Early Greek /y/ and Grassmann's Law

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In *Glotta* 46 (1968) 229–237 I attempted to account for the double development of Proto-Indo-European */y/ in Greek. In the course of my argument I stated, or implied, the following propositions:

1) The double development must be explained by internal linguistic considerations.

2) $*/y/- > \zeta-/\underline{\quad} \begin{bmatrix} Vh \\ u \end{bmatrix}$

3) The action of Grassmann's Law explains the passage of */y/- to ζ- rather than to the expected /h/.

None of these propositions has found universal agreement. Before passing to a discussion of them it might be well to provide orientation by listing the correspondences as they are given by M. Lejeune in his *Phonétique historique du mycénien et du grec ancien* (Paris, 1972) 165–166.[1])

A	1	ἵημι	< *yi-yē-	'send'
	2	ἥβη	< *yēgʷā	'youth'
	3	ἧπαρ	< *yēkʷr̥	'liver'
	4	εἰνατέρες	< *yenəter-	'sisters-in-law'
	5	ὅς	< *yos	'who' (relative)
	6	ὥρα	< *yōrā	'season'
	7	ὑσμίνη	< *yudh-s	'battle'
B	1	ζέω	< *yesō	'boil'
	2	ζειαί	< *yewi̯a	'spelt'
	3	ζωστός	< *yōs-	'girded'
	4	ζυγόν	< *yug-	'yoke'
	5	ζύμη	< *yūs-	'leaven'

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[1]) ἅγιος < *yag- 'holy' could be added in category A. From B I have omitted ὑμεῖς, though included by Lejeune, because I feel with Schwyzer *Griechische Grammatik* I.303) and Frisk (*Griechisches Etymologisches Wörterbuch* II.963–964) that the PIE form was *usme. Cf. also Lejeune *Phonétique* 166 n.3 for the various possible explanations of this form.

1

2   W.F. Wyatt

Recently two scholars have implicitly denied my first point, assuming instead that the words displaying ζ- are borrowed from another linguistic system. A. Nocentini (*AGI* 57 [1972] 24–43) has argued that, since ζ- words refer to rural affairs and activities, these words were borrowed into standard Greek from rural dialects. And M. Leroy (*Mélanges de linguistique et de philologie grecques offerts à Pierre Chantraine* [*Études et Commentaires* 79, Paris, 1972] 105–117) on many of the same grounds, feels that ζ-words were borrowed from a northern Indo-European language, probably in Thrace. M. Lejeune (*Phonétique historique* 167) has found himself willing, in the absence of a good linguistic explanation, to entertain the possibility of borrowing, though he is unwilling to be more specific and identify the language in question.[2])

Leroy (112) notes that I did not explain my refusal to accept the suggestion of C. J. Ruijgh (*Études sur la grammaire et le vocabulaire du grec mycénien* [Amsterdam, 1967] 66) that ζ-words are borrowings. I did not, in my belief that my statement (*op.cit.* 229) was sufficient: "It is at least clear that an inner-Greek solution is required, and that no entities other than those present in Greek are to be invoked". Or, put another way, linguistic problems require linguistic solutions. Both Leroy and Nocentini provide non-linguistic solutions to linguistic problems—the one historical, the other sociological—, and therefore their arguments cannot be controlled by linguistic criteria. For this reason, though both are at least possible, neither is susceptible of any sort of proof. How is one to judge which, if either, is plausible? And cannot one, if one is so inclined, think of other more or less possible non-linguistic solutions? Most of the ζ-words denote activities carried on out-doors: can we not hypothesize that out-door words—because of rain, cold, sun, what-have-you—develop to ζ- while indoor words develop to *h*-? Or, because many again are masculine activities, can we not imagine two sexually differentiated dialects, the one coarse and masculine which produced ζ-, the other delicate and feminine which produced *h*-? The difficulty with these possibilities, all of them, is that they assume a dialect defined by geographical or sociological criteria, the only property of which is that it produces the required double

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[2]) My explanation of */y/-* and that of Nocentini and Leroy are not the only ones that are or have been in the field. Nocentini and Leroy provide extensive critiques of earlier views, and the reader is referred to their articles for the history of the problem and the various solutions attempted.

development of */y/-. We hear nothing further of these dialects, and yet it seems otiose to create a dialectal entity which must then be localized, fed, clothed, endowed with other characteristics, merely to explain one linguistic change. Of course none of the proponents of the dialectal theory go so far, but rather leave their creatures out in the cold to starve, their work done.

The above is not meant to deny that borrowing may produce unexpected phonological results in one or two words, or even in an entire category of words. Examples of such abound in many languages, but in all such cases the source language is amply documented, and can be proved to have been in long and close contact with the borrowing language. Such is clearly not the case with PIE */y/-. The following considerations, without destroying the borrowing hypothesis, to my mind at least render it so fuzzy and inexplicit as to be useless. a) Are all ζ-words in fact to be assigned to the same category of term? Is there any semantic feature which can be assigned to them, a feature that is operative elsewhere in the language? No, there is not, save that farmers, e.g., may well have occasion to use these terms frequently. But one can yoke a team of draught horses or a spirited team of thoroughbreds for racing or battle. There is a difference in the social connotation of boiling mutton and boiling shrimp: presumably the boilers of the one do not boil the other, but the operation is the same in both cases, and both parties will need to refer verbally to what they are doing. The notion of semantic similarity in the ζ-words is not sufficiently explicit, and, before accepting it, we should expect a good deal more elucidation of semantic (and cultural) principles than has been provided. b) Is it likely, assuming that a semantic class has been securely defined, that all ζ-words would be borrowed from one language or social class? It seems relatively unlikely to me, though not impossible. But if we make this assumption, might we not expect to find other exceptions to rules of Greek phonology from the same source? Or are we to assume that, though there were other borrowings in the same general semantic area, they fail to show up as borrowings because in all other respects the phonologies of the source and borrowing languages are the same? But this assumption entails the further assumption that the phonological systems in contact differed only in respect to their treatment of */y/-. If the supporters of the borrowing hypothesis wish to establish it firmly, they should first isolate a semantic class within Greek, and then see what resources the Greeks exploited in that semantic area. Phonological

4 W.F. Wyatt

correlates should be the result, not the cause, of such a study. c) Is borrowing elsewhere coterminous with a systematic exception to a phonological rule? The answer must be yes, but in each case that to me qualifies, the borrowing took place *after* the native rule had applied. There are a number of words in the Greek lexicon containing /s/ in positions in which, from an Indo-European point of view, it should not appear, as in σήσαμον; and there are exceptions to the Latin rhotacism rule such as *casa*: in both cases the words entered the language after the relevant rule had operated. And, more importantly, both show a rule failing to operate at all, not a rule operating in a different fashion. In the case in point we have to assume one of two things: either the Greeks had already experienced the change */y/- > /h/- so that they said **hugon*, but later, upon hearing *dzugon* (or whatever) gave up their own pronunciation (in this and in other words) in favor of that of a lower social class or foreign linguistic system; or that they did not have a word for 'yoke' etc. at all, but, when confronted with this marvelous invention, adopted it, together with its native designation. Neither alternative is particularly attractive. d) Given borrowing as proved, might we not expect to find differences in the Greek dialects, or competing forms, as with ζόρξ?[3]) Dialectal differences are conspicuously lacking (Lejeune *REA* 71 [1969] 379–380).

We may conclude, then, that the assumption of borrowing, though superficially attractive, is deceptively simple, and hides many complexities which have not been adequately resolved. For this reason I feel that this linguistic problem—and all linguistic problems— requires a linguistic solution. That is not to say that my linguistic solution is the correct one, or even that one can be found.[4])

Even a superficial investigation of the (few) cases of PIE */y/- in Greek shows that those developing into *h-* have nothing in common with one another phonologically save that they are followed by a vowel plus a consonant. The ζ-forms, however, do have something in common, and that something is not shared— save in the case of ὑσμίνη—with any of the *h*-forms. ζ-forms either

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[3]) On ζόρξ see Frisk (*GEW* I.410 s.v. δορκάς) and P. Chantraine, *Dictionnaire étymologique de la langue grecque*, II.293–294 (Paris, 1968).

[4]) A linguistic solution to this problem is all the more important because so good a scholar as F. Bader (*Minos* 10 [1969] 56) has used the double development of */y/- (phonological but unexplained) as informal support for her notion of the double development in Mycenaean and other forms of Greek of *[r̥] and *[n̥] (phonological but unexplained).

contain a mid vowel (/e/ or /o/) followed by -/s/- (1, 3), or contain a -/u/- (2, 4, 5). From this distributional information I concluded that the following rules were operative:

1) $*/y/- > \zeta/\_\_/u/$

2) $*/y/- > \zeta/\_\_/Vs/$

3) $*/y/- > /h/-$ elsewhere

I then attempted to explain 1) and 2) in terms of Grassmann's Law, leaving 3) as the residue remaining after their application. 1) I held that */yu/- developed to ζυ- rather than to the expected **/hu/- (by way of [hyu]-) because a phonologically contrastive */hyu/- already existed in the language, having developed from PIE */u/-: the existence of this */hyu/-, which was opposed by reason of aspiration to */yu/-, prevented */yu/- from passing to [hyu]- and hence to /hu/-. The difficulties with this explanation are that: a) it assumes a phonological development, */u/- > */hu/-, which, though assured, may not have been so early;[5] b) it implies that a phonological change was blocked by purely phonological (not morphological or semantic) patterning, a development which seems unlikely; c) it fails to explain ὑσμίνη in a clear and direct way. I now feel that this explanation is to be given up. In 2) the -/s/- passed to -/h/- as regularly in early Greek, and this -/h/- prevented the passage of */y/- to *[hy]-, its regular development. I still believe that my rule 2) is essentially correct.

Professor Lejeune (*REA* 71 [1969] 379–382), clearly not convinced by my proposals, has nonetheless rendered them more explicit and useful. He has cleared up a number of uncertainties in my mind, and also has stated the environments in a way better than I had done. Rather than print his proposals, I shall revise mine in the light of his observations.

1) $*/y/- > \zeta/\_\_/eu/$

2) $*/y/- > \zeta/\_\_/Vh/$

3) $*/y/- > /h/-$ elsewhere

1) now handles ζειαί, uncomfortably an exception before, as well as ζευγ- (but not ζυγ-). In order to account for ζυγ- and -ζοος (in φυσίζοος[6])), I now, following Lejeune, assume analogy with the

[5] I nonetheless feel that it was this early, for reasons set out in my *Greek Prothetic Vowel* 104–108 (Cleveland, 1972).

[6] If indeed φυσίζοος is early and derived from ζειαί. Cf. G. P. Shipp, *Studies in the Language of Homer* 190 (2nd Ed., Cambridge, 1972).

forms containing -/eu/-. One will notice that this new environment is identical with that which produces vocalic prothesis before the other resonants: the development of */y/- > ζ- (by way of [əy]?) is thus parallel with the development of */l/- > ἐλ- in ἐλεύθερος (by way of [əl]?).[7]) 2) remains essentially the same, save that now I specify that the -/s/- must have passed to -/h/- before the development of ζ- (or its earlier stages). Here the only problem is ζωστός, but that problem, too, can be set aside by assuming that ζωστός is analogical to ζώνη and ζώννυμι, in both of which -/s/- had passed to -/h/-. Thus the environmental description has been put in order, problems with ζειαί and ὑσμίνη no longer arise, and the cases of 1) have been inserted into a larger context. It is uncertain whether one should consider 1) a case of Grassmann's Law, though it behaves like one.

In any event Grassmann's Law, or the effects of it, is still a necessary part of my explanation. The date of the application of Grassmann's Law traditionally assumed caused no difficulties for my proposal, for most scholars seem to have agreed that the law operated on early, proto-Greek.[8]) It seemed quite clear that, since all Greek dialects experienced the same dissimilation of aspirates, the development must have taken place in predialectal times, that is, in proto-Greek. On the other hand, though the law applies to both Greek and Sanskrit, it could not be a rule of pre-proto-Greek, i.e., Proto-Indo-European, because:[9])

a) the outcome of Sanskrit and Greek is different; from an original sequence */dh..dh/, Sanskrit has /d..dh/, while Greek has /t..th/. Greek must have already experienced the devoicing of aspirates which is one of the main distinguishing characteristics of that language.

b) the rule applies differently in Greek and Sanskrit. In Greek */h/- < */s/- disappears, so that one has to express the rule in terms of aspirates rather than aspirated consonants; and again the independent Greek change of *s to h must already have taken place. In Sanskrit all aspirated consonants are affected, not just voiced ones.[10]) Proto-Greek seemed the only possible date.

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[7]) Cf. *Greek Prothetic Vowel* 90–120.

[8]) Cf. M. Lejeune, *Traité de phonétique grecque* 47–48 (2nd Ed., Paris, 1953).

[9]) Cf. L. Bloomfield, *Language* 351 (New York, 1933) and W.S. Allen, *Accent and Rhythm* 9–10 (Cambridge, 1973).

[10]) Cf. Brugmann, *Grundriss* I.2 (1897) 641–642.

Recently the traditional date of the application of Grassmann's Law has been challenged from two directions, only one of which is relevant here. C. J. Ruijgh (*Études* 44–46) has investigated the inscriptions written in the Linear B script to see whether they provide any evidence of the date of Grassmann's Law. It must be stated at the outest that there is very little, but what little there is seemed to Ruijgh to prove that the law is post-Mycenaean. Ruijgh's reasoning contains three points:

1) By Grassmann's Law Proto-Greek *th(w)ehos* (Classical ϑεός, Mycenaean *te-o*) should have passed to **tehos* > **τεός*, but did not. Intervocalic -/h/- must have disappeared before Grassmann's Law applied.

2) Intervocalic /h/ was still present in Mycenaean.

3) Grassmann's Law is post-Mycenaean.

To 1). I have argued elsewhere (*Language* 44 [1968] 618) that -/h/- does not cause loss of aspiration in a preceding aspirated consonant, and that therefore ϑεός cannot be used as evidence for the date of Grassmann's Law. Or, as Lejeune has put it more elegantly (*Phonétique historique* 57 n. 4): -/h/- is dissimilated, not dissimilating. Clearly, with the collapse of 1), Ruijgh's other points are without support, but it might be pointed out that his second statement is far from representing a consensus.[11])

M. Lejeune (*REA* 69 (1967) 280–281), however, clearly impressed by Ruijgh's arguments, has adduced other considerations in favor of a late date for the dissimilation of aspirates.

1) /h/- < */y/ was dissimilated by a following aspirate, so that we get ὄφρα < *hophra* (?).

2) /y/- (alternating with zero) remains in Mycenaean.

3) Grassmann's Law is post-Mycenaean.

Lejeune's points are difficult to argue, partly because they are theoretical, not resting on an attested Mycenaean form, and partly because each constitutes an argument in itself. It is clear that I agree with Lejeune's first point (though I set the operation back

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[11]) Ruijgh's argument can be turned against him (Chadwick, *Gnomon* 40 [1968] 374), and used to hold that intervocalic /h/ had already disappeared before Mycenaean times precisely because ϑεός does not develop to *τεός. O. J. L. Szemerényi (*CR* 8 [1958] 61 and *SMEA* 2 [1967] 19) believes that /h/ had already disappeared intervocalically.

8   W.F. Wyatt

into proto-Greek times at latest), but I do not feel that it is relevant
to the dating of the first beginnings of Grassmann's Law. It is in the
first place not certain by any means that ὄφρα comes from *yophra.[12])
Even if it does, this one word does not indicate a post-Mycenaean
date for the origin of Grassmann's Law, though it does (providing
we accept Lejeune's second point) indicate that the law applied in
post-Mycenaean times. Grassmann's Law describes a phonotactic
tendency within the Greek language which allows only one aspirated
segment in a word or, less generally, in successive syllables: usually
it was the first segment that was dissimilated and the second that
remained. This phonotactic tendency was not the kind of rule which
destroys the input to the rule, but rather a rule which remained in
the language, affecting every new sequence of aspirates which
happened to arise. The distinction may become clearer with exam-
ples, and I give first the example of a rule which applied but once
(SD = Structural Description, SC = Structural Change):

SD $k^w/$__$/o/$
SC $k^w > p$

That is, *$k^wo > po$. In this case the rule destroys all cases of *k^wo,
and the rule, though it may have been remembered for a while,
eventually disappeared. If any cases of k^wo entered the language at
a later date, from whatever source, they might or might not remain
unchanged, but the old rule would not affect them. Such is not the
case with dissimilation of aspiration.

SD   Asp /... __ AspCons
SC   Asp > ∅

In this case, since sequences meeting the SD could, and did, arise at
any time, and since the SC was applicable, at least potentially, any
time anyone said τίθημι instead of the morphologically required
**θίθημι, Grassmann's Law remained a feature of Greek for a very
long time.[13]) ὄφρα is a compound of */yo/- > /ho/- plus -/phra/, the
whole resulting in ὄφρα because of the dissimilation of aspiration.
The important thing here, though, is that */yo/- had passed to /ho/-

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[12]) The (unlikely) alternative is that it derives from *sophra. Cf. Frisk,
GEW 2.454.

[13]) Ruijgh (*Études* 45 n. 6) points to Αγηhίλας <ʿΑγηhίλας <ʿΑγησίλαϝος
with initial *h*- dissimilated by a following -*h*- < -*s*-. Too, ἐκεχειρία 'truce' <
ἐχε-χειρ-ία is not likely to be a very early formation. Cf. also E. Schwyzer,
Griechische Grammatik 1.261 (Munich, 1939).

before it was compounded with -/phra/, at which time it of course
met the structural description of Grassmann's Law and passed to
ὄφρα. Lejeune's argument, then, fails to prove that Grassmann's
Law originated after Mycenaean times, though it may prove that
it operated then. His third point is likely to be correct, provided
that it is interpreted to refer to operation and not to origin. His
second point is too controversial to go into here: suffice it to say
that I am not alone among Mycenologists in holding that PIE */y/-
was not present in Mycenaean Greek.[14])

Lejeune's argument is not convincing, and indeed the whole
theory of a post-Mycenaean origin of the dissimilation of aspiration
is very difficult to accept. Two general considerations seem to me
pretty nearly by themselves to rule out such a date. A fair number
of phonological changes took place in the Greek world after ca. 1100.
Among the most notable of these changes, changes which drastically
changed the shape of Greek, we may mention: loss of the labio-velar
consonants by merger with /p/ and /t/; loss of /w/; loss of /h/; vowel
contraction; development of long vowels by compensatory lengthen-
ing from double resonants ($<$ /hR/ $<$ /sR/) as in Attic σελήνη $<$
*selasna. All of these changes took a long time to complete, and
more importantly, all show up on the dialectal atlas of classical
Greece. How is it that the dissimilation of aspiration left no different
traces in the Greek dialects of classical times? Less probative, but
no less relevant, is the motivation of the change, a motivation not
provided by the holders of this theory.

On the basis of general linguistic considerations, then, dissimila-
tion of aspiration is unlikely to postdate the proto-Greek period, the
period, that is, in which the classically attested Greek dialects had
not yet begun to evolve. Can it have been still earlier? It can have
been, provided one is willing to relax the claim of phonological uni-
formity sometimes made of PIE.[15]) We need only assume that the

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[14]) Cf. L. Deroy, *Kadmos* 13 (1974) 9–26.

[15]) P. Kiparsky, *Phonological Change* 57–76 (MIT Dissertation, 1965)
likewise supposes that Grassmann's Law applied in PIE times. He, however,
feels that the regular phonetic result in Greek was a voiced stop, not a voice-
less, and that the attested voiceless stops result from a leveling of the
paradigm. Thus τρέφω, for instance, developed as follows:

		*dhrebh-	
1)	dhrebh-ō	dhrebh-sō	
2)	dhrebh-ō	dhrep-sō	with assimilation
3)	drebh-ō	dhrep-sō	by Grassmann's Law

10   W. F. Wyatt

PIE aspirated consonants were not distinctively voiced in all areas
in which PIE was spoken, and that the dialect which later became
Greek had voiceless aspirates rather than voiced ones, whatever the
original situation may have been: Greek Indo-European had a
system of stop consonants displaying /t d th/, and not the /t d dh/
correctly postulated for pre-Sanskrit, and generally assumed for all
PIE dialects. If we make this assumption, clearly a single dissimila-
tion of aspiration rule will have operated on the two dialects in such
a way as to produce the attested results:

		Greek	Sanskrit
PIE		*th ... th*	*dh ... dh*
Grassmann's Law:	SD	+ Asp / __ V + Asp	
	SC	+ Asp > — Asp	
Result		*t ... th*	*d ... dh*

The same rule, applying to different phonological sequences, natur-
ally produced different results. The rule subsequently remained in
force both in Greek and in Sanskrit. Because of the Greek change of
s > h, however, the area of application of the rule came to include
pure aspiration as well, so that ἔχω results from *ἔχω (< *sekʰo)
and ἄλοχος from *ἄλοχος (< *smlokʰos).[16]) And in Sanskrit likewise
the area of application was extended, in that voiceless aspirates

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| 4) | *dreph-ō* | *threp-sō* | *vd* asp > *vl* asp |
| 5) | τρέφω | θρέψω | leveling of paradigm |

His argument predicts a certain number of forms which, because they do not
form part of a paradigm, retained the original initial voiced segment. He
finds such forms in βόθρος, βρεχμός, ἀγαθός (beside ἀκαθός—Hes.), βυθός
(beside πυθμήν). No one of these etymologies seems convincing enough to
place rule 4 after rule 3 (and thus necessitate rule 5). Furthermore, his
assumption that the present was remodeled after the future is difficult con-
ceptually, in that one would expect the vocalism of the present to react on
that of the future. In fact we find the present changing the future in πείθω :
πείσω.

[16]) Cf. T. M. Lightner "On the Formulation of Grassmann's Law in Greek",
A Festschrift for Morris Halle 128–130 (S. Anderson and P. Kiparsky, Eds.,
New York, 1973). The Greek rule will need touching up in order:

1) to avoid *teos < *thehos, and

2) to account for σώθητι (instead of *σώτηθι) and ἐχύθην (though this
latter *may* be a morphophonemic spelling for /ekuthēn/).

Cf. D. G. Miller, "Some Problems in formulating aspiration and deaspiration
rules in Ancient Greek" *Glossa* 8 (1974) 211–232.

also were affected.[17]) The important thing to note, however, is that the same rule in the same formulation remains in both languages. It seems a clearly economical hypothesis to allow a single rule to have originated at a single time and to have operated on two (neighboring) dialects of a single linguistic system. The alternative, of course, is to assume two nearly identical rules which arose independently in two widely different areas of the world.[18])

The Transformation of a Natural Accent System:
The Case of the Ancient Greek Enclitics

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A functional interpretation of the history of the Greek accent shifts is offered and the shifts are related to final-syllable reduction in that these seemingly different processes serve to guarantee that no word will finish its contonation on the following word. A theory is proposed for the origin of Wheeler's and Vendryes' Laws. Forms like *ánthrōpos*, *lógos tis*, *lógōn*, and *lógōn ti(nōn)* are shown to have the same contonation because of a switch from mora sensitivity to syllable sensitivity motivated by such changes as Vendryes' Law. Originally accentuation in enclitic environments was predicted by the normal accent spread (contonation). But various changes that shifted the accent caused this system to break down and become rule-bound, necessitating several relatively strange rules for accentuation in enclitic contexts. This paper outlines the changes in the accent system that

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[17]) On Sanskrit and the complications introduced by Bartholomae's Law, cf. S. Anderson, "On Grassmann's Law in Sanskrit", *Linguistic Inquiry* 1 (1970) 387–396, and I. A. Sag, "The Grassmann's Law Pseudoparadox", *ibid.* 5 (1974) 591–607.

[18]) What caused the tendency to dissimilate aspiration is another question, one to which there can be no answer. One possibility is that the pronunciation of identical aspirated consonants in successive syllables caused articulatory discomfort. (Cf. Greek ὀφθαλμός ἐχθρός, but Σαπφώ Ἀτθίς Βάκχος and W.S. Allen, *Vox Graeca* 25 with n.4 [Cambridge, 1968]). Thus in reduplicating syllables the first aspiration may have been lost (without any diminution of information conveyed). From this narrow phonological environment the tendency, on this assumption, spread so as to include all aspirated sequences.