

## A. Administrative

1. *Title:* Proposal to add Greek epigraphical letters to the UCS
2. *Requester's name:* Nick Nicholas
3. *Requester type:* Expert contribution
4. *Submission date:* 2005-01-01
5. *Requester's reference:* —
- 6a. *Completion:* This is a complete proposal
- 6b. *More information to be provided?* No.

## B. Technical—General

- 1a. *New Script? Name?* No.
- 1b. *Addition of character(s) to existing block? Name?* Yes. Greek or Greek Extended.
2. *Number of characters in proposal:* Six
3. *Proposed category:* B.1. Specialized (small collections of characters)
4. *Proposed Level of Implementation (1, 2 or 3) (see Annex K in P&P document):* Level 1 noncombining character
- Is a rationale provided for the choice?* No
5. *Is a repertoire including character names provided?* Yes
  - a. *If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document?* Yes
  - b. *Are the character shapes attached in a legible form suitable for review?* Yes
- 6a. *Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard?* —
- 6b. *If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools used:* —
7. *References:*
  - a. *Are references (to other character sets, dictionaries, descriptive texts etc.) provided?* Yes
  - b. *Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?* Yes
8. *Special encoding issues:*

*Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?* Yes
9. *Additional Information:* See below

## C. Technical—Justification

1. *Has this proposal for addition of character(s) been submitted before?* No

2. *Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)?* Yes

*If YES, with whom?* Subscribers of Unicode Greek and Epigraphical mailing lists.

*If YES, available relevant documents:* —

3. *Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?* Scholarly community and individuals interested in Greek linguistics and epigraphy

*Reference:* —

4. *The context of use for the proposed characters (type of use; common or rare):* Occasional in Greek epigraphy, occasional in Ancient Greek linguistics

*Reference:* —

5. *Are the proposed characters in current use by the user community?* Yes

*If YES, where?* *Reference:* Characters are present in various publications on Ancient Greek linguistics, and in publications of epigraphic corpora

6. *After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?* Yes

*If YES, is a rationale provided?* Contemporary use, keeping character together with other Greek characters

*If YES, reference:* —

7. *Should the proposed characters be kept together in a contiguous range (rather than being scattered)?* No.

8. *Can any of the proposed characters be considered a presentation form of an existing character or character sequence?* No (but see below)

*If YES, is a rationale for its inclusion provided?* —

*If YES, reference:* —

9. *Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?* No

*If YES, is a rationale for its inclusion provided?* —

*If YES, reference:* —

10. *Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character?* Yes

*If YES, is a rationale for its inclusion provided?* Yes

*If YES, reference:* —

11. *Does the proposal include use of combining characters and/or use of composite sequences?* No

*If YES, is a rationale for such use provided? —*

*If YES, reference: —*

*Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? —*

*If YES, reference: —*

12. *Does the proposal contain characters with any special properties such as control function or similar semantics? No*

*If YES, describe in detail (include attachment if necessary) —*

13. *Does the proposal contain any Ideographic compatibility character(s)? No*

*If YES, is the equivalent corresponding unified ideographic character(s) identified? —*

*If YES, reference: —*

## Proposal

The characters discussed in this proposals represent distinct letters used in local ancient forms of the Greek alphabet, which would be candidates for inclusion in the UCS. There are arguments for and against their inclusion in the UCS, which I give below. The intent behind this proposal is that the characters should be considered now in order to finalise the Greek script alphabetic repertoire.

Linguists and epigraphers have conflicting requirements with regard to these letters. With the possible exception of tsan, all letters discussed here represent new allophones of existing phonemes in Greek, rather than new phonemes. Alphabets normally encode only phonemes, which is why the koppa was dropped early from the Greek alphabet: the Greek language had no /q/ phoneme distinct from /k/, unlike Phoenecian. Moreover, the dominant form of Ancient Greek used by classicists is Attic Greek, so there is an overwhelming tendency to normalise the letters of inscriptions to Attic phonology and the standard Greek alphabet that represents it, when publishing inscriptions. Such normalisation already takes place in using standard letter forms as opposed to the local (epichoric) forms found regionally. The tendency of epigraphers with these problem letters has been to normalise them as well, making the text readily recognisable from the point of view of Attic Greek. Linguists on the other hand are keen to find evidence of Ancient phonetic change; so in their publication of inscriptions the problematic letters are likelier to be retained as they are.


The variation of epichoric letterforms for the same underlying letter was prodigious in Ancient Greece, but is decidedly outside the scope of Unicode, which encodes letters and not glyphs. For that reason, discussions of the history of the Greek alphabet (such as Jeffery 1990) are not the kind of publication where usage should decide the adoption of distinct codepoints: the glyphs appear there qua glyphs, as illustrations, rather than as distinct codepoints in text. (Jeffery however is rather more conservative than other script historians in her avoidance of epichoric glyphs in her exposition.) The letters considered

here are considered only because they encode distinct phones (if not phonemes), and their conflation with canonical Greek letters is open to question. Their use in normalised transcriptions of Greek inscriptions, published for their text rather than their glyphs, give the strongest support for their adoption—especially if the publication concentrates on their content rather than their language (collections of verse—Hansen 1983, Peek 1955—or of historical documents—Meiggs & Lewis 1969).

In order to trace the tradition of representing these letters in transcription in epigraphy, I concentrate in my examples in one inscription for each letter: the decree of Lygdamis and the Halicarnasseans for sampi (GDI 5531, Ditt. Syll. 45: Example 3–7); the epitaph of Dweinius for Corinthian ei (IG IV.358, GDI 3114: Example 12–17); the Mantinean inscription on Athena Alea for tsan (IG V.ii.262: Example 22–24).

The proposals involve conflation of distinct glyphs, which I argue constitute the same underlying letter (an Ionian and a Pamphylian archaic sampi; a Corinthian and a Boeotian Ei)—or a conflattion under the same codepoint of identical glyphs representing distinct letters (Tsan and Pamphylian Digamma). There is no tradition of using capital case for these codepoints, but I am proposing capitals as they are logically possible, and likely to be demanded once the letters are adopted (cf. the addition after the fact of capital versions of lunate sigma, Greek numeric characters, etc.)

#### 1. GREEK LETTER SMALL ARCHAIC SAMPI, GREEK LETTER CAPITAL ARCHAIC SAMPI.

Ionian glyph (suggested as reference glyph): 

Pamphylian glyph: 

Capital glyphs: suggest same glyph as for lowercase, appropriately resized from x-height to cap height.

The letter conventionally called sampi (Jeffrey 1990:38–39, 428; <http://www.parthia.com/fonts/sampi.htm>; Example 1, Example 8) was in use in Ionia between 550 and 450 BC. Jeffrey lists the cities of Ephesus, Erythrae, Teos, Halicarnassus, Cyzicus, Pontic Mesambria, Chalcedon, Samos, Massalia, with rare usage also in Attica. The letter was used where conventional Greek orthography used  $\sigma$  /ss/ or  $\xi$  /ks/.

There has been speculation that the letter was originally borrowed from the script of Carian, a language indigenous to Asia Minor. Certain inscriptions, notably the Halicarnassean decree used here as an example, use it only for proper names borrowed from Carian (including *Halicarnassus* itself), but elsewhere it is also used for native Greek words (e.g.  $\tau\epsilon\tau\alpha\rho\acute{\alpha}\phi\omicron\nu\tau\alpha$  =  $\tau\epsilon\sigma\sigma\alpha\rho\acute{\alpha}\kappa\omicron\nu\tau\alpha$  ‘forty’: Example 2). As a result, there has been speculation that the letter originally represented a sound, such as /ʃ/, which did not exist in Greek. (See also Example 9.)

The square psi-like letter used in the Pamphylian dialect of Greek to represent /s/, /ss/ and /ps/ (Brixhe 1976:7–9; Example 10) has also been identified with sampi (<http://www.parthia.com/fonts/sampi.htm>). (Note that there is a distinct glyph in the Pamphylian epichoric alphabet that corresponds to psi proper, so this is a letter distinct from psi in Pamphylian.) The identification of the Pamphylian letter with Ionian sampi is not definitive historically: the Pamphylian character could have been an independent loan from Carian, from the Cypriot syllabary, or directly from Semitic scripts. Moreover, the Ionian and Pamphylian glyphs are not identical. But their phonetic value is identical or close to it, and the two variants were in geographical proximity; disunifying them as codepoints serves no defensible purpose. The glyph will need to be specific to the dialect encoded, however, as already occurs for Italic Te in Serbian and Russian.

The letter sampi has been identified as the precursor of the numerical symbol sampi = 900 (U+03E1 GREEK SMALL LETTER SAMPI Ϻ), which it closely resembles, especially in its more archaic form (cf. the reference glyph for U+1034A GOTHIC LETTER NINE HUNDRED ¶). Before that identification was made, the letter was known to 19th century scholarship as disigma, in light of its phonological equivalence to σσ. The name *sampi* is likewise a late descriptive term ('like a pi', referring to the late glyph); the ancient name of the letter is unknown.<sup>1</sup>

Unlike the other epigraphical letters considered here, the sampi routinely appears in published texts as a distinct letter, rather than as normalised σσ or ξ—aided by the suspicion that it represents a distinct phone (Examples 3–7; see also the copious instances reproduced in <http://www.parthia.com/fonts/sampi.htm>). Often the required glyph has not been available typographically, and the letter is represented with a capital tau in a case-mixing context, which is assumed to disambiguate the letter (τεΤαράφοντα /tessarrákonta/; e.g. Example 4, Example 8).

The question posed here is therefore whether the archaic sampi should be disunified from the numerical sampi, as has already taken place with Archaic vs. Numerical Koppa (U+03D9, U+03DF), and Digamma vs. Stigma (U+03DD, U+03DB).

If adopted, the archaic sampi should sort with the numerical sampi, just as the archaic koppa sorts with the numerical koppa. A reference glyph should be selected that accentuates the letter's 'serifs', to avoid confusion with capital tau (despite their frequent conflation in heritage data).

There is no tradition of differentiating capital from lowercase archaic sampi, and past usage has given the lowercase letter both x-height (Examples 2, 6) and cap height (Examples 1, 3, 4, 5, 7, 8, 9). I propose that despite the preponderance of cap height and the absence of a casing distinction, the reference glyphs have the lowercase letter at x-height and the capital at cap height.

*Pro*

- There is precedent for such disunification with the other two Greek numerical

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1. A letter used in various locales of Italy has been tentatively identified with sampi recently; but since such texts belong to the Old Italic alphabet, and are published in Latin transcription, this is beyond the scope of a proposal for a Greek codepoint.


letters, koppa and stigma.

- Like the koppa and stigma, the glyph traditions of the numerical and epigraphical sampi have diverged: the numerical sign has never been used to represent the epigraphical letter. (Either capital tau has been used, as an approximation, or a specially drawn letter representing the sampi itself.)
- The identification of the ‘disigma’ with the sampi is conjectural, although unlikely to be challenged in the future.
- If the Pamphylian letter is conflated with the Ionian disigma/sampi, the identification of the two is even more tentative, and is primarily undertaken for practical reasons. This provides more incentive not to identify the Pamphylian letter with the numeric sampi.
- The distinct glyph appears consistently in publications of inscriptions—including Meiggs & Lewis (1969: Example 7), which is a historical rather than a linguistic collection. Unlike the other letters considered here, I am aware of no tradition of transliteration with a normal letter and diacritic, nor of normalisation to  $\sigma$  or  $\xi$ .

*Contra*

- The numerical character and the epigraphical letter are identified by the same name, and are at least at some level the same character.
- Unlike the koppa, the use of sampi as a letter was regionally restricted, which means the disunified letter would not be widely used.

## 2. GREEK LETTER SMALL EI, GREEK LETTER CAPITAL EI.

Boeotian glyph (suggested as reference glyph): 

Corinthian glyph: 

Capital glyphs: suggest same glyph as for lowercase, appropriately resized from x-height to cap height.

The phoneme /e:/ which had appeared in Greek by the 5th century BC was normally represented by the digraph  $\epsilon\iota$ , since in many instances it was a phonological development of earlier /ei/. A few alphabets however accorded /e:/ a distinct letter. Notably, Corinth used the glyph **B** for /e/ and /ε:/ (standard  $\eta$ ), and **E** for /e:/ (Jeffery 1990:114–115). (The same applies for the area around Corinth and its colony Corcyra, with some modifications.)

This period also saw the raising of short vowels, and the tack glyph  $\vdash$  was used briefly in Thespieae of Boeotia, ca. 424 BC, for a raised /e/ before a vowel (Buck 1955:22, Jeffery 1990:89; Méndez Dosuna 2003:86). The use of a sign distinct from epsilon and iota strongly

suggests the phone had an intermediate phonetic value at the time—although elsewhere in Boeotia iota and epsilon iota were used in that context.

In this proposal, I suggest the Boeotian and the Corinthian letters be conflated for convenience, as they are in complementary distribution. Note however that they are not phonetically identical: the Corinthian vowel is long, but the Boeotian is short.

Since ei is a variant of epsilon, it could either sort after epsilon, or collate with the digraph ει, with which it is identified in its Corinthian usage, and which is also not inconsistent with Boeotian usage.

The name of the character if adopted may need to be altered, since ei (εῖ) was the original name of the letter known since the Middle Ages as epsilon.

#### *Pro*

- A distinct glyph is usual in epigraphical publication, and is consistent with the insistence by epigraphers of having the inscription represent the lettering on the stone faithfully, including the letter count.
- A distinct letter is called for in the citation of these forms in Ancient Greek linguistics, as it constitutes important evidence for the monophthongisation of /ei/ and for vowel raising. For that reason, the glyphs remain in use; cf. the Boeotian letter appearing in Méndez Dosuna (2003:86), available as of this writing as a PDF.

#### *Contra*

- The Corinthian glyph is identical to capital epsilon. Epigraphical publications rely on the ill-formedness in Greek orthography of case mixing (Examples 13, 14) to use a capital epsilon in a lowercase or titlecase context: ΔφΕνίας /dwe:nías/. As a general solution in the UCS, this is impractical. Some attempts have been made at using typographic style to differentiate epsilon from Corinthian Ei, but they do not seem promising (Example 11, Example 20). The same problem obtains for the Boeotian glyph, which is identical to the “tack” reference glyph of heta proposed separately.
- The Corinthian glyph is problematic enough that Greek epigraphers themselves do not consistently use it. Jeffery (Example 17) uses the digraph without further annotation for Corinth, and considers both the Boeotian and Corinthian letters glyph variants of epsilon in her discussion, rather than distinct letters. Peek is content to conflate ei with lowercase epsilon (Example 15), while Hansen (Example 16) uses a ligature tie ε̂ in his transliteration, indicating his own dissatisfaction with the E glyph. Similar mistrust is evident with the Boeotian letter. Schwyzer (Example 18) transliterates it as <é>, though this is consistent with his avoidance of tsan in favour of <ś> (Example 22; see below).

Jeffery’s exposition is on the history of the alphabet rather than linguistics, which is why she can afford to regard the Boeotian glyph as a variant of epsilon; Buck needs to recover phonetic detail, so he preserves the glyph as a distinct phone (see introductory comment). Thus, Jeffery (1990:402) transliterates ΦΙΣΟΚΛΗΕΣ as Φισοκλεῆς; and in the authoritative *Inscriptiones Graecae* series, inscriptions from Thespieae have Ϡ printed as ι—though with an

extensive accompanying note on the likely phonetics involved, and a facsimile of the original inscription. But Buck (1955:22), who only cites the Thespian forms to illustrate their phonetics, cites such a form as (ΠΟΛΥΚΛΗΕΣ) Πολυκλῆς = Πολυκλήης (with semi-normalised inscription form, normalised inscription form, and Attic equivalent). (Example 21; Note the acute on the EI.)

Failing adoption of a distinct codepoint for EI, both the Boeotian and Corinthian glyph could be encoded as ligatures of an underlying εἰ. This would not be problematic for Corinth, since EI there represents the same phoneme as εἰ elsewhere, and is so normalised outside of epigraphy (and often within it). In Boeotia, ε, ι, εἰ and ἥ appear in free variation, with the ultimate phonetic result ι the usual spelling. One could encode ἥ as a glyph variant of ε or εἰ, though at the risk of losing phonetic detail; this distinction would need to be supplied at a higher level of markup.

Boeotian EI could be conflated with “tack” heta as the same codepoint. Boeotian had a heta of its own, but since print sources have had to deal with the identity already this is not necessarily a problem: a Boeotian HO ΘΗΟΣ /ho tʰeos/ ‘the god’ would be encoded as either ho θῆός or ἥο θεός, though in the latter instance some sort of diacritic on the epsilon might be necessary. (Jeffery, who uses ἥ = /h/, ignores the distinction as seen.) Alternatively one might recommend that epigraphers henceforth encode Boeotian EI as epsilon with a diacritic (e.g. U+031D COMBINING UP TACK BELOW, from the IPA), with a glyph ligature producing ἥ for display, but allowing /h/ and /ɛ/ to be underlyingly distinguished.

As with the archaic sampi, there is no tradition of casing the ei (although the ‘tack’ glyph for heta, which is identical to the Boeotian glyph, is capitalised by Jeffery). In fact, since capital E is routinely used to encode lowercase (Corinthian) EI (except for Example 19), such tradition as is currently extant for the glyph is that it appear as cap-height, not x-height; the same appears to hold for the Boeotian glyph. Nonetheless, I suggest that the reference glyph make an x-height/cap-height distinction.

### 3. GREEK LETTER SMALL TSAN OR PAMPHYLIAN DIGAMMA, GREEK LETTER CAPITAL TSAN OR PAMPHYLIAN DIGAMMA

Glyph for Tsan or Pamphylian Digamma: 

Capital glyph: suggest same glyph as for lowercase, appropriately resized from x-height to cap height.

I propose that this codepoint be used to encode two epichoric letters of Greek which have distinct phonetic realisations, histories, and regional provenances—but which use an identical glyph: the Arcadian tsan, and the Pamphylian digamma. Below, I describe the letters separately, before making the case for treating them as the same codepoint.

#### 3.1. Tsan

The use of this letter is restricted to a single inscription from Mantinea in Arcadia (Jeffery



1990:40, 212–214), where it probably represents a development of san, in turn a development from Phoenecian tsade. (The name Tsan is my own invention.) The letter is significant in Greek historical linguistics because it represents the evolution of fronted proto-Greek \*k<sup>w</sup> > ts, a “missing link” in the evolution of \*k<sup>w</sup> to /ss/ (/tt/ in Attic).

Since tsan does not appear on any abecedaries (alphabet inscriptions), its sorting order is unknown. Jeffery sorts it with sigma, of which she considers it a variant; but if tsan is regarded as related to san, it should be placed together with it. If on the other hand tsan is regarded as a whole-cloth innovation, it should be placed at the end of the Greek alphabet.

*Pro*

- The letter represents a distinct phonological development in Greek, which is significant in Greek linguistics (Example 25).
- A conflation with san is not certain historically (Jeffery 1990:213), and tsan may be a local invention; so treating tsan as a glyph variant of san would be an insecure conjecture.

*Contra*

- Notwithstanding its historical importance, tsan appears in only one inscription, which makes it very much an idiosyncratic letter—not the type normally adopted in the UCS.
- The tsan appears from a period and region of appreciable innovation in the alphabet: Mantinea also presents innovated forms of epsilon, mu, and psi. Such innovation further emphasises the idiosyncratic nature of the letter.
- Unlike archaic sampi, tsan does not appear in published transcriptions of the Mantinea inscription: scholars prefer <ś> (Example 22) or <σ> (Examples 23–24).
- While treating tsan as a variant of san would be doubtful historically, it would be convenient, since san is not otherwise attested in Arcadia (Jeffery 1990:206). Note also that san is not normally used in transcriptions of inscriptions at all, as it was mutually exclusive with sigma in Ancient Greek alphabets: it is always transcribed as sigma, and its printed use is restricted to discussions of the script itself. So san is likely to be underused in any case.

### 3.2. Pamphylian digamma

The alphabet of the deviant Greek dialect of Pamphylia (Brixhe 1976:5–6) used three glyphs to represent /w/: digamma, beta, and the glyph И. The latter glyph also appears where Greek would normally have a beta; and a similar glyph appears as a form of digamma or beta in other epichoric alphabets (Crete, Melos: Jeffery 1990:308). Brixhe (1976:6) concludes that the glyph И is a local development from Phoenecian waw, while the standard digamma was later imported from other Greek alphabets. (For this reason, he notes, И is unrelated to tsan, which developed from tsade.)

Brixhe (1976:46–57) discusses the distribution of И and F, and find that in early inscriptions И appears after vowels—either in diphthongs ([aw, ew]), or in glides near back vowels ([sbaluwau])—while the digamma appears elsewhere. He concludes that the importing of the normal digamma to be used alongside the local form was motivated by a phonetic split,

whereby /w/ gained the allophone [v], represented by F, while Ι was kept for [w]. (This is well illustrated by Example 29, which Brixhe transliterates into French accordingly.)<sup>2</sup>

That said, the distribution of the indigenous and imported digamma was inconsistent even in the earliest surviving inscriptions—e.g. Ι remained used in [v] contexts in archaic spellings like ΙανάΥα /wanassa/ [vanassa] ‘queen’, referring to the goddess Artemis.<sup>3</sup> And as far as we can tell, [v] was only an allophone of /w/ (as well as of /b/), and not a distinct phoneme—so that normally it would not be accorded its own letter in an alphabet.

As a result, on the one hand, publications of Pamphylian texts keep the normal digamma and the indigenous digamma distinct, and do not normalise Ι to the more common F. On the other hand, Ι and F are treated as the same underlying letter where normalisation is appropriate.

- Panayotou (2001:318) cites the inscription ΙανάΥαι Πρεΐαι Κλεμύτας Λφαραμυ ΙασιρFῶτας ἀνέθεκε : ἐπίστασι, which she translates into Modern Greek as Στην Ἄνασσα της Πέργης ο Κλεμύτας, ο γιος του Λφάραμου, ο ΦασιρFώτας, ἀνέθεσε;;, “to the Queen of Perga [i.e. the goddess Artemis], Klemytas, son of Lwaramos, a Wasirwotas, raised this (?)”. While Panayotou admits she does not know what *Wasirwotas* means, she does normalise the Pamphylian digamma into the normal digamma in the translation, even though both digammas are used in the same word. Digamma is not a letter of Modern Greek, but the normalisation is motivated. Head (1911) also appends normalised transliterations with standard digamma to cited forms with Pamphylian digamma; e.g. “ΙΑΝΑΤΑΣ ΠΡΕΪΙΑΣ (Φανασσας Περγαιας) Artemis huntress holding wreath and sceptre.” (Head 1911:702).<sup>4</sup>
- The index of Brixhe’s grammar of Pamphylian (1976) treats Ι and F as the same letter (Example 30).

#### Pro

- Pamphylian digamma has a tradition of being represented and transliterated as a distinct letter; this is consistent with the epigraphical practice of maximal faithfulness to the inscription as it appears on the stone. (Head 1911:699–705, scanned in as <http://www.snible.org/coins/hn/pamphylia.html> , employs the Pamphylian digamma as a distinct letter, though the html version substitutes ~ as the Pamphylian digamma glyph is unavailable.)
- The phonetic identity of the Pamphylian digamma is uncertain, and the distinction between the two digammas represents a phonetic innovation,

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2. Buck (1955:47) concludes that the Ι glyph represents the early development of a [v] pronunciation for /b/ and /w/, and recommends that it “is best transcribed as v (w in German publications).” He thus gets the phonetic value of Ι wrong, according to Brixhe: it was F, not Ι, that was pronounced [v]. But since F as /w/ was a widespread feature of Greek alphabets, and Ι was not, it was expedient to assign Ι the ‘odd’ transcription, <v>.

3. Note the use of Υ for the letter here proposed to be encoded as Archaic Sampi.

4. The html version cited has conflated archaic sampi and tau.

important in the history of Greek.

- The distribution of the two digammas is at no stage wholly predictable, so the alternation between the two glyphs could not be automated.
- The distinction is retained not only in publication of Pamphylian inscriptions, but also in discussion of Pamphylian grammar (Example 28), where normalisation is usual. (But contrast Examples 26–27, by a different author, where normalisation to a Latin transliteration is preferred for linguistic discussion.)

#### *Contra*

- If both tsan and Pamphylian digamma were adopted, they would end up having the same reference glyph. (See below.)
- The Cretan and Melian instances of the letter have always been treated as glyph variants of digamma and beta respectively, so the distinct letter should not be used there.
- Even in the case of Pamphylia, there was some degree of interchangeability between the two digammas, and they clearly represented the same underlying phoneme; in at least some contexts (collation, translation to Attic or Modern Greek), the Pamphylian is normalised to the standard digamma.
- Consistent with his recommendation, Buck (Example 26) cites [selúwíjus] as Σελύνιυς when discussing the Pamphylian glyph; but when citing the form linguistically, in the context of glides in Greek in general, he gives it as the normalised Σελύνιυς (Example 27), with a Latin *v*.
- The numismatic font developer Edward (Chris) Hopkins treats the Pamphylian digamma explicitly as a glyph variant of digamma ([http://www.parthia.com/fonts/letterforms\\_usage.htm](http://www.parthia.com/fonts/letterforms_usage.htm)).

### *3.3. Conflation of Tsan and Pamphylian digamma*

The case for tsan and Pamphylian digamma as codepoints in the UCS can be made individually; but it would be untenable to have in the UCS two separate codepoints in the same script with exactly the same glyph. For that reason, it is expedient to conflate the two letters in the one codepoint, despite their distinct histories and pronunciation. No single ancient text will contain both letters, because of their different regional provenance. A collection of texts or secondary work on Greek might give rise to confusion with the one codepoint being used for the two letters; but that is no more confusion than is already in place in print, with the identical glyphs. Text processing seeking to distinguish between the two phonetic values would need to resort to higher-level markup; but that is no more than already is the case with Latin letters having distinct phonetic values or properties in different languages. It is unusual for this duplication to take part in the Greek script, which is conventionally associated only with Attic and Modern Greek phonology; but the resulting inconvenience is not argument enough to justify two identical reference glyphs.

If the two letters are conflated, the resulting codepoint should take on the properties of the most prevalent letter, which is clearly the Pamphylian digamma. For instance, the default sorting location of the letter should be with normal digamma; if Arcadian instances need to

be sorted with, say, san, this would be a matter of introducing an Arcadian-specific sorting order, and possibly having words sort in two different locations depending on language markup. (The situation would be akin to a single index containing Swedish and German words with <ö>, the German instances sorting after <o>, and the Swedish after <z>.)

The usage to date of tsan and Pamphylian digamma glyphs has had cap-height for lowercase glyphs, and no capital/lowercase distinction. (The transliterations of the letters with sigma-macron-below and normal digamma, on the other hand, use the normal lowercase letters, and indicate that casing is underlyingly there.) Again, in anticipation of future likely requests for such a casing distinction to be made, I recommend that the reference glyphs be at x-height and cap-height for the lowercase and capital codepoints.

## Examples

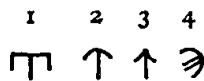


FIG. 25

Example 1. History of the shapes of sampi (Jeffery 1990:38). Fig. 1 is the letter sampi/disigma; figs. 2–4 are the numeral sign sampi, with which the letter has been identified.

53. [c. 9?] τεπαραφοντα μνεαι : το πρω[τον] εστα-  
θ[ησ]αν :: εκ ττων δω[ρ]ων χρυσο :: εκ πολεως  
ηνειχ[τθ]ησαν :: αργυραι πεντε :: και ειφοσ(ι)  
μν[ε]αι : ειν τωι πρωτωι χρυσωι ηνειχ[τθ]ησαν ::  
εκ ττο δορατος εξς μνεαι | εσταθ[ησ]αν :: δεκα δε αι  
ενθενδε εσταθησαν μνεαι | χρυσο : αργυρο τρες  
κα[ι] τριηροντα μν[ε]αι ενθαδ' εσταθησαν :: αργυραι

Example 2. Inscription from the Artemisium in Ephesus (SGDI iv.870ff, DGE 707; Jeffery 1990:414). Archaic sampi appears in first word.

Τάδε ὁ σύλλο[γο]ς ἐβουλεύσατ[ο]  
ὁ Ἄλικαρνα[τ]ῶν καὶ Σαλμακι-  
τέων καὶ Λυγ[δα]μῖς ἐν τῇ ἱερῇ  
ἀγορῇ, μνη[σ] Ἑρμαιῶνος πέμ-  
5 πτη ἴσταμέ[νον] ἐπὶ Λέοντος πρυ-  
ταν[έον]το[ς] τοῦ Ὁα[τ]ῆ[τος] κα-  
[ι] Σα[ρυσώ]λλ[ου] τοῦ Θεκυλιώνε[ω].  
.⊙|. . . . μ[ν]ῆμονας μὴ παρ[α]-  
διδό[σθαι] μὴ[τε] γῆν μὴτε οἰκ[ι]-  
10 [α] τοῖς μνη[σ] ἐπὶ Ἀπολλω-

Example 3. Lygdamis inscription (Roberts 1887:174).

τάδε ὁ σύλλο[γ]ος ἐβδλεύσατο | ὁ ἈλικαρνᾶΤέ[ω]ν καὶ Σαλμακι-  
τέων καὶ Λύγδαμις ἐν τῇ ἱερῇ[ι] | ἀγορῇ μῆνος Ἑρμαιῶνος πέμ-  
πτῃ ἰσταμένῳ ἐπὶ Λέοντος πρυταν[εύον]τος τῷ ὉαῤᾶΤίος κα[ι] [ι]  
Σα[ρ]υ[τ]ᾶλλῷ τῷ Θεικίλῳ νε[ωπ]οί[δ]ο· τ[ὸ]ς μνήμονας μὴ παρ[α]διδό-  
[ναι] μῆτε γῆν μῆτε οἰκ[ί]α<sup>10</sup> τοῖς μνήμοσιν ἐπὶ Ἀπολλωνίδεω τῷ  
Λυγδάμιος μνημονε[ύον]τος καὶ Παναμύω τῷ Κασβῶλλιος καὶ Σαλ-  
μακιτέων μνημονε[ύον]των Μεγαβάτεω τῷ Ἀ<sup>15</sup>φυσίος καὶ Φορμίω-  
νος τῷ Π[α]νυάΤιος. ἦν δέ τις θέλη δικάζε[σθαι] περὶ γῆς ἢ οἰ-  
κίων, ἐπικαλ[ε]ῖτω ἐν ὀκτωκαίδεκα μηνῶν, ἀπ' ὅτ[ε]ο | ὁ ἄδος ἐγέ-

Example 4. Lygdamis inscription (Schwyzer 1923:360). Sampi rendered as mixed-case capital tau.

Τάδε ὁ σύλλο[γ]ος ἐβδλεύσατο | ὁ ἈλικαρνᾶΤέ[ω]ν καὶ Σαλμακιτέων καὶ Λύγδαμις ἐν τῇ ἱερῇ[ι] | ἀγορῇ μῆνος Ἑρμαιῶνος πέμπτῃ ἰσταμένῳ ἐπὶ Λέοντος πρυταν[εύον]τος τῷ ὉαῤᾶΤίος κα[ι] [ι] Σα[ρ]υ[τ]ᾶλλῷ τῷ Θεικίλῳ νε[ωπ]οί[δ]ο. Τ[ὸ]ς μνήμονας μὴ παραδιδό[ναι]

Example 5. Lygdamis inscription (Solmsen & Fraenkel 1930:107).

Τάδε ὁ σύλλο[γ]ος ἐβδλεύσατο | ὁ ἈλικαρνᾶΤέ[ω]ν καὶ Σαλμα-  
κιτέων καὶ Λύγδαμις ἐν τῇ ἱερῇ[ι] | ἀγορῇ, μῆνος Ἑρμαιῶνος  
5 πέμπτῃ ἰσταμένῳ, ἐπὶ Λέοντος πρυταν[εύον]τος τῷ ὉαῤᾶΤίος  
κα[ι] [ι] Σα[ρ]υ[τ]ᾶλλῷ τῷ Θεικίλῳ νε[ωπ]οί[δ]ο. τ[ὸ]ς μνήμονας μὴ  
10 παραδιδό[ναι] μῆτε γῆν μῆτε οἰκ[ί]α τοῖς μνήμοσιν ἐπὶ Ἀπολ-  
λωνίδεω τῷ Λυγδάμιος μνημονε[ύον]τος καὶ Παναμύω τῷ Κασβῶλ-  
15 λιος καὶ Σαλμακιτέων μνημονε[ύον]των Μεγαβάτεω τῷ Ἀφυσίος  
καὶ Φορμίωνος τῷ Π[α]νυάΤιος. ἦν δέ τις θέλη δικάζε[σθαι] περὶ  
γῆς ἢ οἰκίων, ἐπικαλ[ε]ῖτω ἐν ὀκτωκαίδεκα μηνῶν ἀπ' ὅτ[ε]ο | ὁ  
20 ἄδος ἐγένετο· νόμῳ δὲ κατὰπ[ε]ρ νῦν ὀρκῶν σ(α)ι τὸς δικαστάς·  
ὅτ[ε]ο | ἂν οἱ μνήμονες εἰδέωσιν, τοῦτο | καρτερὸν εἶναι. ἦν δέ τις  
ὑστερον | ἐπικαλῆι τούτῳ τῷ χρόνῳ τῶν | ὀκτωκαίδεκα μηνῶν, ὄρκον  
25 εἶναι τ[ὸ]ν νεμομένῳ τῆγ γῆν ἢ τὰ οἰκ[ί]α, ὄρκῳ δὲ τὸς δικαστάς  
ἡμί[ε]κτον δεξαμένως· τὸν δὲ ὄρκον εἶ[ν]αι παρεόντος τῷ ἐνεστη-  
30 κότος· κ[α]ρτερὸς δ' εἶναι γῆς καὶ οἰκίων οἵτινες || τότε εἶχον ὅτε  
Ἀπολλωνίδης καὶ Παναμύης ἐμνημόνευον, εἰ μὴ ὑστεροῖν ἀπεπέ-  
ρασαν. τὸν νόμον τοῦτον | ἦν τις θέλη συγχέαι ἢ προθῆτα[ι]  
35 ψῆφον ὥστε μὴ εἶναι τὸν νόμον τοῦτον, τὰ ἐόντα αὐτῷ πεπρή-  
σθαι | καὶ τῶπλόλωνος εἶναι ἱερά καὶ αὐτὸν φεύγειν αἰεὶ· ἦν δὲ μὴ  
ἦι αὐτῷ ἄξια δέκα στατήρων, αὐτὸν [π]επρῆσθαι ἐπ' ἐξαγωγῆ  
40 καὶ μη[δ]αμὰ κάθοδον εἶναι ἐς Ἀλικαρνησόν. Ἀλικαρνασέων  
δὲ τῶσ σ[υ]μπάντων τοῦται ἐλεύθερον εἶναι, ὃς ἂν ταῦτα μὴ παρα-  
45 βαίνηι, κατόπερ τὰ ὄρκια ἔταμον καὶ ὡς γέγραπται ἐν τῷ Ἀπολ-  
λωνίδεω, ἐπικαλῆν.

Example 6. Lygdamis inscription (Buck 1955:185). Sampi rendered as small-caps tau.

τάδε ὁ σύλλο[γ]ος ἐβoλεύσατο  
 ὁ Ἁλικαρνα[Τέ(ω)]ν καὶ Σαλμακι-  
 τέων καὶ Λυγδαμῖς ἐν τῇ ἱερῇ[ι]  
 ἀγορῇι, μῆνος Ἑρμαιῶνος πέμ-  
 5 πτη ἰσταμένο, ἐπὶ Λέοντος πρυ-  
 ταν[εύον]τος τῶ Ὁα[Τα]Τίος κα-  
 [ι] Σα[ρῶ]Τ[ω]λλο τῶ Θεκύλλω νε-  
 [ωπ]οί[ο], πρ[ὸς] μνήμονας· μὴ παρ[α]-  
 δίδο[σθαι] μῆτε γῆν μῆτε οἶκ[ι].  
 10 [α] τοῖς μνήμοσιν ἐπὶ Ἀπολλω-  
 νίδεω τῶ Λυγδάμιος μνημονε-

Example 7. Lygdamis inscription (Meiggs & Lewis 1969:69).

4. The four Phoenician signs for sibilants were taken over, but with varying distribution or values. Both the  $\varsigma$  or  $\xi$  (sigma) and  $\mu$  (san) were used for  $\sigma$ , but, with few exceptions (e.g., once  $\mu$  beside  $\xi$  in the Locrian no. 59), only one or the other at the same place and time. A sign  $\text{Ⓜ}$ , a simplified form of  $\mu$  is used in an Arcadian inscription for a sibilant of special origin, as  $\text{Ⓜις} = \tau\acute{\iota}\varsigma$ , Cypr.  $\sigma\iota\varsigma$  (no. 17; see 68.3).  $\text{Ⓜ}$ , occurring also in the Carian alphabet and perhaps ultimately another modification of the san, is used for usual  $\sigma\sigma = \text{Att. } \tau\tau$  at Halicarnassus (Ἁλικαρνα[Τέ(ω)]ν beside Ἁλικαρνασσέων), Teos (θαλα[Τη]ς beside θάλασσαν), Ephesus (τέ[Τα]ρες, etc.) and elsewhere (see p. 348). This is the source of the numeral sign for 900, namely  $\text{Ϡ}$ , known by the late name "sampi" (σάν πῖ 'like πῖ', from its form).

Example 8. Discussion of sampi and tsan as glyphs in Buck (1955:18). Tsan rendered as mixed-case capital tau.

#### (Ϡ) ττ/σσ

It has already been mentioned (pp. 10ff.) that Attic in a number of words shows ττ where most other dialects have σσ—e.g. μέλιττα, ἐλάττων, τέτταρες. In these forms the double consonants in question derive from original  $ty$ ,  $ky$  and  $tw$  respectively, which might have been expected in the first instance to give rise to some kind of affricate stage such as  $[tʃ]$  or  $[ts]$  (as in *catch* or *cats*). This stage is probably represented by some early Asiatic Ionic inscriptions which show in such cases a special letter  $\text{Ⓜ}$  (e.g. 6–5 c. B.C. ελα[Τον]οσ, τέ[Τα]ραροντα), which may be derived from the Semitic 'tsade' (and perhaps

Example 9. Discussion of sampi in Allen (1974:57).

Θάσους  
Στρατοκλίτους

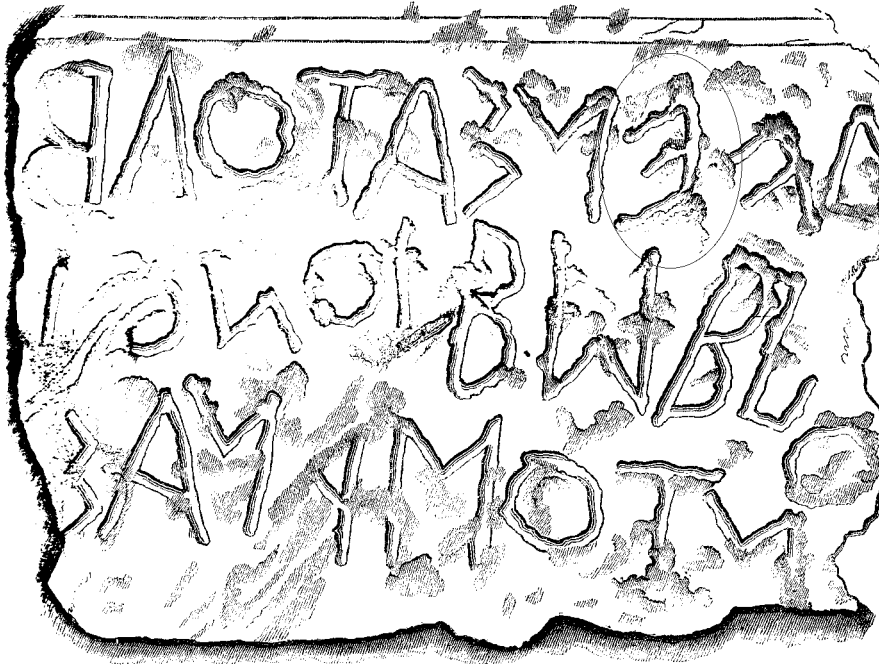
Να  
ΜαγασίϜϜαυ

Épitaphe de Thasous, fils de Stratoklis, et de Na, fille de Magasisvas.

Example 10. Instance of Pamphylian sampi in print, here assumed to have the phonetic value [s] (Brixhe 1976:234).

3. a) Das korinthische Alphabet hat zwei Zeichen für den *e*-Laut: Β Β (oder auch Ξ) ist = *ε* und urgriech. η; Ε bezeichnet den echten Diphthongen *ει* und den aus Ersatzdehnung oder Kontraktion entstandenen *ē*-Laut (att. *ει*), z. B. ἀνβθβκε = ἀνέθηκε, μβθέν (IG 1607, Kleonae), aber ΠοτΕοάνι = Ποσειδώνι, ἈργΕος = Ἀργεῖος mit echtem *ει*, Εμί = εἰμί mit Dehnungsvokal, ΚΛΕτόλας mit Kontraktionsvokal (IG IV 415). Der Göttername 'Poseidon' ist auf den Aufschriften der Tonscherben IG IV 210—345 nach Bechtel II 214 31mal mit Ε, 5mal mit Β, aber nur 7mal mit Βξ und 1mal mit Εξ geschrieben. Auch beim Dehnungs-*ē* sind Ausnahmen selten, z. B. [έσ]αγγβσλας IG IV 212. Jedenfalls waren der echte Diphthong *ει* und das Dehnungs-*ē* in einen geschlossenen Vokal *ē̄* zusammengefallen; auf die nicht-diphthongische Aussprache des Ε (*ει*) weist auch die Schreibung ἈθαναΕα = Ἀθαναία neben Αβθδν = Αἴθων. Auf Korkyra wird zwar das Zeichen Β für *ε* und η verwendet (ἀνβθβκε = ἀνέθηκε), aber das Dehnungs-*ē* und der Diphthong stets mit Β + ι geschrieben (Βξμί = εἰμί, ἐποίει; in Kleonae Είμεν).<sup>2</sup> Ε für *ει* ist auch für die Kolonien Poteidaia (ΠοτΕδα[ιάτας] Syll.<sup>3</sup> 152) und Leukas (ΦιλοκλΕδας Coll. 3179) bezeugt. Nach Annahme des Einheitsalphabets herrscht überall die Schreibung *ει* (εἰμεν, μετέχειν, ποιείν); die Schreibung ἐνεκέχηρον neben ἐκεχειρίαν (M) und Εὐχηρίδα (IG IV 460) ist daher nicht dialektrecht.

Example 11. Discussion of Corinthian letterforms in Thumb (1932:128).



ΔΦΕΥία τόδε [σάμα], τὸν ὄλεσε πόντος ἀναι[δής]

Example 12. Dweinius epitaph (Roberts 1887:119). Consistent with his practice elsewhere, the transcription Roberts provides is fully normalised, and so employs the epsilon-iota digraph.

υ.) ΔΦΕΥία τόδε [σᾶμα]. τὸν ὄλεσε πόντος ἀναι[δές].

Example 13. Dweinius epitaph (Schwyzer 1923:61). Ei rendered as capital epsilon.

ΔΦΕΥία τόδε [σᾶμα], τὸν ὄλεσε πόντος ἀναι[δές].

Example 14. Dweinius epitaph (Buck 1955:294). Ei rendered as capital epsilon.

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ΔΦΕΥία τόδε [σᾶμα], τὸν ὄλεσε πόντος ἀναι[δές].

Example 15. Dweinius epitaph (Peek 1955:21). Peek, a literary rather than linguistic collection, does not bother to differentiate ei from epsilon at all.

ΔΦΕΥία τόδε [σᾶμα], τὸν ὄλεσε πόντος ἀναι[δές].

Example 16. Dweinius epitaph (Hansen 1983:72). Hansen uses a ligature tie to mark the ει digraph as a single letter—notwithstanding that Hansen's, like Peek's, is a literary rather than linguistic collection.

6. ΔΦΕΥία τόδε [σᾶμα] τὸν ὄλεσε πόντος ἀναι[δές].

Example 17. Dweinius epitaph (Jeffery 1990:404). Unlike her usual punctiliousness as a historian of the Greek script, Jeffery is quite happy to transcribe ει as a digraph.



A Βράμις | Πυθίας | Πυθόδορος | Φρῦνος <sup>5</sup> Ἀρξικλέης | Ἀρέσανδρος | Ἀριστόμα(χ)ο[ς] | Σάμιχος | Πολύδαλος <sup>10</sup> Αἰβέρος | Δράπυς | Κόκκυφος.

B Ἀριστίδων | Πολυκλέης | Πετραδίδων | Μέλανθος <sup>5</sup> Πολυτιμίδας | Στιόνδας | Πυθόδορος | Δάμαλκος | Τεθιμένες Πυθιονίκα <sup>10</sup> Πολύνικος | Ὀλυμπιο[νίκα] | Δαμόφιλος | Παραιβάτας.

C Λίπαρος | Καλλιφάδων | Σάμιχος | Ἀμινομένες <sup>5</sup> Ἐμμοнос | Ἀσόπιος | Σάδων | Σανκράτες | Γύλις <sup>10</sup> Καφισοθρά[σ]ῆς | Ηιππόκριτος | . . . . . όνδας.

D Ἀντανορίδας | Ἀνφικράτες | Φοινίας | Εὐχορίδας <sup>5</sup> Πολύστροτος | Φέργων | Κρινόλαος | Φοίκων | Φίλτερος <sup>10</sup> Φάδων | Φαλίδιος | Ἀρμόδιος.

E Κᾶπος | Ἐπικράτες | Κυδίας | Σαντέλες <sup>5</sup> Καλλιροΐδας | Διόδορος | Φιλόλαος | Καλλίστροτος | Νεομένιος <sup>10</sup> Σμίνθος | Εὐμάριχος | Καφισίνος.

F Κρεοντίδας | Φρυνίσκος | Εὐφάτας | Ἀρχίλαος <sup>5</sup> Λέσσχων | Ἐπικράτες | Προκλέης | Ἐχέσσθένες | Ημερατος <sup>10</sup> Σφρίγδων | Διονύσιος | Εὐχοσμίδας.

G Δαμόφιλος | Γλαῦκος | Δίκων | Π(ο)όθοος <sup>5</sup> Φαναξίλαος | Ηέριχος | Δρέκων | Κέλαινος | Βράδων <sup>10</sup> Ηερμαίας.

H (F)ίσαρχος | Ἀντιγένης | Φόσδων | Λεξικράτες <sup>5</sup> Φαίκος | Ἀμφίας | Ἀντιγενέδας | Ἀμφιμέδες | Ἀριστοκράτες <sup>10</sup> Πυθόδορος | Πέρδιξ | Βαβύριος.

Littera *é* (in titt.  $\text{\textcircled{f}}$ ) medius quidam inter *e* et *i* sonus significatur; cf. IG p. 346sq.; BeD 1, 219. 224. A 5 Βράμις; cf. Solmsen RhM 53, 143/51. 12 cf. Κοκκουβία[ς] IG VII 4745 et BeD 1, 262. B 9 Τέ.: cf. Sadée 66. 9. 10 Πυθιονίκα, Ὀλυμπιονίκα; cf. ad nr. 143. — Ad Κλέγιντες IG VII 1888 i 5 cf. Sadée 89 adn. 1.

Example 18. Thespian inscriptions (Schwyzer 1923:241). Boeotian *ei* is transliterated as <έ>, with the transliteration noted in the apparatus; the Roman acute forces the suppression of the Greek acute that would normally appear on Ἀρξικλ᾽ῆς.

5. In Boeotian  $\text{\textcircled{f}}$ , a compromise between E and I, is sometimes used for the close *ε*, later *ι* (9.4). At Corinth with Corcyra, Sicyon, Cleonae, and Megara there were two characters for the *e*-sounds, namely, Corinth.  $\text{\textcircled{ε}}$ , Sicyon,  $\text{\textcircled{ζ}}$  = *ε* or *η*, but  $\text{\textcircled{ε}}$  or (Corcyr.)  $\text{\textcircled{εζ}}$  = original *ε* or secondary  $\bar{\epsilon}$  (but  $\text{\textcircled{ε}}$  in an archaic Meg. inscription = *ε* only, not *η*, and at Cleonae = *η* only. Cf. nos. 91-97.

Example 19. Discussion of Boeotian and Corinthian *Ei* (Buck 1955:18). The Corinthian glyphs are erroneously given as <B> for both /e/, /ε:/ and /e:/.

## ει

**28.** Sooner or later ει became everywhere a monophthong, a close ē (ē̄), though the spelling was retained and in certain dialects extended to the secondary ē (25). In Corinthian this had taken place at the time of the earliest inscriptions, and, while at Corcyra the spelling was εϛ (25d), at Corinth the sound was nearly always denoted by a single sign, though generally differentiated from ε or η, e.g., Δφενία = Δεινίου, ΠοτΕδάν (rarely with Εξ or εϛ), but ἀνεθεκε = ἀνέθηκε. From Megara there are a few examples of E = ει, as names in -κλΕδας.

Example 20. Use of capital epsilon (in distinct font) to represent Corinthian Ei (Buck 1955:31).

4. Boeotian. The spelling is usually ι, but sometimes ε, ει, or Ε (see 4.5), as θιός, θειός = θεός, ἀνέθιαν, ἀνέθειαν, beside ἀνέθεαν, ΠολυκλΕς = Πολυκλέης, ἰόντος = ἑόντος, ῥιοντος = ῥέοντος.

**29.** ι from ει in Boeotian. The change in pronunciation which took place everywhere at a late period (28a) occurred very early in Boeotian, and here showed itself in the spelling, which in the fifth century varies between ει, Ε (4.5), and ι, but later is regularly ι, e.g., Τεισιμένες = Τεισιμένης, ἐπί = ἐπέι, ἐπιδεί = ἐπειδή (cf. also 16), ἔχι = ἔχει, κιμένας = κειμένας. For Arg. hī = εἶ, see 25c.

Example 21. Use of Boeotian Ei in linguistic discussion (Buck 1955:22, 31).

(A) § 1 [φδ]φλέασι οἶδε ἰν Ἀλέαν· | [Σι]σουρος, | [Σ]σ[κλ]ες, | [Φ]μλομελίδας, <sup>9</sup>Θεό[κ]οσσομος, | Ἀριστόμαχος, | Δρομέας, | Στίλπας, | Φάνις, <sup>10</sup>Ἀκραντος, | Ἀντιλαΐδας, | Βῶθις, | Ηέσκλαρος, | Θέμανδρος. | § 2 ὁδῆοι ἂν χρῆστέριον κα(κ)κρίνῃ <sup>15</sup>ἢ γνῶσιδικα κριθῆε τῶν χρῆμάτων, | πῆ(τ) τοῖς φοικιάται(ς) τᾶς θεῶ ἔναι, | κα(φ) φοικίας δάσασσθαι τᾶς ἀνδρ᾽ ἐά(σ)σας. | § 3 εἰ τοῖς φδφλεκόσι ἐπὶ τοῖ(δ)δ' ἐδικάσαμεν | ἄ τε θεός κας οἱ δικασταί, ἀπυθεδομίν[ος] <sup>20</sup>τῶν χρῆμάτων τὸ λάχος, ἀπεχομίνος | κα(τ) τῶρρέντερον γένος ἔναι | ἅματα πάντα ἀπὸ τοῖ ἱεροῖ, ἴλαον ἔναι | εἰ δ' ἄλλὰ [ζ]ν' ἔατο κα(τ) τῶν[υ], ἰνμενφῆς ἔναι. | (B) § 4 εὐχῶλὰ [δ'] ἄδε εἰ[σ]ετοι τοῖ ἀ[-]. <sup>25</sup>εἰ [ς] ἰν τοῖεροι τῶν τότε [ἀπυθανόντων] | φονῆς ἔστι, εἰ[ς] αὐτὸς εἰ[ς]ε [τῶν ἐσγόνων] | [ς] κα(τ) τῶρρέντερον, εἰ[ς]ε τ[ῶν ἀνδρῶν] | εἰ[ς]ε τᾶς φαρθῆνδ, ἰνμενφῆς ἔναι κα(τ) | τὸ χρῆστέριον· εἰ δὲ μῆ, ἴλα[ον] ἔναι. <sup>30</sup>εἰ (Θ)έμανδρος φονῆς ἔστι εἰ[ς]ε | τῶν ἀνδρῶν εἰ[ς]ε τᾶς φαρθῆν[δ] | τῶν τότε ἀπυθανόντων ἰν τοῖ[εροι] | κας μῆ προσσθαγενῆς τὸ φέρ[ρον] | τὸ τότε ἑόν, τῶς ἰν μόνφον θε[ναι]. <sup>35</sup>εἰ δὲ προσσ(θ)αγενῆς τὸ φέρ[ρον] | κας μῆ φονῆς, ἴλαον ἔναι.

Example 22. Mantinea inscription (Schwyzer 1923:319). Tsan transcribed as <ς>.

[Fō]φλέασι οἶδε ἰν Ἀλέαν· | [Σί]συρνος, | [Σ]ῶ[κλ]ῆς, |  
 5 [Φ]ιλομελίδας, || Θεό[κ]οσσμος, | Ἀριστόμαχος, | Δρο-  
 10 μέας, | Στίλπας, | Φάνις, || Ἄκραντος, | Ἀντιλαΐδας, | Βῆ-  
 θις, | Ηέσκλαρος, | Θέμανδρος. |  
 15 ὅσσοι ἄν χρῆστέριον κακρίνῃ, || ἔ γνῶσιδῖκα κριθέῃ τῶν  
 χρεμάτων, | πὲ τοῖς Φοικιάται(ς) τὰς θεῶ ἔναι, | κα Φοι-  
 κίας δάσασσθαι τὰς ἄνῶδ' ἑάσας. | εἰ τοῖς Fῶφλεῶκοσι ἐπὶ  
 τοῖδ' ἐδικάσαμεν | ἅ τε θεὸς κὰς οἱ δικασσταί, ἀπυῶδο-  
 20 μιν[ος] || τῶν χρεμάτων τὸ λάχος, ἀπεχομῖνος | κα τῶρ-  
 ρέντερον γένος ἔναι | ἅματα πάντα ἀπὺ τοῖ ἱεροῖ, ἴλαον  
 ἔναι. | εἰ δ' ἄλλα σ[υ]ῖ ἔατοι κα τῶν[υ], ἰμενφῆς ἔναι. |  
 25 εὐχῶλὰ [δ'] ἄδε ἔ[σ]ετοι τοῖ ἀ[λάξαντι?]. || εἴ[σι]ς ἰν τοῖε-  
 ροῖ τῶν τότε [ἀπυθανόντων] | φονῆς ἔστι, εἴ[σ] αὐτὸς εἴ[σ]

5 Ubi (Ι) occurit, scripsi σ. 12 An adi. (= exsors vel sex  
 οὐτασ habētis?) ἡε κλάου (tendens a [Fō]φλέασι) legit Com-

Example 23. Mantinea inscription (Solmsen & Fraenkel 1930:8). Tsan transcribed as σ (with the choice of transcription noted in the apparatus).

10 [Fō]φλέασι οἶδε ἰν Ἀλέαν· | [ll. 2-9 proper names] || Ἄδραν-  
 τος, | Ἀντιλαΐδας, | Βῆθις, | Ηέσκλαρος, | Θέμανδρος. { ὅσσοι ἄν  
 15 χρῆστέριον κακρίνῃ || ἔ γνῶσιῖκα κακριθέῃ τῶν χρεμάτων, | πὲ τοῖς  
 Φοικιάται(ς) τὰς θεῶ ἔναι, κα Φοικίας δάσασσθαι τὰς ἄν ὀδ' ἑάσας. |  
 20 εἰ τοῖς Fῶφλεῶκοσι ἐπὶ τοῖδ' ἐδικάσαμε[ν], | ἅ τε θεὸς κὰς οἱ δι-  
 κασσταί, ἀπυῶδομῖν[ος] || τῶν χρεμάτων τὸ λάχος, ἀπεχομῖνος |  
 κα τῶρρέντερον γένος ἔναι | ἅματα πάντα ἀπὺ τοῖ ἱεροῖ, ἴλαον  
 ἔναι. | εἰ δ' ἄλλα σ[υ]ῖ ἔατοι κα τῶν[υ], ἰμενφῆς ἔναι. | εὐχῶλὰ  
 25 [δ'] ἄδε ἔ[σ]ετοι τοῖ ἀ[ - - ]. || εἴ[σι]ς ἰν το(ῖ) ἱεροῖ τῶν τότε[ε  
 ἀπυθανόντων] | φονῆς ἔστι, εἴ[σ] αὐτὸς εἴ[σ] [τῶν ἐσγόνων] | σ[υ]ῖ  
 κα τῶρρέντερον, εἴ[σ]ε τ[ῶν ἀνδρῶν] εἴ[σ]ε τὰς φαρθένῶ, ἰμενφ[ῆς  
 30 ἔναι κα] | τὸ χρῆστέριον· εἰ δὲ με, ἴλαο[ν ἔναι]; || εἰ (Θ)έμανδρος  
 φονῆς ἔστ[ε] εἴ[σ]ε | τῶν ἀνδρῶν εἴ[σ]ε τὰς φαρθέν[ῶ] | τῶν τότε  
 ἀπυθανόντων ἰν [τοῖ ἱεροῖ] | κὰς με προσσθαγενῆς τῶ Fέρ[γῶ] |  
 35 τῶ τότε ἔο[ν]τος, ἰμνονφον θε[οῖ] ἔναι. || εἰ δὲ προσσ(θ)αγενῆς  
 τῶ Fέργ[ῶ], | κὰς με φονῆς, ἴλαον ἔναι.

Example 24. Mantinea inscription (Buck 1955:198). Tsan transcribed as σ.

The voiceless aspirate /t<sup>s</sup>/ existed as a phoneme in some dialects. Our evidence comes mainly from certain Arcadian and Central Cretan spellings. /t<sup>s</sup>/ could be spelled in Arcadian with a special letter (Ι) as in (Ι)λς /t<sup>s</sup>is/ 'who' (= τίς), or (Ι)φοι /ot<sup>s</sup>eoī/ 'to whomever' (cf. Homeric ὅτεψ), or with a diagraph TZ (as in τζετρακατα /t<sup>s</sup>etra-/ 'fourhundred'), ZT (as in ζτεραιον, probably cognate with ζευρά 'upper garment'), or with Z as in οζος /ot<sup>s</sup>is/ 'whoever' (cf. Homeric ὅτις). On the interpretation of Cretan οζου see p.117, n.

Example 25. Tsan appears untransliterated in context of linguistic discussion (Bubeník 1983:22).

b. Pamphylian has *F* in some words (*Ἰέτια*, etc.), but in others a sign **Ϟ** (e.g. **Ϟ**οικυπολις = \*οἰκοπολις), which is used also for β (e.g., ἐρυξ**Ϟ**οται), and for υ in the αυ, ευ diphthongs (e.g., ἀ**Ϟ**παῖσι) and the glide (e.g., Σελύ**Ϟ**ιως). A similar sign occurs in the Cretan towns of Eleutherna and Vaxus with the value of *F*, and at Selinus and Melos for β. It presumably represented a fricative pronunciation like that of English *v* and so is best transcribed as *v* (*w* in German publications). Also once φίκατι = *F*ίκατι.

Example 26. Pamphylian digamma cited as glyph (Buck 1955:47).

b. *F* is often used to indicate the natural glide before or after υ. So before or after the υ of diphthongs, as already noted (32, 36), and Chalcid. δύ**Ϟ**ο, Eretr., Aetol. δύ**Ϟ**ε, Sicyon. Σε**Ϟ**υ**Ϟ**όνιος, Pamphyl. Σελύ**Ϟ**νιος.

Example 27. Pamphylian digamma cited in phonetic discussion, transliterated as <v> (Buck 1955:49).

*Nominatif*

-εύς, cf. Κεσκέύς (n<sup>o</sup> 87, 115), Ορομνεύς (n<sup>o</sup> 96)<sup>9</sup>, Ορομνεύς (n<sup>o</sup> 90, 123); ou -ε**Ϟ**ς (avec **Ϟ**) notant le second élément de la diphtongue)<sup>10</sup>, cf. [Κεσ]κε**Ϟ**ς (n<sup>o</sup> 57). Contrairement à

Example 28. Pamphylian digamma used in discussion of Pamphylian nominal morphology (Brixhe 1976:111).

Μιακλι̃[ς]  
 Ἰάρνιτους  
 -----  
 Μεακλι̃ς  
 ἸΑπελαυρύ**Ϟ**[ις]  
 Κορβαλίνα  
 Ἰάρνιτους[ς]

Építaphe de Miaklis, fils de Varnis, de Meaklis, fils d'Apélauru**Ϟ**is, et de Korvalina, fille de Varnis.

Example 29. Pamphylian inscription (Brixhe 1976:232). Note that in his translation of the proper names, Brixhe uses <w> for the Pamphylian digamma, and <v> for the normal digamma, consistent with his theory of how they had been pronounced.

[ - - - ] *Φαίνιχος* (41) : 47, 100.  
*Φαναΐου* (169) : 52.  
*Φαναξάδρου* (73 ; 96) : 47, 64, 140.  
*Φαναξιμοῦτος* (140) : 47, 140.  
*Φαναξίω* (4), *Φαναξιόνος* (48 ; 109), *Φαναξιώνος*  
 (4), *Φαναξιώνος* (108), *Φαναξιωνος* (32),  
*Φαναξιόνος* (76 ; 165) : 47, 108, 140.  
*Φάρνεις* (164), *Φάρνις* (124 ; 177 l ?), *Φάρνιτους*  
 (63), *Φάρνιτυς* (169) : 29, 68.  
*Φαρνίω* (132) : 108.  
*Φαρνόπα* (60 ; 62 ; 84 ; 94) : 92, 98, 100.  
*Φέχεις* (67), *Φέχειτους* (50), *Φέχιτους* (71) : 47,  
 104, 141.  
*Φεχιᾶτου[ς]* (139), *Φεχιᾶτυς* (93) : 14, 47, 141.  
*Φεχιδάμυ* (54) : 19, 88, 141.  
*Φουκω* (42).

Example 30. Index of proper names (Brixhe 1976:304). Pamphylian and normal digamma are collated as the same letter.

## Properties

### UCD Entry

```
aaaa;GREEK SMALL LETTER ARCHAIC SAMPI;Ll;0;L;;;;;N;;;bbbb;;
bbbb;GREEK CAPITAL LETTER ARCHAIC SAMPI;Lu;0;L;;;;;N;;;;;aaaa;
cccc;GREEK SMALL LETTER EI;Ll;0;L;;;;;N;;;dddd;;
dddd;GREEK CAPITAL LETTER EI;Lu;0;L;;;;;N;;;;;cccc;
eeee;GREEK          SMALL          LETTER          TSAN          OR          PAMPHYLIAN
DIGAMMA;Ll;0;L;;;;;N;;;ffff;;
ffff;GREEK          CAPITAL          LETTER          TSAN          OR          PAMPHYLIAN
DIGAMMA;Lu;0;L;;;;;N;;;;;eeee;
```

### DUCET Entry

```
03E1  ; [.110A.0020.0002.03E1] # GREEK SMALL LETTER SAMPI
03E0   ; [.110A.0020.0008.03E0] # GREEK LETTER SAMPI # same
distinction made between Koppa and Archaic Koppa
aaaa  ; [.110B.0020.0002.03E1] # GREEK SMALL LETTER ARCHAIC SAMPI
bbbb  ; [.110B.0020.0008.03E0] # GREEK CAPITAL LETTER ARCHAIC SAMPI
# same distinction made between Koppa and Archaic Koppa
03F8   ; [.110C.0020.0002.03F8] # GREEK SMALL LETTER SHO
03F7   ; [.110C.0020.0008.03F7] # GREEK CAPITAL LETTER SHO

cccc  ; [.10ED.0020.0002.03B5][.10F3.0020.0002.03B9] # GREEK SMALL
```

**LETTER EI**

**dddd** ; [.10ED.0020.0008.0395][.10F3.0020.0008.0399] # GREEK CAPITAL LETTER EI # that is, by default collate EI (both Corinthian and Boeotian) as underlyingly epsilon-iota

03DD ; [.10EE.0020.0002.03DD] # GREEK SMALL LETTER DIGAMMA

**eeee** ; [.10EE.0020.0002.eeee] # GREEK SMALL LETTER TSAN OR PAMPHYLIAN DIGAMMA

03DC ; [.10EE.0020.0008.03DC] # GREEK LETTER DIGAMMA

**ffff** ; [.10EE.0020.0008.ffff] # GREEK LETTER TSAN OR PAMPHYLIAN DIGAMMA

03DB ; [.10EF.0020.0002.03DB] # GREEK SMALL LETTER STIGMA

03DA ; [.10EF.0020.0008.03DA] # GREEK LETTER STIGMA

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