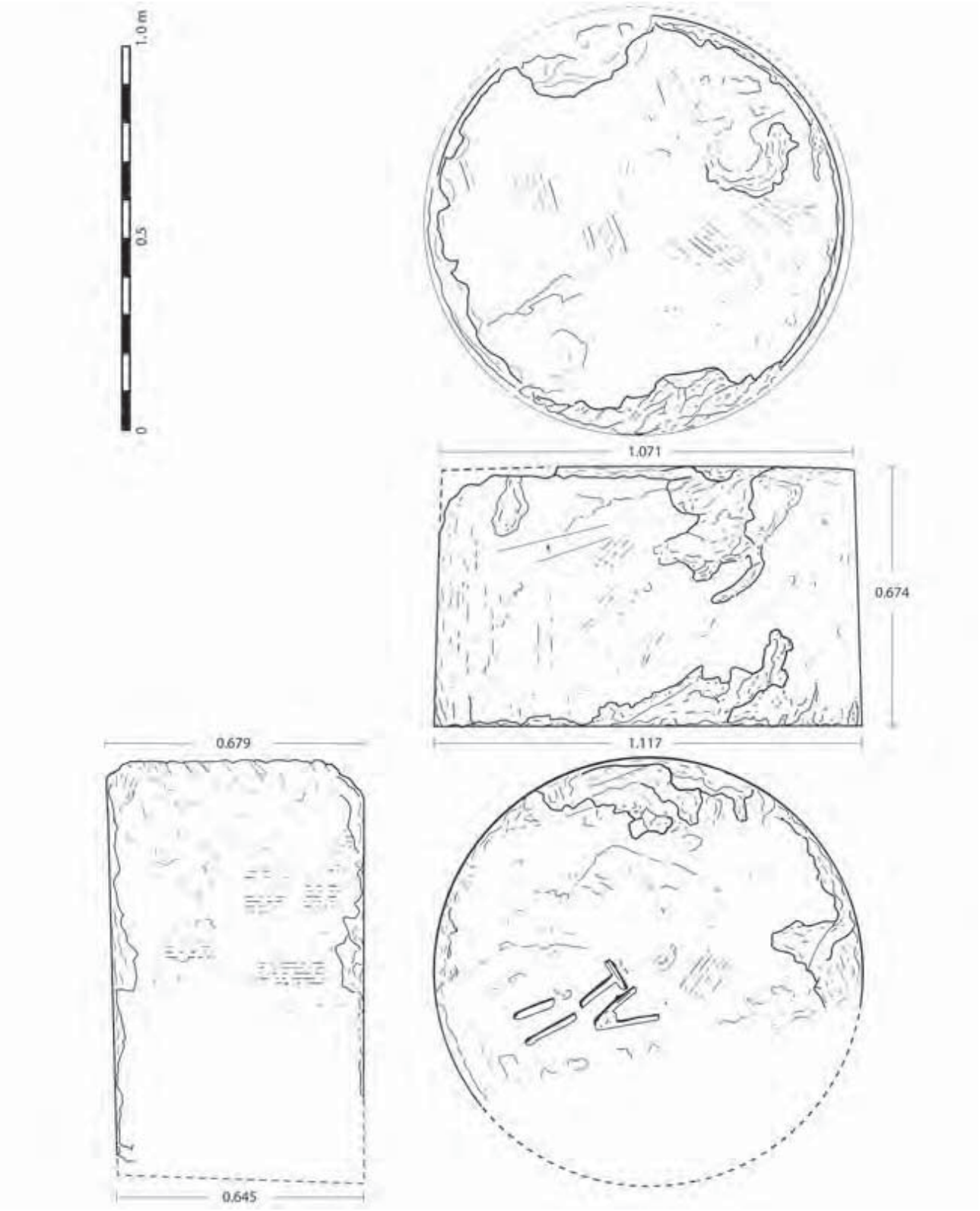

Fig. 5. Drum 2. Scale 1:15. By A. Hooton & J. Pakkanen.

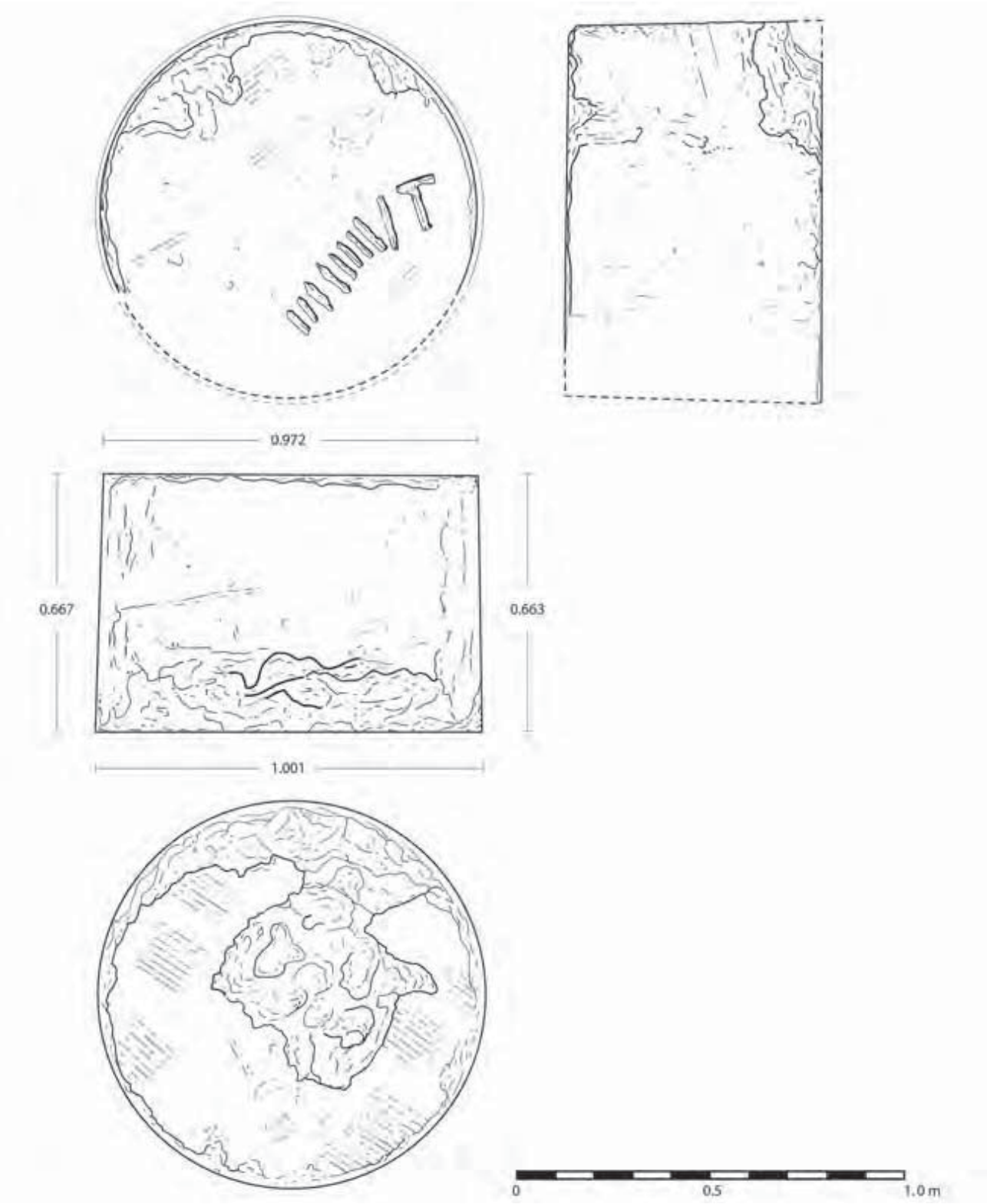

Fig. 6. Drum 3. Scale 1:15. By A. Hooton & J. Pakkanen.

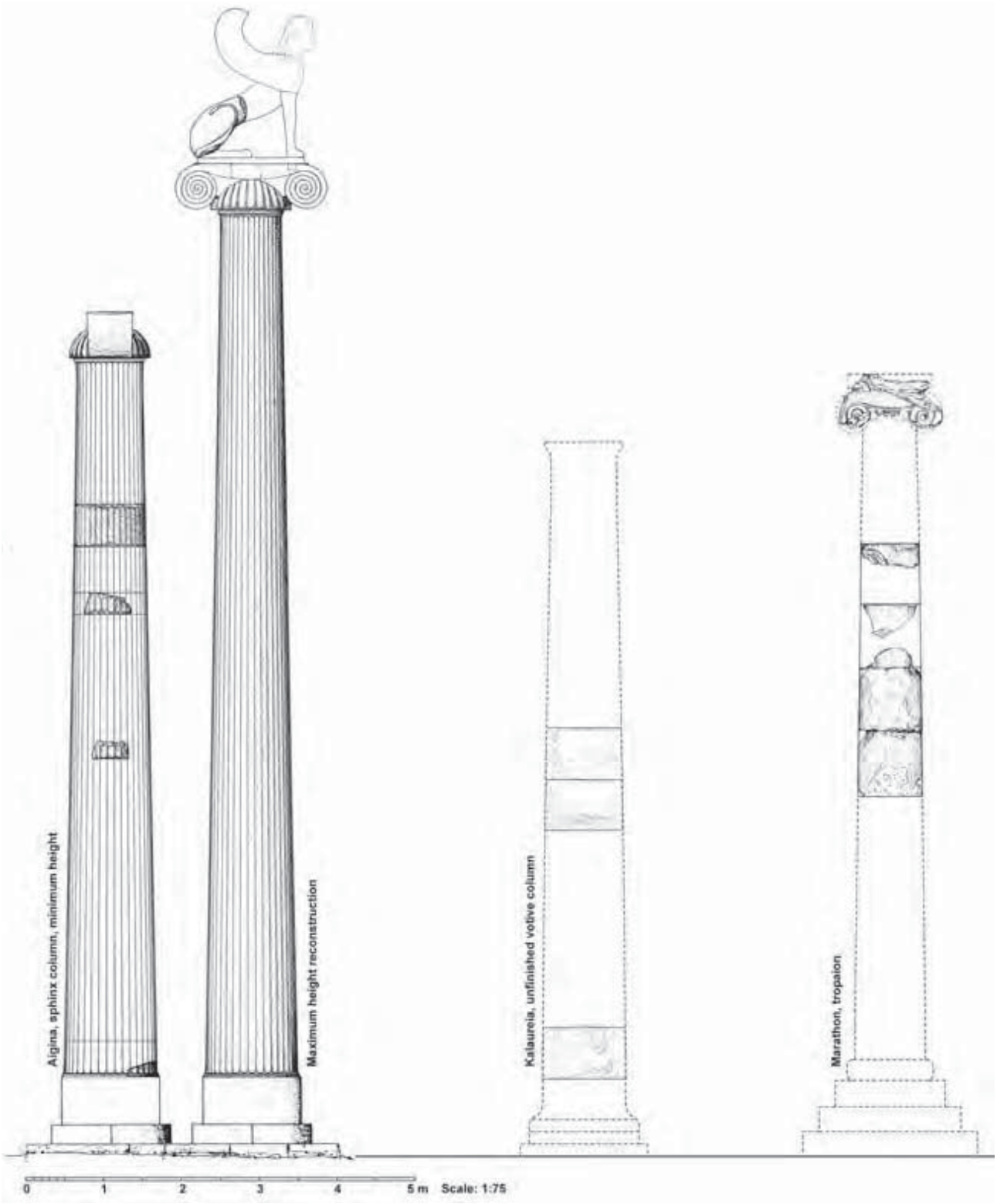

Fig. 7. Comparison of votive columns on Aigina, at Kalaureia and at Marathon (reconstruction of Aigina based on Gruben 1965, pl. 3, and Marathon on Petrakos 1996, fig. 8, and physical reconstruction at Marathon). By J. Pakkanen.

money:[19] Τ is used for both a talant and a quarter obol,[20] the vertical stroke stands usually for an obol but it can also denote a drachma before the introduction of a specific sign for it,[21] and the slash is used for *chalkous*, one twelfth of an obol, in Hellenistic inscriptions from Delos.[22] Talant is obviously too large a sum in relation to a single column drum, and the alternative total sum of an obol and a third[23] is a rather small figure in an architectural context.[24] Also, the late date for this parallel from Delos renders this reading very unlikely.

However, pottery trademarks might offer a more plausible alternative: ΤΙ followed by numerals is well-attested as an abbreviation for τίμε.[25] The earliest examples are on early fifth-century, Attic red-figure vases, and none of these early examples uses the drachma sign.[26] In this reading the most likely interpretation for the slash would be one drachma: the reason for writing it diagonally would be to separate it from the iota. One drachma is attested as a craftsman's day wage in the fifth century BC,[27] but since the inscription is on an unfinished drum, the sum should relate to quarrying and/or transport of the block. The price of quarrystone is difficult to resolve even based on the well-preserved fourth-century building accounts from Epidauros, but the majority if not all of the costs were due to labour expenses and transport.[28] Dressing a soft limestone block into a cylindrical drum probably took less than three working days.[29] Limestone outcrops are common on the island, so the transport costs were probably relatively small.[30] Therefore, the price tag of one drachma for quarrying and even transporting a column drum to the Sanctuary of Poseidon from a local quarry is conceivable. The parallels in Late Archaic pottery trademarks makes this reading rather attractive: if the alternative is accepted for Drum 3, the first parts of the inscriptions on the two other drums should also be read as a tau and a stroke followed by a slash for a drachma sign.

RECONSTRUCTION OF THE COLUMN SHAFT AND DATE

The shaft diameters of the known cases of Archaic, freestanding, Doric columns in the Saronic are considerably smaller than the drums from Kalaureia,[31] but for monumental Ionic votive columns there are parallels.[32] Therefore, it is very likely that if the column in the Sanctuary of Poseidon had been finished, it, too, would have been crowned by an Ionic capital. *Figure 7* presents a hypothetical reconstruction of the Kalaureia column shaft sandwiched between the early sixth-century sphinx column from the sanctuary of Aphaia on Aigina[33] and the Late Archaic/Early Classical tropaion of the Battle of Marathon.[34] The Aigina column has a reconstructed height range of 10.7–12.6 m and a lower

[19] A numeric reading of the first part of the inscription was suggested to me by N. Stampolidis.
[20] See, e.g., Tod 1911–1912, 101.
[21] Tod 1911–1912, 101; Johnston 1979, 233.
[22] Tod 1911–1912, 116; Tod 1936–1937, 250.
[23] So 1/4 obol + obol + chalkous = 1 obol 4 chalkous. This reading also requires that a quarter obol would be written before a whole obol (there is a parallel, though, in an Attic abacus *IG* II^2 2781 where the order is reversed; see Tod 1936–1937, 237).
[24] Johnston (2006, 22) lists the known prices for Archaic, large, closed vases and they vary from 4 to 7 obols.
[25] Johnston 1979, 169; Johnston 2006, 165.
[26] Troilos painter: TI followed by 12 (Johnston 1979, 226, fig. 9x); Berlin painter: TI followed by 7 (Johnston 1979, 226–227, fig. 12p); imitation of Berlin painter: TI followed by 7 (Johnston 1979, 226–227, fig. 9w); near Berlin painter: TI followed by 5 (Amyx 1958, 297–298, pl. 54d; Johnston 1979, 226–227); Tyszkiewitz painter: TI followed by 4 (Johnston 1979, 226–227).
[27] See, e.g., Burford 1972, 138–140, with references to sources.
[28] Burford 1969, 168–175.
[29] In the reconstruction of the Stoa of Attalos at the Athenian Agora, it took 100–120 man-days to dress a single Doric column of Pentelic marble from quarry-face to tapering cylinder, and soft limestone is approximately five times faster to work with (Burford 1969, 246–247, also on the limitations of modern comparisons); the height of the stoa columns is 5.24 m (Coulton 1976, fig. 28), so *c*. 7.5 Kalaureia drums of 0.67 m are needed to match the height of the stoa column shaft: 110 man-days / (7.5 × 5) ≈ 3 man-days. The contact surfaces of the Kalaureia drums are only preliminarily worked, so the time-consuming matching of the drums together was not done on our blocks.
[30] The fourth-century transport of *c*. 400 tons of limestone from Corinth to the Temple of Asklepios at Epidauros, a distance of *c*. 60 km by sea and land, costed 1,700 drachmas: 1,700 dr. / 400 tons / 60 km ≈ 0.42 ob. / ton / km (Burford 1969, 190).
[31] The largest example in the Saronic is a funerary column from Troizen: the octagonal shaft has a lower width of 0.715 m and preserved height of 3.50 m; it was crowned by a now lost capital so it could well have been unusual or a variation of Doric (550–525 BC; McGowan 1995, 621–622, esp. n. 45), but a close parallel for this type in the region is provided by the interior octagonal Doric columns from a fountain house at Megara (Gruben 1996, 75–77). More typical cases are provided by the two preserved Doric votive capitals from the Athenian Acropolis which both have an abacus width of 0.495 m (550–525 BC; Kissas 2000, 22–23, 176–179). For further references to freestanding Doric columns used as grave markers or votives, see McGowan 1995, 615–622, and Kissas 2000, 22–23. Monumental Doric votive columns are known in the Peloponnese, e.g., from the Sanctuary of Apollo Korythos at Longa (Luraghi 2009, 119, pl. 5; no dimensions for the capital given).
[32] In addition to the examples discussed below, there is a very large drum next to the small theatre at Epidauros, so it is quite possible that there would have been also other monumental votive columns in the region.
[33] Gruben 1965, pl. 3, illustrates minimum and maximum height reconstructions of the shaft.
[34] The preserved blocks in *Fig. 7* are based on I. Yarmenitis' reconstruction published in Petrakos 1996, fig. 8, but I have redrawn the base: it is unlikely that an early fifth-century monument would have had a Classical Attic base. The drawing in *Fig. 7* is an approximation of how the base is reconstructed at Marathon (warm thanks are due to M. Korres for discussing the base of the monument with me). On the date of the monument as *c*. 490–470 BC, see Shoe Meritt 1996, 128 (the capital obviously postdates the battle, and since the capital is quite damaged, I would prefer the wider range to Shoe Meritt's rather precise date of 480–470 BC).

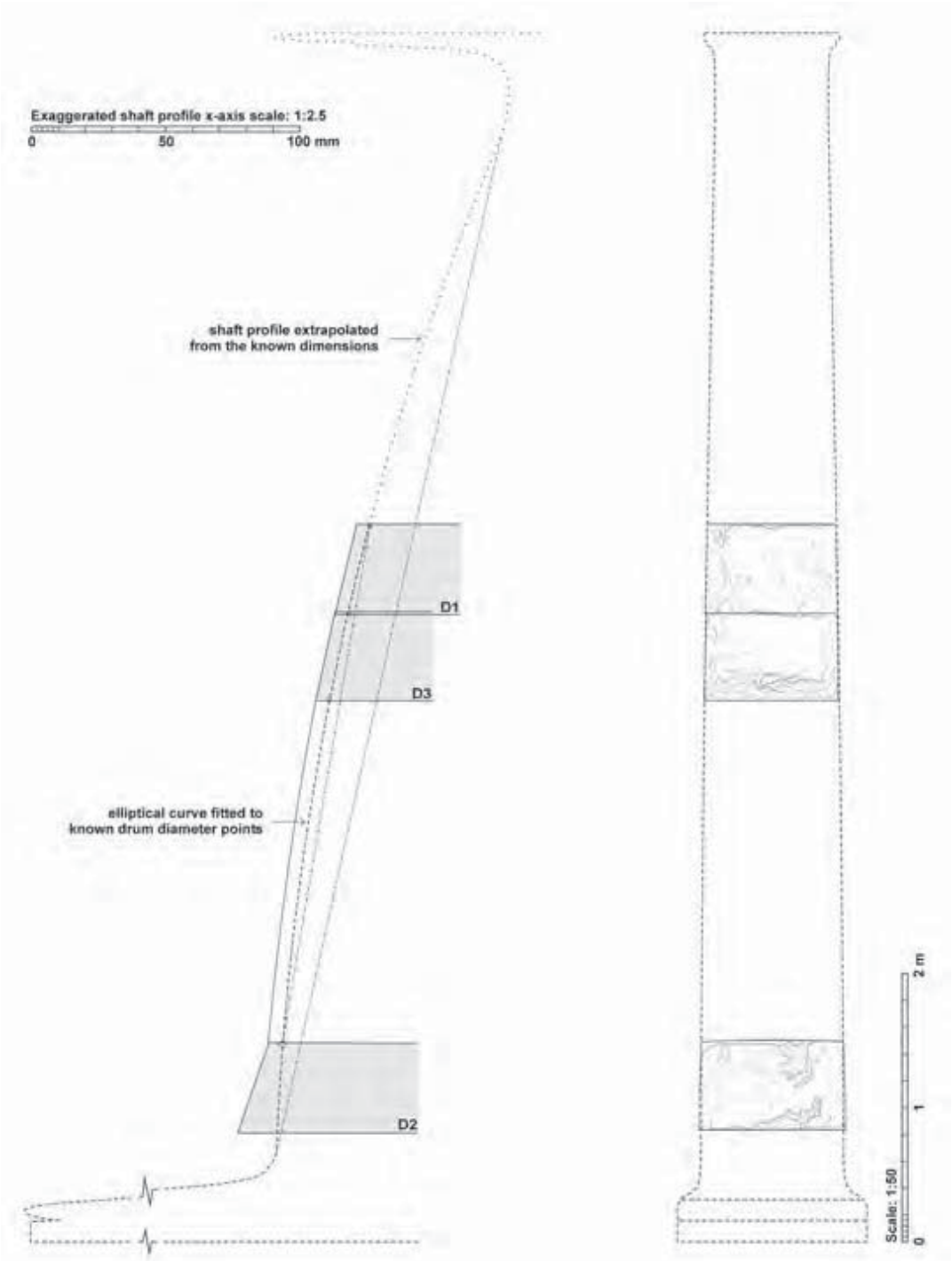

Fig. 8. Hypothetical reconstructions of the profile and column shaft. By J. Pakkanen.

column diameter of *c*. 1.19 m.[35] Both the minimum and maximum reconstructions are presented on the left of *Figure 7*. The largest Ionic capital on the Greek mainland belongs to a votive column on the Athenian Acropolis: the width of the capital is 2.50 m and the height of the column can be reconstructed as at least 11 m. Two large fragments of it have been documented, and it can most probably be dated towards the end of the sixth century BC.[36]

It is possible to estimate the lower diameter of the column shaft at Kalaureia based on the inscription defining Drum 2 as the second in the sequence of drums in the shaft. The difference in the lower and upper diameters is 46 mm, much greater than that of the other two drums where the differences are 29 and 32 mm, respectively. This is perhaps best explained by the need to leave extra room at the bottom of the shaft for the projection of the profile at the lower part of the column (see the reconstruction on the right of *Fig. 8*). A bottom drum or a joint block for a combined column base and lower shaft would have flared even more, so the best estimate for the lower diameter can be gained by extrapolating between the diameters of the seventh and eighth drums and the upper diameter of the second drum. The height of the drums seems standard, though the thickness of the protective layer of extra stone left on the blocks in the quarry needs to be subtracted from all the measured dimensions:[37] the soft limestone would possibly have been fluted and it certainly would have been covered by a layer of plaster when finished. The estimated final drum dimensions used in the calculations are 20 mm less than the recorded height and diameter measurements.[38]

An elliptical curve is fitted to the estimated diameter points of the column drums marked. The diameters are marked by a small circle on the left of *Figure 8*. Comparison of the curve with the line connecting the tops of Drum 1 and 2 shows that the shaft profile was planned with entasis and did not taper in a straight line.[39] Due to entasis the shaft profile is nearly vertical over the first two drums, so the lower diameter above the apophyge can be estimated as *c*. 1.05 m. Because the thickness of the layer of protective stone on Drum 2 is not known, the lower diameter should be regarded as hypothetical. Even though the shaft profile of the top part of the column can be extrapolated as curving, its precise shape can only be suggested here because the height of the shaft remains unknown. In *Fig. 8* the shaft height of the Kalaureia column is hypothetically reconstructed as 8.5 times the lower diameter. These proportions are based on those of the minimum column height of the Aigina sphinx column, and the base is tentatively reconstructed on the basis of the unusual base of the interior Ionic columns of Stoa A in the Sanctuary. The stoa at Kalaureia has been variously dated between the second and fourth quarters of the fifth century, but the base type was known already in the late sixth century.[40]

The lower diameter of the Marathon tropaion would have been smaller than the shaft diameter at Kalaureia. The height of the Marathon column in *Fig. 7* is hypothetical, reconstructed from Vanderpool's report that the diameter of the lower surface of the capital is 0.73 m and that the largest drum diameter he was able to measure is 0.82 m. However, since the uppermost drum would have most likely been carved at the top with the usual apophyge and a half round, the under surface of the capital does not directly indicate the upper diameter of the shaft.[41] Taking this and any possible entasis of

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[35] The total height range includes the round plinth and the capital; Gruben 1965, 187–190.

[36] Wiegand 1904, 173, fig. 172; Korres 1997, 95–107.

[37] The depth of the protective surface varies, but an overview can be gained from the plates in Kalpaxis 1986: 14 mm in the Hephaisteion at Athens (pl. 16.1); 10, 18 and 22 mm in the Older Parthenon (pl. 16.3 and 20.5); 45 mm in the Treasury of Kyrene, Delphi; 31 mm in the Hieron at Samothrace (pl. 19.5).

[38] Reduction of the principal dimensions by 20 mm is equivalent to a protective layer thickness of 15 mm and stucco of 5mm for the sides of the drums (the difference 10 mm is multiplied by 2 since the extra stone was cut away all around the block, and the same applies to the extra layer of stucco) and cutting away 10 mm from both the upper and lower surfaces. Dimensions for the second drum used in calculations: upper diameter 1.051 m, height 0.625 m (the height of the drum varies greatly, but the dimension is based on the minimum height); seventh drum: diameters 0.981 and 0.952 m, height 0.643 m; eighth drum: same dimensions 0.952 and 0.920 m, 0.654 m.

[39] Not all votive columns had entasis, e.g. the column of the Naxians at Delphi had none (Amandry 1953, 9). On curve fitting and shaft profiles, see Pakkanen 1997, 336–341; Pakkanen 1998, 62–72. The porch columns of the Temple of Zeus at Stratos provide a parallel for unfinished drums with shaft entasis taken into account (Pakkanen 2004, 108–111).

[40] For a comparison of the base profiles of the late sixth-century Temple of Athena at Paestum and Stoa A at Kalaureia, see Coulton 1977, fig. 40, profiles 12–13. Welter's date of Stoa A in the last quarter of the fifth century is supported by Coulton, but Martin dates the building to the second quarter of the fifth century, probably following Wide & Kjellberg's argumentation; Wide & Kjellberg 1895, 274–277; Welter 1941, 45–47; Martin 1951, table 2; Coulton 1976, 100, esp. n. 3. The Ionic base of Stoa A has a close parallel in Argive architecture of the second quarter of the fifth century: the interior base of the Hypostyle Hall at Argos has a vertical band and a single torus with a flaring apophyge in the lower part of the shaft (Bommelaer & Courtils 1994, 27, 29–30, fig. 15. The base at Argos has also an astragal at the bottom of the vertical band). The base type is closely linked with the sixth-century bases from Samos consisting of a disk and a single torus, a type also attested in Athenian Archaic and Early Classical architecture (Shoe Meritt 1969, 186–188, pl. 49c), so a date for the Kalaureian base in the last quarter of the fifth century would be quite anomalous. An initial analysis shows that the Stoa A capital proportions are in line with capitals from the second half of the fifth century. Excavations inside Stoa A at Kalaureia were started in 2009: the packed earth floor is preserved, so obtaining a pottery date for the structure is a possibility.

[41] Cf., e.g., the column shafts of the Stoa of Athenians in Amandry 1953, pl 27. In the reconstruction drawing by Yarmenitis (Petrakos 1996, fig. 8), it seems that the smaller shaft diameter due to narrowing of the shaft at the top has not been taken into account, so I have shifted the drums further down in *Fig. 7*.

the shaft into account and based on the available evidence, it is not possible to estimate the lower diameter any more precisely than as within a range of 0.9–1.0 m.[42]

The two comparative columns from Aigina and Marathon also represent the upper and lower boundaries of the time frame during which the column drums could have been carved. The known monumental Ionic votive columns that support sphinxes cluster in the first half of the sixth century BC.[43] The late-sixth-century material in the fill where the three column drums at the Sanctuary of Poseidon at Kalaureia were deposited places the building project firmly in the sixth century. The best parallel for the intended Ionic capital is probably provided by the very large votive monument from the Athenian Acropolis.[44] If the two strokes following the T at the beginning of the masons' marks are interpreted as V, the Archaic shape of the upsilon suggests that the votive column project was begun in the second half of the sixth century BC. If the first part of the inscription is read as a price indication for quarrying and/or transport, the earliest parallels in pottery trademarks are Late Archaic, so an even tighter sequence between the beginning and abandonment of the project could be proposed. In conclusion, a date after 550 BC can be suggested for the start of the project and a date towards the end of the century for the abandonment of the uncompleted project.

Jari Pakkanen
Department of Classics
Royal Holloway, University of London
Egham, Surrey TW20 0EX, UK
E-mail: j.pakkanen@rhul.ac.uk

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[42] A conservative estimate for the upper diameter of the shaft below the apophyge would be in the range of 0.68 m, so if the known diameter of 0.82 was in the centre of the shaft and the taper was constant, the lower diameter could be calculated as 0.82 m + (0.82 m – 0.68 m) = 0.96 m, so a range of 0.9–1.0 m is reasonable taking into consideration all the unknown factors related to drum dimensions; for the capital and drums, see Vanderpool 1966, 96–101.

[43] In addition to the Aigina column, relatively well preserved examples include the column of the Naxians at Delphi (second quarter of the sixth century BC; column height *c*. 10 m; Amandry 1953, 3–32; for a suggestion of a date *c*. 570–560 BC, see Bommelaer 1991, 146), a column at Kyrene (*c*. 550 BC; column height *c*. 6.5–6.9 m; White 1971, 49–54), and a column on Delos (*c*. 550 BC; column height *c*. 5 m; Amandry 1953, 19, n. 1; for the date, see Bruneau & Ducat 2005, 96).

[44] Korres 1997, 95–107.

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