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On the Loss of the Greek /h/ and the So-called  
Aspirated Rhō

1. Introduction

1.1. The origin of the Greek /h/

The Greek /h/<sup>1</sup>, excluding /h/ in some onomatopoeic words, has developed from the sounds <sup>+</sup>s and <sup>+</sup>y partly during prehistoric, partly during historic times. Other origin forms are the consonant clusters <sup>+</sup>sy and <sup>+</sup>sw. In addition analogy has given rise to [h] in several words where it has no etymological basis; there seem in particular to be numerous such cases among words with an initial ypsilon.<sup>2</sup> In Greek /h/ only appears before a vowel either in the initial or the medial position, never before a consonant nor in the final position.<sup>3</sup>

The Greek /h/ was realized as a voiceless laryngeal fricative.<sup>4</sup>

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1 For the debate upon the phonemic nature of the Greek (Attic) /h/, vide Lupaş (1972), pp. 105-108.

2 For the details, vide Schwyzer (1939), pp. 303-306. Sturtevant (1940), p. 69. Lejeune (1947), pp. 77-88, 251-253.

3 Schwyzer (1939), p. 179 and Anm. 9. According to Lupaş (1972, p. 69) in the medial position only after [n], [s], and [ks].

4 Schwyzer (1939), p. 179. Sturtevant (1940), p. 73.

## 1.2. The spelling of the Greek /h/

The methods used to spell /h/ in the Greek script differ from those used for other consonants. Having borrowed the alphabet of Semitic peoples the Greeks chose to spell the Greek closed /e/ with  $\Xi$  which was the symbol of the [h] -consonant in the Semitic system.<sup>1</sup> In contrast,  $\text{H}$  (= Semitic [h̄]) was primarily introduced as the symbol of the syllable [h̄e], and the open /e/ was presumably written soon afterwards with the same letter.<sup>2</sup>

Thus there were two possible ways of spelling the syllable [h̄e]: either to write it with the symbol of /e/ or with the symbol already applied for [h̄e] and /e/. In the former case the Greek E (the letter only developed its final shape later on) acquired two sound values: [e] and [h̄e], and H (the shape is later, too) retained the previous realizations [e] and [h̄e]. In other words the distinctive feature of epsilon and ēta was qualitative ([e] vs. [ē]), not yet quantitative nor dependent on the presence or absence of /h/. The latter possibility, i.e. to spell the syllable [h̄e] with ēta, gave rise in some areas to a new idea: the use of ēta (H) as the symbol of /h/ occurring before any vowel in the form of certain

1 As known, there were no vowel letters in the Semitic alphabet.

2 The development must have happened in the Ionic dialect area, because only there was found an /e/ originating in the Old Greek /ā/.

kinds of correction mark.<sup>1</sup> The phonetic values of the old /e/ and /ē/ coalesced later, and thus ēta was taken over to indicate /ē/, as well.<sup>2</sup> Only now the difference between epsilon and ēta became qualitative rather than quantitative.

The different script methods reviewed above were used even in same areas. In order to harmonize these multiple practices the Greeks proceeded to write only /ē/ with ēta while /h/ was indicated with <sup>h</sup> or <sup>h</sup> which are just parts of the H leaving epsilon as a consequence to represent /e/. This happened at first in Corinth, Delphi, Elis, and Tarentum.<sup>3</sup> In Athens

1 For different and varying sound values of E and H in different areas, vide Hammarström (1920), p. 39, and Schmitt (1952), pp. 47-51.

2 This innovation obviously happened c. 700 B.C. in Miletus. Schwyzer (1939), p. 146.

3 This whole survey of the history of the spelling of /h/ is based on Der Buchstabe H im Griechischen of Alfred SCHMITT (1952).

Schwyzer (1939, pp. 143-147) explains the development in another, widely known way. According to him H was initially in Greek the symbol of /h/. The early loss of /h/ in the Ionic of Asia Minor, however, made this letter superfluous. Thus the possibility was opened of transferring H to sign the newly evolved /ē/, and later c. 700 B.C. (firstly in Miletus) /ē/, too. The new system spread out to the remaining Greek alphabets.

Schmitt's criticism (1952, pp. 6-8, 41) applies mainly to the difficulty of explaining the use of H as the symbol both of /h/ and /ē/ occurring also in dialects where /h/ had not disappeared and which were not influenced by the Milesian spelling. Thus the use of H as the symbol of /ē/ must be earlier than psilosis. In addition, it is possible to explain the Milesian script method in the same way as the system of the non-psilotic Cretan inscriptions: E = /e/ or [he] and H = /ē/ or [hē]. Consequently, it is not necessary to interpret the Milesian script as testifying in favour of psilosis in Ionic as early as the 7th century B.C.

ēta came increasingly from the middle of the 5th century B.C. to mean /ē/ and not /h/ as before, and /h/ was no more spelled. The system became a standard usage in Athens in 403/402, and the Athenian example was followed by the other states by 350 B.C.<sup>1</sup>

Before that time the symbol of /h/ had assumed varying shapes in different local alphabets: **⊞**, H, and its parts **└** or **┘**. The symbols were written on the bottom of the line and they were used in just the same way as the other letters even in the medial position.<sup>2</sup> The marking of /h/ was given up last in Tarentum and even there no later than the 4th century B.C.<sup>3</sup>

In the papyri the spiritus and accent symbols were introduced in the time of the Alexandrian grammarians (3rd century B.C.); Aristophanes of Byzantium is considered the inventor of these marks.<sup>4</sup> However, the grammarians added spiritus and accent symbols only to highly respected classical texts and particularly to those written in old and already strange dialects (e.g. Homer, Aeolian lyrics). Even in this kind of literature there was no intention of providing the whole text with accents and spiritus marks; they were mainly used to distinguish between words in which the quality or the position of the accent or spiritus mark influenced the meaning of the word concerned (e.g. ὄρος vs. ὄροϛ; τί vs. τι). These symbols were

1 Schwyzer (1939), p. 147.

2 For different systems used in various states, vide Thumb (1888), pp. 5-73.

3 Lejeune (1947), p. 250 and note 4.

4 Laum (1928), pp. 99-118.

written above other letters. The following shapes of spiritus asper occur in papyri:  $\text{ḥ}$ ,  $\text{ḥ}$ ,  $\text{ḥ}$ ,  $\text{ḥ}$ , and  $\text{ḥ}$ . The present shape  $\text{ḥ}$  has developed from the last two variants.<sup>1</sup> The number of those marks increases in manuscripts of the 1st and 2nd century A.D., but the original principles of the usage disappear at the same time. The present Byzantine system originates c. 400 A.D.,<sup>2</sup> but the accents and spiritus marks are not normally added to the texts until ca. 900.<sup>3</sup>

### 1.3. Psilosis

As a matter of fact the Greek script had no  $\text{ḥ}$  for 1300 years, and later spiritus asper became a mere historical relic without sound value. This state of affairs makes it exceedingly difficult to date the loss of /h/, i.e. the psilosis phenomenon, both in the ancient dialects as later in the Koine.

In the pre-hellenistic period /h/ had disappeared from the Ionic of Asia Minor and from the dialects of Lesbos, Elis, Middle Greek, and Cyprus.<sup>4</sup> The aspiration of the voiceless muta consonants in sandhi cases, the transcriptions of Greek words and names in other languages and scripts, and the statements of Atticist grammarians concerning [h] as a part of the proper pronunciation bear witness, however, to the existence

1 Laum (1928), pp. 128-134, 357-371, 451.

2 op.cit., pp. 453-456, 493.

3 Schwyzer (1939), p. 149.

4 Debrunner - Scherer (1969), p. 61. Tucker (1969, p. 41): "The supposed loss of h- in Cyprian is not conclusively proved by the inscriptions."

of /h/ in the remaining dialects. Middle and Modern Greek has no [h] although spiritus asper is spelled according to the etymology.<sup>1</sup> The weakness of the realization of /h/ even in classical Attic is shown by the elision of the short vowel in the final position before a word with an initial /h/ (e.g. καθ' ἡμέραν); similar evidence proves the inability of /h/ to form a positione-long syllable with another consonant.<sup>2</sup>

In the papyri there occur cases of non-aspiration of the voiceless muta consonant before (the Attic) /h/ from as early as 3rd century B.C.<sup>3</sup> On the other hand, the inverse spellings show also that extraordinary [h] sounds were found in Koine.<sup>4</sup> Parallel occurrences are found in inscriptions, as well.<sup>5</sup>

This kind of evidence has been interpreted as proof of the general psilosis. These indications do not, however, necessarily show that /h/ had lost its phonemic significance by that time and that it only remained later as a free variant or supported by the theory of the literary language.

Firstly, those 'mistakes' may be, as MAYSER presumes, at least partly a heritage of the dialects in which psilosis was a normal phenomenon.<sup>6</sup> Secondly, the parasitic [h] seems to have belonged even to the irreproachable Koine pronunciation in such words as

1 Schwyzer (1939), pp. 218-220.

2 Lejeune (1947), pp. 253-254. Lupaş (1972), p. 28.

3 The oldest occurrence is from the year 301 B.C. Mayser (1970), p. 173.

4 Mayser (1970), pp. 173-176. Debrunner - Scherer (1969), p. 103.

5 Thumb (1888), pp. 70-73. Debrunner - Scherer (1969), p. 103.

6 Mayser (1970), p. 173.

ἔτος, ἐνιαυτός, ἴδιος, and ἴσος.<sup>1</sup> These forms are probably products of an analogy<sup>2</sup> arising out of the unsuccessful attempts of the speakers of psilotic dialects to learn the respected pronunciations with [h], i.e. pseudo-corrections which have superseded the original forms in Koine.<sup>3</sup> As mentioned above (p. 1), a tendency existed towards secondary [h] sounds even in the classical Attic (e.g. ἵππος).<sup>4</sup> Thirdly, a corresponding inclination to drop [h] can be perceived in modern languages which still have a completely phonemic /h/. In German [h] is usually dropped when it occurs after another (especially voiceless) consonant, e.g. in words like Grossherzog, weshalb or in junctures like das heisst. [h] may be dropped even in the correct English pronunciation in parallel instances such as Fulham, Graham, shepherd, I've, he'd, I saw him; furthermore it disappears as a rule in words where /h/ is in initial position and the stress does not fall on the first syllable (e.g. habitual, historical), and these words may be given the indefinite article in the form an. Many English dialects have lost /h/; thus the attempts of persons normally using such a vernacular are liable to produce pseudo-correct [h] sounds (or \$h\$ letters in

1 Thumb (1888), pp. 70-73. Schwyzer (1939), p. 220.

2 Schwyzer (1939), p. 305. Mayser (1970), pp. 174-175.

3 For parallel 'false regression' cases in Classical Arabic, vide Blau (1970), pp. 16-17, 56.

4 Schwyzer (1939), p. 306.

Inverse cases are e.g. words ἀδελφός and ὄρος which should etymologically have an initial /h/. Some of such words have lost /h/ by dissimilation or analogy, some others are probably loan words from the psilotic dialects. Lejeune (1947), p. 253. Lupaş (1972), pp. 28-29.

spelling) whenever they take particular pains to correct their speech (e.g. am and heggs pro ham and eggs). Certainly it is an inverse case where the original (Old and Middle English) hit is superseded by the 'psilotic' form even in the correct language. In French which has no /h/ phoneme, there is, however, a distinction between h muette and h aspirée; only h aspirée obviates elision and liaison phenomena. The vernacular does not usually pay heed to the difference and sporadic words and expressions, where the effects of the h aspirée are neglected, have penetrated into cultivated French.<sup>1</sup>

The deviations from the original Greek pronunciation found in papyri and late inscriptions reflect, as far as I can see, development phenomena similar to those described above; thus they do not testify to the general loss of /h/. Instead they do predict its loss.

More reliable evidence of the loss of /h/ is provided by the incorrect use of spiritus asper marks pro spiritus lenis occurring in an Odyssey papyrus dating back to the 5th century A.D.<sup>2</sup> The scholion of the Grammar of Dionysius Thrax composed after the 6th century<sup>3</sup> gives still clearer proof of the loss. The

1 Jespersen (1912), pp. 78-82. For pseudo-corrections in general, vide Blau (1970), pp. 12-22 where additional literature is quoted.

2 Laum (1928), p. 456. For the date of the papyrus (Ryland 53), vide Laum (1928), p. 62 and Anm. 3.

3 The scholion is anonymous; it is known by the name Περὶ προσφθίου καὶ ἄλλως. Hilgard (1901, pp. 150-156) has published the text in his Scholia in Dionysii Thracis Artem Grammaticam. He says (p. xxvi) of the date of the scholion: "aevi inferioris quam duo illi qui antecedunt de prosodia commentarii." The two preceding commentaries dealing with the



writer mentions that the grammarians have prepared on the strength of their learning and their knowledge (παραδόσεις) rules and word lists which indicate when the initial vowel has spiritus asper and when it has spiritus lenis. In other words, it was already impossible to determine this from the living language, and other methods were needed to establish the correct spelling.<sup>1</sup> The oldest indisputable proof of the loss

prosody mentioned by Hilgard are those of Georgius Choeroboscus and a certain (not properly identified) Porphyrius. Choeroboscus flourished in the 6th century (Cohn, 1899, p. 2363).

- 1 The most interesting parts of the scholion touching upon our subject are the following ones:

Σημείωσαι ἐπὶ τῶν πνευμάτων, τῆς δασείας καὶ τῆς ψιλῆς, ὅτι οἱ μουσικοὶ ταῦτα ἐφεύρον, καὶ πρὸς τὰς ἐκφωνήσεις ἐτίθεισαν τοῖς φωνήσιν· καὶ εἰ μὲν ἡ φωνὴ εἴη τραχεῖα καὶ ὡσπερ ἐκ τοῦ θώρακος ἐξερχομένη, εἰς ἀπὸ φωνήεντος ἤρχετο, ἐδάσυνον· εἰ δὲ λιγυρά τις καὶ χαλαρὰ καὶ ὑφειμένη, ψιλὴν ἐτίθεισαν ἐπὶ τὸ φωνῆεν. Ἐπειδὴ δὲ ὕστερον οἱ λόγοι τῶν μουσικῶν ἦσαν δυσκατάληπτοι, <καὶ> κατὰ τὴν παρατήρησιν καὶ παράδοσιν τῶν πρὸ ἡμῶν καὶ τοῦ ἐκείνων κανόνας τὰ πνεύματα ἐπὶ τιθέαμεν τοῖς φωνήσιν. (Hilgard, 1901, p. 153; 4-11).

<Ἡ δὲ δασεῖα τίθεται εἰς γράμμα φωνῆεν δασυνόμενον καὶ ἐξῆς.> Τὸ παλαιόν, ὡς καὶ ἄνωθεν εἶπομεν κατὰ λόγους μουσικοῦς καὶ ἡ δασεῖα καὶ ἡ ψιλὴ τοῖς φωνήσιν ἐπετίθεντο· ἐπεὶ δὲ ἡ μουσικὴ ὀλίγοις ἔμελε, τινὲς τῶν γραμματικῶν ἐξ ἐμπειρίας κανόνας ἐποίησαντο, κατὰ τὰς εὐρημένας παραδόσεις λέξιν ἐκάστην μεταχειρισάμενοι καὶ τὰ ἐν ταῖς λέξεσι φωνήεντα ἀκριβωσάμενοι, πότε καὶ ὁπόσα δασύνονται, καὶ <πότε καὶ> ὁπόσα ψιλοῦνται. Καὶ ἐστὶ τεχνολόγημα περὶ τούτων, πότε τὸ ᾱ πρὸ τοῦ β̄ καὶ πρὸ τοῦ γ̄ καὶ τῶν λοιπῶν στοιχείων δασύνεται ἢ ψιλοῦται, ὁμοίως καὶ τὸ ε̄ καὶ τὰ λοιπὰ φωνήεντα πρὸ τῶν αὐτῶν στοιχείων πότε δασύνονται καὶ πότε ψιλοῦνται. Διὰ τοῦτο νῦν στενωῶς εἶπεν "ἡ δὲ δασεῖα τίθεται εἰς γράμμα φωνῆεν δασυνόμενον, καὶ ἡ ψιλὴ εἰς γράμμα φωνῆεν ψιλούμενον".

(Hilgard, 1901, p. 154; 1-10).

of /h/ are according to THUMB the transcriptions in Latin characters compiled by Liudprand, bishop of Cremona, dating from the 10th century.<sup>1</sup>

Studies based upon the 'mistakes' of the inscriptions and papyri and upon the Greek loan words occurring in other languages have yielded the following dates for the loss of the Greek /h/: According to THUMB /h/ was still in use in the 5th century, but only in the cultivated language of conversation among scholars.<sup>2</sup> SCHWYZER considers that /h/ disappeared before the beginning of the Middle Ages.<sup>3</sup> STURTEVANT is of the opinion that /h/ was generally preserved in hellenistic Greek until the 2nd century A.D., and still later "as a scholastic tradition" until the 4th - 5th century.<sup>4</sup> LEJEUNE concludes that /h/ was lost gradually in the Roman imperial period before the beginning of the Byzantine era and survived longest in the Greek of Attica.<sup>5</sup> ALLEN estimates on the basis of the Gothic transcriptions that [h] had been lost by the 4th century A.D.<sup>6</sup> According to TUCKER the loss of h had extended in the 1st - 2nd century A.D. to all the Greek world.<sup>7</sup>

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1 Thumb (1888), pp. 75-76.

2 op.cit., p. 88.

3 Schwyzer (1939), p. 220.

4 Sturtevant (1940), pp. 72-73.

5 Lejeune (1947), pp. 254-255.

6 Allen (1968), p. 51.

7 Tucker (1969), p. 44.

## 1.4. The history of the so-called aspirated rhŏ

The 'aspirated' rhŏ has developed from the consonant clusters <sup>+</sup>sr and <sup>+</sup>wr.<sup>1</sup>

The 'non-aspirated' rhŏ was realized as a voiced apical tongue-tip tremulant (trill); the sound value of the 'aspirated' rhŏ seems to have differed from that only by way of its voicelessness.<sup>2</sup> The voiceless allophone of /r/ occurred in the initial position, in the cluster  $\rho\rho$  in the medial position, and after an aspirated consonant or /h/.<sup>3</sup> There is no trace of the voiceless realization left in Modern Greek nor any other difference between the pronunciations of /r/ in different positions; the voiced sound value is the only in existence.<sup>4</sup>

The history of the graphical notation of the 'aspirated' rhŏ closely follows that of /h/. At first it was spelled with PH or HP<sup>5</sup>, but later, as §h§ had disappeared from the script, the difference between  $\rho$  and  $\rho$  was left unmarked. Before the 4th - 5th century A.D. the 'aspiration' is indicated a couple of times in papyri with spiritus asper on rhŏ.<sup>6</sup>

The only date for the loss of the voiceless allophone I have found is that given by THUMB. He estimates on the basis of the Greek loan words in Armenian that the distinction had vanished before the 5th century A.D.<sup>7</sup>

1 For details, vide Schwyzer (1939), pp. 308-311, and Lejeune (1947), pp. 101-103.

2 Sturtevant (1940), p. 62. Lejeune (1947), pp. 121 and 252. Lupaş (1972), pp. 24-25, 30, 105.

3 Sturtevant (1940), p. 62. Lupaş (1972), pp. 30, 67.

4 Schwyzer (1939), p. 179. 5 Sturtevant, pp. 61-62.

6 Laum (1928), p. 365. 7 Thumb (1900), p. 415.

## 2. The research method

The loss of the Greek /h/ and [r<sub>o</sub>] which I will attempt to date in this paper forms part of the great phonological shift which completely transformed both the Greek vowel and consonant system as well as the quality of the stress. The shift took place mainly between the 4th century B.C. and the 4th century A.D. It is, however, a very difficult task to date a given innovation more precisely than this.<sup>1</sup> Furthermore, this development did not take place simultaneously in different areas<sup>2</sup>, and therefore a date fixed in one region does not necessarily mean that the same development has occurred in the entire language area at the same time. Research into the history of /h/ and [r<sub>o</sub>] faces additional obstacles in shape of the exceptional methods of spelling described above (pp. 3-5 and 11).

The Greek loan words of other languages have been analyzed in order to date more exactly the development phenomena of Greek. The borrowing languages have been treated, however, as a whole without setting apart script methods of different periods or paying attention to changes within the borrowing language.<sup>3</sup>

1 Cf. Schwyzer (1939), pp. 178-234, and Browning (1969), pp. 30-35.

2 The preservation of the classical /ē/ as [e] in some Asia Minor Greek dialects until this century (Browning, 1969, pp. 122-123) is an instructive example of the non-coincidence of the phonetic developments.

3 The results of the older studies are collected by Schwyzer (1939, pp. 150-165: Die Nebenüberlieferung des Griechischen).

My study of the history of the pronunciation of /h/ and [r̥] is also based on the Greek loan words found in other languages.<sup>1</sup> I have, however, tried to provide more exact dates for the occurrences of the words in question and to take into account the possible effects of developments within the borrowing language.<sup>2</sup>

The languages which can be made use of in this context have to fulfill the following conditions: 1. /h/ must be preserved in the language unchanged and be always visible in the spelling, 2. the language must have an abundance of Greek loan words, 3. its literature must be datable, from the period between the first signs of psilosis (3rd century B.C.) and Liudprand's chronicle (10th century), and not have been submitted to later radical revision, 4. the loan words must have penetrated to the language direct from Greek and not through other languages.

On this basis Syriac, Coptic, Gothic, and Armenian remain at our disposal amongst the languages given by SCHWYZER in his *Nebenüberlieferung des Griechischen*.<sup>3</sup> In addition Palmyrene Aramaic is suitable for our purposes.

1 The problem Lehn- oder Fremdwörter? (Cf. Böhlig 1954a, pp. 6-8) does not matter here, because the disappearance of /h/ from the Greek spelling compelled the borrowers to decide by ear even in the transcribed words, whether to write §h§ or not in them.

2 There exists always, however, the possibility that a loan word has become an organic part of the borrowing language long before its first appearance in written form. In that case the loan word already reflects the phonetic system of this language rather than the changes in the original language. Cf. pp. 14-15 and 16.

3 Schwyzer (1939), pp. 150-165.

Latin seems at first sight to provide abundant material, but the study of the loss of the Greek /h/ with the help of Latin encounters many obstacles. Firstly, the Greek /h/ was written according to the normal system with the Latin \$h\$ in the loan words both in the initial and the medial position and the Greek aspirated consonants were also written by means of \$h\$: \$ch\$, \$ph\$, \$rh\$, etc. Thus it was possible to establish the spelling at an early date in Latin (because \$h\$ was visible) and to follow that irrespective of the actual pronunciation or non-pronunciation of /h/ in Greek.<sup>1</sup> Secondly, Latin lost its own /h/ in Italy in the 1st century A.D. and apparently only a little later elsewhere.<sup>2</sup> Consequently Latin speakers were no longer able to recognize the [h] of other languages nor to spell it reliably in the loan words.<sup>3</sup> A third difficulty is associated with the same development. A considerable number of Greek words became, apparently quite early on, part and parcel of the Latin vocabulary; since then they have followed the sound developments of Latin instead of those of Greek. The loss or pseudo-correct use of \$h\$ in that kinds of words is thus only a proof of the

1 Cf. Schwyzer (1939), p. 157, and Sturtevant (1940), pp. 156-160.

Parallel cases of \$h\$ preserved by spelling but not pronounced for 2000 years are e.g. those in French words herbe, homme or in Spanish words haber, hombre. Sturtevant (1940), p. 160.

2 Sturtevant (1940), pp. 156-157.

3 The difficulties of French speakers in spelling [h] of other languages properly provide a parallel case.

changes in the Latin pronunciation. For these reasons I have preferred to abandon the systematic study of Latin approaching the problem of the loss of the Greek /h/.

With Hebrew and the different dialects of Judaeo-Aramaic we run into problems regarding the survival of /h/ in these languages.<sup>1</sup> In addition, accurate dating of texts written in these languages in the Ancient period and early Middle Ages is, as is well known, virtually impossible.

The history of Ethiopian literature is rather obscure before the 13th century, and it seems highly probable that the entire literature was revised at that time.<sup>2</sup>

The remaining languages listed by SCHWYZER are either chronologically unsuitable for my purposes or the details of the passage of Greek words into these languages (e.g. the Indian languages and Gallic) is somewhat obscure.

In the following chapters I shall accordingly examine the treatment of the Greek /h/ and [r<sub>o</sub>] in Greek words borrowed by Palmyrene Aramaic, Syriac, Coptic, Gothic, and Armenian; the examination deals first with cases where the Greek /h/ is spelled correctly with ḥ in the beginning of the borrowed word, secondly with the absence of ḥ in the same position, thirdly with the occurrences of ḥ deviating from the the Greek original system, then with the medial

1 Cf. e.g. the contrary views maintained by Kahle (1959, pp. 164-171) and Kutscher (1959, pp. 43-60).

2 Littmann (1907), pp. 202-205.

Greek /h/ in the same order, and finally with  $\delta$ .

Treating each group I have tried to date the preservation of the Attic system on the one hand and the appearance of the deviations on the other. As the Greek /h/ was spelled only exceptionally (cf. above, pp. 4-5 ), thus preventing its transliteration, it seems possible to conclude that the use of  $\$h\$$  in Greek loan words of other languages reflects the actual pronunciation of /h/ in the Greek spoken by the (usually bi-lingual or multi-lingual) writer or that current in his surroundings. The deviations from the Attic (or Koine) usages in the spelling of loan words are thus to<sup>be</sup> seen as evidence of changes in the pronunciation of Greek.<sup>1</sup>

The only possible source of errors lies in the possible chrySTALLIZATION of the old spelling with  $\$h\$$  in words which were borrowed at a sufficiently early date to become fully organic parts of the borrowing language and which would therefore tend to follow the development of the language concerned. It is possible, however, to observe alterations in the spelling of numerous words; besides the languages under consideration are all comparatively young as literary languages so that presence of a fixed spelling tradition seems improbable.

The word lists which I have collected do not include the following groups: 1. words where /h/ following a muta-consonant has aspirated the preceding muta;  $\phi$ ,  $\theta$ , and  $\chi$  had developed or were just developing into fricative sound values [f], [p], and [x],

1 Cf. Penzl (1957), particularly pp. 201, 206-207, and Thumb (1888), p. 87.



and thus the disappearance of /h/ was no longer able to dissolve them; in addition it was possible to transliterate these kind of cases, 2. words where the initial syllable beginning with /h/ has completely disappeared in the borrowed form, 3. the majority of names of non-Greek origin (occurring especially in Bible translations)<sup>1</sup>, and 4. words in which according to the theory an 'aspirated' rhŏ succeeds an aspirated muta-consonant (cf. group 1).

The word lists are enclosed as appendices at the end of this paper.

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1 Some of them have, however, been discussed in the text due to their interesting spelling.

## 3. Palmyrene Aramaic

The Palmyrene inscriptions are written in West Aramaic using the West Semitic alphabet. The majority at least, of the Palmyrenes was ethnically Arab. The texts extend from the 2nd century B.C. to the 4th century A.D.<sup>1</sup> The biggest group among loan words in Palmyrene is that of Graeco-Roman origin. As a rule they pertain to the themes of political, military, and economic life.<sup>2</sup>

The Palmyrene [h] disappears, as usual in Aramaic, only in some suffixes.<sup>3</sup>

I have collected my material from the Personal Names in Palmyrene Inscriptions of STARK<sup>4</sup> and from the grammar Die Sprache der palmyrenischen Inschriften of ROSENTHAL (1936).<sup>5</sup> The same words or those beginning with the same initial element are counted in the word list ( vide appendix 3 ) as a single occurrence; I have converted the Seleucidian calendar into the Christian one.

1 Moscati ( 1964 ), p. 11

2 Rosenthal (1936), p. 91

3 op.cit., p. 35.

4 Stark (1971) has collected the Greek names on pp. 133-137 where the Palmyrene transcription methods are also thoroughly analysed.

5 A list of Greek loan words is given on pp. 91-94.

## 3.1. The Greek /h/ in the initial position

The correspondence Greek /h/ = Palmyrene ḥ occurs in six different words, 24 times in all. The oldest example is from the year 160/1 and the earliest from 248/9 (vide appendix 3.1,1).

ḥ is found instead of the Greek /h/ only in the word 'mlgy' = ὁμολογία, but the initial letter is obscure in the text and could equally well be ḥ; in addition the correct etymology of the Palmyrene word is anything but certain.<sup>1</sup>

The name 'drynws = Hadrianus<sup>2</sup> is of Latin origin; thus ḥ reflects the loss of the Latin /h/ and not that of the Greek. The inverse phenomenon occurs in the word hṭyn = optio. Also in the Nabataean Aramaic inscriptions we have a corresponding pseudo-correct ḥ offering further evidence of the loss of the Latin /h/: hgrps = Agrippa.<sup>3</sup>

## 3.2. The Greek /h/ in the medial position

The Greek /h/ occurs in the medial position in only two words. In the word plhḍrwt' = πρόεδρος /h/ is written correctly with ḥ ( ḥ instead of the first rh̄o is due to the typical Semitic dissimilation of liquid consonants).

1 Rosenthal (1936), pp. 36, 92.

2 The occurrence is from the year 235/6. From 130/1 encounters us the form hdryn(ws). Stark (1971, p. 141) considers the spelling without ḥ as a scribal mistake.

3 Rosenthal (1936), p. 36. The Nabataean texts date back to the same period as the Palmyrene inscriptions (Moscati, 1964, p. 11).

On the contrary, 'kšdr' = ἐξέδρα has no §h§. §š§ could certainly be explained as the result of the combination [s] + [h]. However, it seems to be uncertain, whether [h] ever occurred in Greek after ksī.<sup>1</sup> In the Greek loan words that I have collected from the Semitic languages and Coptic §h§ is never found after the Greek ksī; §h§ is also unusual in Greek words in Latin<sup>2</sup>, and even those rare cases it is probably a result of theoretical deliberation. An explanation for this phenomenon may be found in the sound history and phonetical development of the Greek language. Ksī and psī were obviously realized as [k<sup>h</sup>s] and [p<sup>h</sup>s], i.e. the plosive initial part was weakly aspirated at the very least.<sup>3</sup> The Semitic transcriptions point in the same direction: ksī is usually transcribed with the combination §ks§, although §k§ is the normal counterpart of khī and not of kappa which as a rule is written with §q§.<sup>4</sup> Thus the cluster ksī + /h/ had to be pronounced as [k<sup>h</sup>sh]. It is difficult, however, to believe that the actual pronunciation could persist in this form. The parallel combinations φθ and χθ (in which the aspiration

1 According to Lupaş (1972, pp. 30, 69) [h] was pronounced "effectivement" after [n], [s], and [ks] (= ksī). She does not give, however, any evidence of her claim upon ksī.

2 Cf. Saalfeld's Tensavrivs (1884), pp. 475-480.

3 Schwyzer (1939), p. 211, and Sturtevant (1940), p. 91, *contra* Lupaş (1972, pp. 17, 108-109) who on Lejeune's authority (p.45, 62-63) proposes sound values [k<sup>o</sup>s] and [p<sup>o</sup>s] where [k<sup>o</sup>] and [p<sup>o</sup>] are "sourdes douces".

4 Rosenthal (1936), p. 37.

A similar treatment also occurs in other Aramaic dialects including Syriac and in Hebrew. Cf. e.g. the material collected by Altheim - Stiehl (1966), pp. 44-55.

of the first part is doubtful even in the early period<sup>1</sup>) developed at the latest in the Egyptian hellenistic Greek to the forms πθ and κθ<sup>2</sup> and later in Medieval Greek to the sound values [ft] and [xt].<sup>3</sup> Corresponding way of dissolving the aspiration cluster would transform [k<sup>h</sup>sh] at first into [ksh]. However, the strong analogical influence of the realization of ksī as [k<sup>h</sup>s] preserved without obstacles before a vowel (ksī does not occur before a consonant besides /h/) gives reason to assume that [k<sup>h</sup>s] is a more probable final result than [ksh].<sup>4</sup>

### 3.3. The 'aspirated' rhō

The only occurrence is rdwn = 'Ροδών where ϱ is spelled with §r§ used also as the counterpart of ρ.

- 1 Schwyzer (1939), pp. 210-211. Lejeune (1947), p. 59. According to Sturtevant (1940, p. 83) and Allen (1968, pp. 24-26) there is no reason for such a supposition. Lupaş (1972, p. 17) considers that the "doux" allophones [p<sup>o</sup>] and [k<sup>o</sup>] (cf. preceding page, note 3) were found also in these compositions, i.e. they were realized as [p<sup>o</sup>t'] and [k<sup>o</sup>t'].
- 2 Sturtevant (1940), p. 83. Allen (1968), p. 26.
- 3 Schwyzer (1939), p. 211.
- 4 The loss of [h] in this kind of clusters can be seen as an explanation for the use of the prepositional ἐξ (found as a rule before a vowel) before words with an initial /h/ instead of ἐκ. /h/ behaves, however, also in other respects in a manner differing from other consonants (cf. above, p. 6).

## 3.4. Conclusions

These observations indicate that the Greek /h/ was preserved unchanged until the middle of the 3rd century A.D. It would appear that it had not been pronounced after  $ks\bar{i}$  for quite some time.

Only one  $rh\bar{o}$  case exists. It points to the loss of the distinction between realizations of  $\rho$  and  $\rho$ , but the evidence is very sparse.

The Latin /h/ had already disappeared, and as a result the transcriptions of Latin names and words vary in this respect.

## 4. Syriac

Syriac belongs with Coptic to the languages most influenced by Greek. Its influence was felt most strongly through the medium of hellenistic civilization and Greek Christian literature. Since the time of Alexander the Great Greek had gradually become the common language especially in the towns of West Syria, and it remained the official language until the years 705-715, i.e. nearly a century after the Arab conquest. Aramaic (Syriac) survived, however, as the language spoken in the countryside. Syrian literature apparently originated in the 3rd century A.D. We know of inscriptions even earlier than this; the oldest of those dates from the year 73 A.D. Translations of Greek literature into Syriac began in the 4th century bringing many additional Greek loan words into the language. The techniques of translation also had an influence of their own; unfamiliar Greek words were frequently transliterated as they stood into the Syriac alphabet.<sup>1</sup>

Both the Greek /h/ and the Syriac /h/ were realized uniformly, as unsounded laryngeal fricatives.<sup>2</sup> [h] disappears in Syriac only in some suffixes; this kind of <sup>+</sup>h is spelled with \$h\$ which has a bar (linea occultans) on it.<sup>3</sup> Another proof of the stability of the Syriac /h/ is its survival in all of

1 Cf. Schall (1960), pp. 1-5, 27-29.

2 Brockelmann (1960), p. 13. Schwyzler (1939), p. 179.

3 Brockelmann (1960), p. 11.

the living Aramaic dialects.<sup>1</sup>

The loan words examined in this paper are collected mainly from the Lexicon Syriacum of BROCKELMANN (1928). The Old Syriac (Edesseean) Inscriptions of DRIJVERS (1972) gives some additional loan words not mentioned by BROCKELMANN. From these I have taken those Greek words which have an initial spiritus asper in Greek and in Syriac \$h\$ (group 1) or '\$' or \$y\$ (group 2), words beginning with a spiritus lenis in Greek but having \$h\$ instead of it in Syriac (group 3), words which belong to group 3 but which are also found with an initial '\$' (group 3a), then words which have a Greek /h/ in the medial position and a Syriac \$h\$ in the same place (group 4), those where the Greek medial /h/ is represented with another Syriac consonant or is without any symbol (group 5); the latter groups include words which have an 'aspirated' rhō in Greek and \$rh\$ or \$hr\$ as its Syriac transcription (groups 6a and 6b); in cases where the Greek 'aspirated' rhō is represented only with an \$r\$ the occurrences are listed in groups 7a and 7b.

BROCKELMANN gives the occurrences of the words in his Lexicon referring, apart from independent and individual publications, also to research and collected editions which comprise texts from different periods.<sup>2</sup> To some extent this has complicated the task

1 Bergsträsser (1928), pp. 80, 89.

2 About his method to indicate the occurrences Brockelmann mentions (1928, p. iv): "testes adhibui quam veterrimos, additis inferioris aetatis, ut fata vocum, quantum possent, delinearentur".



of dating the first occurrences, particularly in view of the scarcity of original editions at my disposal. SCHALL gives, however, in his Studien über griechische Fremdwörter im Syrischen (1960) a complete list with dates of the Greek loan words found in Syriac literature and inscriptions up to the middle of the 4th century, and this book has provided a firm basis for dates of early loan words. As to the rest I have made use of BAUMSTARK's Geschichte der syrischen Literatur (1922) to date the word occurrences given by BROCKELMANN. The main obstacle to an accurate chronology has been the uncertainty about the date of certain books, particularly the Pešit̃ta version of the Old Testament, since its textual history and time of completion are still extremely obscure.<sup>1</sup> I have therefore chosen to overlook the loan words of Pešit̃ta as far as the date of first occurrence is concerned, although I have also listed this evidence. Words with the same prefix or initial element are counted as one in the word lists and calculations.

#### 4.1. The Greek /h/ in the initial position

In the list extending up to the middle of the 4th century given by SCHALL<sup>2</sup> there are seven words which

1 Cf. e.g. Noth (1962), pp. 300-302.

The publication of the critical edition was recently initiated by the Peshit̃ta Institute in Leiden, but is still in its infancy.

2 Schall (1960), pp. 33-122.

The words occurring in the Old-Syriac inscriptions are included here.

have an initial spiritus asper in the Greek form.<sup>1</sup> Among these the Greek /h/ is replaced in six cases by the Syriac Ḥ and only once with Ḥ'. This exception is 'sqry' = ἰστοκεραία (4.2,31). It seems, however, that the word was commonly used in the Near East in the form ἰσπεραία.<sup>2</sup> ḥdrwl' = ὕδραυλις<sup>3</sup> occurs in the Acts of St. Thomas parts of which at least may date back to the 3rd century.<sup>4</sup>

Among the words listed by SCHALL there are 26 words with an initial spiritus lenis. In Syriac they have Ḥ' in the beginning with the exception of ḥdywṭ' = ἰδιώτης (4.3,16). The variant ἰδιώτης was, however, the normal form in Koine.<sup>5</sup>

In the remaining Syriac literature of the 4th century I found seven words in which the counterpart of the Greek initial /h/ is Ḥ in Syriac.<sup>6</sup>

In three words /h/ is replaced by the Syriac Ḥ': 'ygmwn = ἡγεμών (4.2, 26), 'yrṭywn = ἱερατεῖον (4.2,29), and 'rsys = αἵρεσις (+ two derivatives, 4.2,3); all three occur in the texts of Ephraem Syrus written in the middle of the 4th century (his works are not included in the study of SCHALL). αἵρεσις and ἡγεμών are found earlier with Ḥ in the initial position: hrsys (4.1,2) by Bardesanes in the 3rd century and hgmwn' (4.1,13) by Afraḥ in the early 4th century (and by Eusebius of Caesarea in the

1 Vide appendix 4.1, no. 2, 13, 18, 21, 22, 28, and appendix 4.2, no. 31.

2 Krauss (1899), pp. 96-97. The word may be an Ionian nautical term.

3 (4.1,25), not mentioned by Schall.

4 Baumstark (1922), pp. 12, 14-15.

5 Schwyzer (1939), p. 220.

6 Vide appendix 4.1, no. 2, 13, 17, 20, 26 (2x), and 28 (2x).

4th century).

Instead of spiritus lenis §'§ is found in three words in the 4th century. They are hrwm' = ἀρώματα (4.3,3), hprky' = ἐπαρχία (4.3,10)<sup>1</sup>, and hdywṭ' = ἰδιώτης (4.3,16, cf. the preceding page and note 5) + its derivative hdywṭwt'.

With the exception of ἀρώματα the initial vowel in all words deviating from the Attic system is either [e]<sup>2</sup> or [i]<sup>3</sup>. Words with these initial vowels occur, however, correctly spelled in this same period. Among the 'faulty' words the stress falls on the initial syllable only in αἴρεσις. On the other hand, in the words where the Greek /h/ is correctly replaced by the Syriac §h§ the stress falls on the initial syllable in five cases and elsewhere in seven cases.

Among loan words occurring for the first time in the 5th century there are 10 cases where the Greek /h/ is represented by the Syriac §h§, and 11 where it is replaced by §'§; in five words the pseudo-correct §h§ is the counterpart of spiritus lenis. The initial Greek vowel seems to have no significance in this respect. The stress falls twice on the initial syllable among the words of the first group (/h/ = §h§), never in the second group (/h/ = §'§), and once in the last (ϕ = §h§).

The use of §h§ in place of spiritus asper also continues throughout the history of Syriac literature in words which at any rate are not preserved for us

1 The Syriac form could be also = ὑπαρχία.

2 ατ was pronounced as [e] as early as in the 4th century. Sturtevant (1940), p. 49-50. Tucker (1969), p. 44-45.

3 η was pronounced as [i] in Syria in the 4th century. Sturtevant (1940), pp. 37-38. Tucker (1969), p. 46.

in the Syriac form from the previous centuries. The explanation may lie in an awareness of the theories of the Greek grammarians and of their word lists (cf. above, p. 9). It is also possible that some loan words had become rooted at an early stage in Syriac in the form with [h]; [h] may also have survived as a free variant in Greek vernaculars for a long time despite the loss of its phonemic value.

#### 4.2. The Greek /h/ in the medial position

The reference method used in the Lexicon of BROK-KELMANN does not always distinguish between the spellings with and without \$h\$, and because of the scarcity of original sources I have not been able to check all spelling forms. This does not, however, obscure the overall picture.

The Greek /h/ is replaced by \$h\$ in five words or combinations of words. The three oldest examples go back to the 5th century.

/h/ is not marked in 16 different words; sometimes '\$' indicates some kind of hiatus within the word. The oldest cases ('ksdr' = ἐξέδρα and pr(h/w)l(w)s = παράλογος) are from the 4th century, but the former has ἐξ before /h/ (cf. above, pp. 20-21) and the latter is uncertain in regard to its spelling (and /r/ before /h/ = [r]?). Clear instances of the loss of the Greek medial /h/ are found from the beginning of the 5th century.

The pseudo-correct usage ( $\emptyset = \$h\$$ ) does not occur.

Jacob of Edessa (ca. 640-708) was opposed to the use of \$h\$ as the counterpart of the Greek medial

[h] including the marking of ϝ with the help of \$h\$ as he intended to revise the Syriac orthography and to bring it closer to the pronunciation.<sup>1</sup> To my mind this also points towards the disappearance of the Greek medial /h/ and the difference between ϝ and ρ.

#### 4.3. The 'aspirated' rhŏ

The reference method adopted by the dictionaries leads in the case of rhŏ to the same kind of difficulties as mentioned in the previous chapter.

The Syriac /r/ was realized in the same way as the Greek ρ, i.e. as a sounded alveolar tremulant pronounced with the tip of the tongue.<sup>2</sup>

\$rh\$ is the counterpart of ϝ in two loan words; the older is from the year 243 (rhmwš = ῥωμαῖος) and the second from the middle of the 4th century (rhyṭrwṭ' = ῥητορῆσαι). ϝ is replaced twice by \$hr\$ (4.6a,1 and 4), but the etymology and date of the former is uncertain while the latter is from the 10th century.

ϝ is spelled in Syriac with \$r\$ (as ρ) in nine words, the oldest being from the 4th century (rwp', rwp'y' = ῥοπή).

The medial ϝϝ is written with \$rh\$ in two words (the gemination can not be indicated in the Syriac consonantal script); both of them occur in the early 4th century (rhbw'n' = ῥῥαβών and prhsy' = παρῥησία). ῥῥαβών has lost its initial vowel; in addition it

1 Merx (1889), pp 52-53.

2 Brockelmann (1960), p. 13. Sturtevant (1940), pp. 60, 62.

is a loan word of Semitic origin in Greek.<sup>1</sup> The word seems, however, to have been introduced into Syriac from the Greek since the original Semitic /<sup>c</sup>/ has also disappeared from the beginning of the word.

In nine words the medial Greek ρρ is written simply with \$r\$. The oldest datable case among them is from the beginning of the 6th century (qṭṛqṭ' = καταρράκτης). According to SCHALL that word can be dated back to the 3rd century, but the text in which it is preserved to us originates from the 6th century<sup>2</sup>, and the spelling may therefore have altered in the meantime.

ρ is never replaced by a \$h\$-combination.

The attitude of Jacob of Edessa in regard to the use of \$h\$ with \$r\$ and the significance of these objections is discussed on pp. 28-29.

#### 4.4. The Syriac \$h\$ as a vowel letter

On the basis of the observations made so far it becomes apparent that NÖLDEKE's<sup>3</sup> and SCHWYZER's<sup>4</sup> theories on the use of \$h\$ as the symbol of ε, η; and α is valid only from the 5th century onwards. In that century this kind of usage occurs in the translations of Athanasius and Hermeneutika of Aristotle (herm. & glherm.) and it is also present later in

1 Schall (1960), pp. 98-99.

2 op.cit., pp. 49-50.

3 Nöldeke (1880, p. 5): "Griechisches ε drücken gewisse Schriften durch \$h\$ aus, z.B. \$lhksys\$ λέξις. Der Wunsch, die griech. Vocale genau wiederzugeben, hat bei gelehrten Syrern überhaupt allerlei Seltsamkeiten zu Wege gebracht".

4 Schwyzer (1939), p. 159.

certain other texts. In the loan word list of SCHALL<sup>1</sup> there are no examples of \$h\$ being used as a vowel mark, and this list extends, as mentioned, up to the middle of the 4th century.

Some words which occur later having the pseudo-correct initial \$h\$ instead of spiritus lenis may belong to this group.

#### 4.5. Conclusions

It is evident from the above that the Greek initial /h/ was uniformly represented by the Syriac \$h\$ up until the middle of the 4th century. Since there was no possibility of transliteration we may presume in my opinion that /h/ was preserved till that period in the Greek spoken in Syria.

Since ca. 350 cases arise in which /h/ is not replaced by \$h\$ but by \$' \$ (or \$y\$); in some words we can even observe the change of spelling in this respect at that time. Indeed, the first cases with pseudo-correct \$h\$ instead of spiritus lenis (and Syriac \$' \$) appear at the same moment (apart from those words which generally had an exceptional initial [h] in Koine). The trend grows greatly in strength in the 5th and the following centuries. All these phenomena strongly support the conclusion that the Greek /h/ lost its phonemic value in the first half or middle of the 4th century.<sup>2</sup>

1 Schall (1960), pp. 33-122.

2 Cf. Penzl (1957, p. 201): "Reverse or inverse spellings always indicate a phonemic coalescence." Cf. also the parallel examples of other languages given by him, pp. 201, 206-207.

The evidence concerning the medial /h/ is slight and gives no clear picture of the the development. In the 5th century the medial /h/ was probably no longer extant.

The pronunciation of  $\rho$  became obviously identified with that of  $\rho$  in the 4th century. It is not possible to fix the date more exactly in view of the scantiness of the material nor to discern the developments between the initial and the medial position.

The variable spellings  $\$rh\$$  and  $\$hr\$$  of  $\rho$  support the hypothesis that the 'aspirated'  $\rho\bar{h}$  was originally pronounced as an unsounded  $[\underset{\circ}{r}]$  (cf. above, p. 11) The Finnish language provides a parallel case of the treatment of the consonant  $[f]$  which, unlike its sounded equivalent  $[v]$ , is unknown to the original phonetic system. In old loan words  $[f]$  is replaced as a rule by  $[hv]$  in the medial position (e.g. kahvi = coffee), and instead of a final  $[f]$  one can often hear e.g. in foreign names realizations where  $[f]$  is replaced by an aspirated sounded labiodental fricative  $[v^h]$ , e.g.  $[\text{ulv}^h]$  pro proper  $[\text{ulf}]$  (= Ulf, a Swedish first name).

The loss of the Greek /h/ does not seem to be associated with any particular vowel following /h/. However, it is possible to observe a slight correlation between it and the position of the accent so that /h/ is preserved better in cases where the stress falls on the first syllable. In this context it is worth mentioning that among the words where the Non-Attic  $[h]$  occurs in the initial position in the Greek texts<sup>1</sup> almost all of them have the stress

1 Cf. the list given by Mayser (1970), pp. 174-175.



on the initial syllable. Thus we get the impression that the initial stress favours (even non-etymological) [h] at the beginning of the word and the stress lying on another syllable its absence. The explanation may lie in the change from the Greek musical pitch into the dynamic stress which has a tendency to strengthen the stressed syllable and to weaken the others.<sup>1</sup> This change took place around the 2nd century, but developments in this direction seem to appear as early as the 4th century B.C. in colloquial Greek.<sup>2</sup> The influence of the dynamic stress becomes more evident in the early Middle Ages as the unstressed initial vowels are dropped in Greek.<sup>3</sup> The already weak initial [h] vanished probably on account of such development and the loss also spread to the medial [h].

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1 Martinet (1955), pp. 169-170.

2 Sturtevant (1940), pp. 103-105. Cf. also Allen (1968), pp. 119-120, and Tucker (1969), p. 45.

3 Browning (1969), p. 63 (ἡμέρα > μέρα etc.).

## 5. Coptic

Coptic, the last offshot of Egyptian, was written from the 2nd century onwards with an alphabet of Greek origin. It was moulded into a literary language during the 3rd century; original works and translations especially from Christian literature were then produced until the 14th century. Coptic literature exists in at least five dialects the most important of which are Sahidic (in Upper Egypt) and Bohairic (in Lower Egypt). Sahidic is older as a literary language, but was supplanted by Bohairic in the 11th century.<sup>1</sup>

The influence of Greek seems to have been relatively slight on (Demotic) Egyptian at least in its written form. This may be due to the traditionalism of the literary language; it is, however, very probable that more Greek loan words were found in the vernaculars.<sup>2</sup> Coptic was not bound by tradition, and thus Greek loan words spread very widely even in the literature: BLOK mentions that he has collected a loan word list containing 4000 words<sup>3</sup> and the vocabulary of BÖHLIG includes ca. 1500 different loans.<sup>4</sup> The main factors behind this extensive borrowing were the Greek administration, the status of Greek as the

1 Till (1961), pp. 29-39.

2 Girgis (1964), p. 63. Till (1961), p. 34 and Anm. 7. Cf. also Schwyzer (1939), pp. 154-155.

3 Blok (1927), p. 50.

4 Böhlig (1954a). Cf. also the statistics concerning different texts given by Girgis (1964, pp. 64-65).

principal language of the civilized world at that time, the intermingling of the Greek and Egyptian populations, and the advanced bilingualism in Egypt.<sup>1</sup> Greek loan words occur most frequently in the original Coptic works and in Sahidic more often than in Bohairic; in the oldest texts loan words are rare.<sup>2</sup>

The Greek loan words of Coptic are not included in the Coptic dictionaries and no special dictionary covering the whole Coptic literature exists. Because of this shortage the method applied above for Syriac is not suitable for Coptic. My sources of material are therefore confined to the loan words occurring in the Sahidic version of the New Testament which are collected by LEFORT in his Concordance du Nouveau Testament sahidique I, Les mots d'origine grecque (1950). In the absence of a critical edition the concordance is compiled on the basis of several editions and manuscripts.<sup>3</sup> The Sahidic version is believed to originate from the middle of the 3rd century<sup>4</sup> or ca. 300<sup>5</sup>; the text was apparently completed before 350.<sup>6</sup>

The Coptic /h/ was realized in accordance with the Greek as an unsounded laryngeal fricative.<sup>7</sup> However,

1 Böhlig (1954a), pp. 19-35. Girgis (1964), pp. 64-65.

2 Girgis (1964), pp. 68-72. Böhlig (1954, pp. 11-19) claims, however, that the differences are minor between texts of different periods and qualities. For the types of the words, vide Böhlig (1953), pp. 12-14, and Böhlig (1954), pp. 152-427.

3 List of the source texts: Lefort (1950), pp. i-ii.

4 Kahle (1959), p. 260. Morenz (1952), p. 210.

5 Noth (1962), p. 304.

6 Leipoldt (1907), p. 139.

The version is mentioned in the literature for first time in 367. Morenz (1952), p. 211.

7 Worrell (1934), p. 37. Schwyzer (1939), p. 179.

the realization was obviously quite weak, and /h/ seems to have disappeared from the dialect of the Thebaid territory in the 6th century.<sup>1</sup> /r/ was realized both in Sahidic and Bohairic dialect as a sounded alveolar tongue-tip tremulant.<sup>2</sup>

BLOK leaves open the question of whether the Greek loan words in Coptic may provide evidence of the psilosis problem.<sup>3</sup> According to BÖHLIG the Greek /h/ had already disappeared by the time the Sahidic version of the New Testament appeared although \$h\$ generally occurs correctly in the place of spiritus asper in the loan words "aber doch wohl nur aus orthographischen Gründen".<sup>4</sup>

The list of the loan words in the Sahidic New Testament which is collected and arranged according to the same principles as those described above for Syriac can be found at the end of this paper (appendix 5).

#### 5.1. The Greek /h/ in the initial position

33 different loan words are found in the Sahidic version of the New Testament with an initial /h/ in the Greek form. /h/ is always replaced by the Coptic \$h\$. The words occur 598 times in all.

1 Worrell (1934), p. 110. Vergote (1945), 100.

2 Worrell (1934), pp. 84 and 10. The realization was thus equal with that of the Greek ρ (cf. above, p. 11).

3 Blok (1927, pp. 58-59): "Sehr schwierig zu beantworten ist die Frage, ob die Kopten eine Psilosis ursprünglich aspirierter Formen gekannt haben." The examples of Blok are, however, picked from texts of various dates.

4 Böhlig (1954a), pp. 41, 111-113. The use of \$h\$ is

The only word in which spiritus asper has no counterpart is the place name armakedōn = Ἀρμαγεδών.<sup>1</sup> It is, however, of Hebrew rather than of Greek origin.

There are seven different words in which the Greek spiritus lenis is replaced by the Coptic ḥ. Altogether these words occur 264 times with hethnos = ἔθνος, ἔθνικῶς (5.2,1) alone accounting for 159 occurrences. However, the words ἑλπίς (= helpis), ἕδιος (ἠιδιῶτες), and ἕσος (= hisaggelos) usually had an initial [h] in Koine<sup>2</sup> and are not therefore valid as evidence for the loss of the Greek /h/. This leaves in this group hethnos and its derivatives, heikōn (= εἰκῶν, 5.2,2)<sup>3</sup>, hetaze (= ἐτάζειν, 5.2,7)<sup>4</sup>, and hobolos (= ὀβολός, 5.2,6). ἔθνος occurs also in Armenian in the form hetanos (7.3,3). Corresponding [h] sounds developed before an aspirated muta-consonant are also found in early Attic;<sup>5</sup> θ may have led to a similar kind of superfluous [h] at the beginning of hethnos, in addition it is worthy of note that the stress falls on the initial syllable (cf. above, pp. 32-33 and 46-47).

according to him "ein Beweiss dafür, dass die Schreiber sich um eine einigermaßen saubere Schulorthographie bemühen" (p. 111).

1 One occurrence, cf. Lefort (1950), p. 35.

2 Thumb (1888), pp. 70-71. Schwyzer (1939), pp. 220 and 305. Mayser (1970), p. 175.

3 According to Böhlig (1954, pp. 112 and 312) the spelling is always hikōn.

4 The word occurs, etymologically correctly, also with initial [h] in Greek. Frisk (1960), pp. 578-579.

5 Sturtevant (1940), p. 78-79. Lupaş (1972), p. 29.

A superfluous [h] also occurs in hamēn = ἀμήν<sup>1</sup>, a word of Hebrew origin. The word must have been known in its Hebrew-Aramaic form in Egypt, and thus §h§ signifies here the original Semitic laryngeal plosive ['], a fact which supports the supposition of the weak realization of the Coptic /h/ (cf. above, pp. 35-36).

### 5.2. The Greek /h/ in the medial position

The medial Greek /h/ is indicated by §h§ in six words, 59 times in all (appendix 5.3.).

/h/ is without any counterpart in two words (appendix 5.4.), both of which have, however, the preposition ἕξ as a prefix, and thus the survival of [h] is uncertain even in the Greek regardless of psilosis (cf. above, pp. 20-21).

In two words (appendix 5.5.) there is a superfluous §h§; both of them occur after the Greek /r/ and thus their case would appear rather to belong to the group of the 'aspirated' rhō.

### 5.3. The 'aspirated' rhō

The 'aspirated' rhō occurs in two Greek words in the initial position in both of which it is replaced by an §hr§ combination in Coptic (appendix 5.6.). The same spelling is applied to two words of Hebrew origin: hrabbei = ῥαββεί and hrabbounei = ῥαββουνεί.<sup>2</sup>

1 Cf. Lefort (1950), pp. 12-13.

2 Cf. Lefort (1950), p. 264. The words occur 17 times altogether.

The medial 'aspirated' rhŏ is found in two different Greek words which occur a total of 41 times (appendix 5.7.). The 'aspiration' is not marked, i.e. ϑ̄ is spelled with §r§ which corresponds also to ρ. §h§ is used, however, in certain other texts in similar cases.<sup>1</sup>

In addition to this there are two words (parhoimia = παροιμία and parhousia = παρουσία) which have neither the medial ϑ̄ nor /h/ in Greek (appendix 5.5.). They occur 25 times altogether. §h§ may stand for some kind of diaeresis mark in these cases (cf. also hamēn = ἀμήν above, p. 38).

#### 5.4. Conclusions

It would seem from the arguments put forward above that the Greek /h/ was still realized as [h] both in the initial and the medial position up until the time of the Sahidic version of the New Testament. Otherwise it would be difficult to account for the marked quantitative distinction between the correct Greek /h/ = Coptic §h§ cases and 'incorrect' words, since the use of §h§ was decided by ear. A few cases in which §h§ exists as a pseudo-correct feature, excluding some exceptional Koine-words (cf. above, p. 37) may stem from the weak realization of /h/ in Coptic itself.

The realization of ϑ̄ was obviously still different from that of ρ in the initial position. The spelling §hr§ supports the theory of the [r<sub>o</sub>] realization of ϑ̄ (cf. above, p. 32). On the other hand, the distinc-

<sup>1</sup> Blok (1927), pp. 57-58.

tion between medial  $\delta$  and  $\rho$  would seem to have already disappeared to the advantage of the latter.

### 5.5. Later developments

The Bohairic version of the New Testament may have appeared as early as the 4th century,<sup>1</sup> though more probably it dates from the period after the Council of Chalcedon (in 451).<sup>2</sup>

In this version too, there are numerous Greek loan words. According to BÖHLIG there is a marked difference between the treatment of the Greek /h/ here and that found in the Sahidic version. In most cases the  $\$h\$$  found in Sahidic has disappeared in the Bohairic form (e.g. idiōtēs, paroimia, rētōs, and er-synistan are words which have  $\$h\$$  in the Sahidic text), but a few words still occur with  $\$h\$$  such as e.g. hina, hotan, hydōne (= ἡδονή), hydrōpikos, and hypomenē. In addition the use of the pseudo-correct  $\$h\$$  is still found in the words hēdē (= ἡδῆ), hi(y)sōs, hi(y)sos (= ἱσος), hirēnē, hirēnikon, hōdē, hikōn (= εἰκῶν), and helpis.<sup>3</sup> The two latter already occur in the Sahidic version. Amongst the words given above the Greek stress falls on the initial syllable in five instances and on another syllable in eight other cases.

The difference between the two versions permits us

1 Morenz (1952), pp. 210-211.

2 Böhlig (1954), p. 85.

Noth (1962, p. 304): "Die...bohairische Übersetzung ...ist durch die erhaltenen Handschriften erst für jüngere Zeit (7. Jahrh. n.Chr.?) bezeugt".

3 Böhlig (1954), pp. 112-113.



to draw the conclusion that the Greek /h/ lost at least its phonemic value between the appearance of the Sahidic version (ca. 300) and the composing of the Bohairic version (the second half of the 5th century - 7th century). [h] still seems to appear occasionally in the initial position but never in the medial; it is, however, seemingly independent of the etymology but in some degree dependent upon the location of the stress so that the initial stress favours [h] (cf. above. pp. 31-32 ). The weak realization of the Coptic /h/ and knowledge of the theories of the Greek grammarians might, however, have had some influence on this state of affairs.

## 6. Gothic

Wulfila's Gothic version of the Bible dates back to the middle of the 4th century (Wulfila died in 383).<sup>1</sup>

This version also includes numerous Greek loan words. The dissertation of ELIS Ueber die Fremdworte und fremden Eigennamen in der gotischen Bibel-Übersetzung (1903) includes lists of those<sup>2</sup> which I have made use of in my research.

ELIS says of the treatment of spiritus asper in Gothic: "Der Spiritus asper wird durch h übertragen. Er fehlt 1) bei Esaias und Ymainaius (neben Hymainaius), 2) bei ð + Vokal, das zu i + Vokal wird."<sup>3</sup>

## 6.1. The Greek /h/ in the initial position

Seven different, authentic Greek words (24 occurrences) which have an initial /h/ appear in the Gothic version. /h/ is replaced by the Gothic \$h\$ in four of these (appendix 6.1.).

Spiritus asper remains without a counterpart in three words (4 occurrences, appendix 6.2.); the word Ymainaius also occurs, however, with \$h\$ (6.1,4).<sup>4</sup>

1 Noth (1962), p. 303.

2 Elis (1903), pp. 39-76.

3 op.cit., p. 20.

4 According to Elis (1903, p. 54) Ymainaius is a scribal mistake (and that is quite probable).

All the words beginning with a  $\dot{\iota}$  + vowel combination<sup>1</sup> are, with the exception of the name  $\dot{\iota}$ εράπολις, names of Hebrew origin and have [y] as the first letter in Hebrew. The spiritus asper added (later!) to them in Greek is doubtless due to an incorrect folk etymology, i.e. the Hebrew [yər-] element is associated with the Greek word  $\dot{\iota}$ ερός. In the Gothic version the original §j§ or §i§ was restored to these names probably through the influence of the Latin Itala version<sup>2</sup>, and this adaptation also drew along the genuine Greek name  $\dot{\iota}$ εράπολις to the form Iairaupaulēi or Jairupula. The Hebrew name Esaias (mentioned by ELIS) has no spiritus asper in its Greek form.

There are no instances of the superfluous use of §h§ nor of Greek loan words with a medial /h/ in the Gothic version.

## 6.2. The 'aspirated' rhō

There are no ϱ's in any of the authentic Greek loan words found in this version.

In names of Latin origin like Rufus =  $\dot{\iota}$ ΡΟΥΦΟΣ and Ruma =  $\dot{\iota}$ Ρώμη the aspiration is not marked, nor it is marked in the Semitic names which later at least were spelled with - $\dot{\rho}\dot{\rho}$ -; their pronunciation in the 4th century is of course a different matter.<sup>3</sup>

1 Cf. Elis (1903), pp. 54-55.

2 Elis (1903, p. 20) supposes obviously with reason that the correct use of §h§ in Semitic words in medial position is due to the influence of Itala version (e.g. Abraham, Aharon, Beplaihaim, Johannes).

3 Names of that kind are Gaumarra = Γόμορρα (lx, Elis, p. 52), Sarra = Σάρρα (lx, Elis, p. 69), and rabbei = ϱαββεί, ϱαββουνεί (8x, Elis, p. 69).

## 6.3. Conclusions

It is difficult to draw conclusions from such scanty material. Instances of the correct correspondence /h/ = §h§ are, however, quite numerous and the only certain exception to the Greek system is Airmo-gaineis (6.2,1) which together with the word pair Ymainaius - Hymainaius might point towards the incipient disappearance of the Greek /h/.

The difference between realizations of  $\rho$  and  $\dot{\rho}$  has possibly vanished; the evidence, however, is very weak.

## 7. Armenian

The Armenian alphabet was created at the beginning of the 5th century. During this century a rich literature was published consisting of both translations and original texts<sup>1</sup> and literary activity has continued without interruption from this time onwards. Medieval Armenian has plenty of loan words borrowed mainly from Persian, Greek, and Syriac.<sup>2</sup> Loans from Arabic and European languages occur mainly in the later literature.

The Armenian /h/ was realized, like the Greek /h/, as a laryngeal fricative,<sup>3</sup> /r/ as an untrilled alveolar fricative pronounced with the tip of the tongue, /r̄/ differed from it mainly because of its trilled pronunciation.<sup>4</sup>

THUMB has made a thorough investigation of the Greek vocabulary of Armenian from which he concludes that /h/ was preserved in the Greek of the 5th century if at all only in the speech of the scholars; the differences between the treatment of the 'aspirated' and 'non-aspirated' Greek rhō is in his view only an imitation of the system of the Greek grammarians.<sup>5</sup>

I have taken the words of particular interest to myself from the Armenische Grammatik, I. Theil, Armenische Etymologie of HÜBSCHMANN (1897). The method

1 Hübschmann (1897), pp. vi-ix.

2 Hübschmann (1897, pp. 9-389) lists 686 Persian, 512 Greek, and 132 Syrian loan words.

3 Tumanjan (1971), pp. 38-39. Schwyzer (1939), p.179.

4 Tumanjan (1971), pp. 42-43. 5 Thumb (1900), pp. 414-415.

of treatment is the same as that used previously for Syriac. The dates of first-occurrences are based on the dates of books and authors given by HÜBSCHMANN in his work.<sup>1</sup>

#### 7.1. The Greek /h/ in the initial position

The Greek /h/ is replaced by the Armenian §h§ in seven Greek words (appendix 7.1.). Except in one instance all the words are found as early as the 5th century. In four of these six words the stress falls on the initial syllable in Greek.

/h/ is left without any counterpart in 12 words. Eight of these are from the 5th century; the Greek forms of the words a/kion (7.2,1) and e/imos (7.2,6) in regard to spiritus are, however, uncertain. None of them has the stress on the initial syllable (appendix 7.2.).

§h§ occurs in the place of spiritus lenis in four words, all from the 5th century. The stress falls on the initial syllable in three of them (appendix 7.3.). hefanos = ἔθνος also occurs with an initial §h§ in Coptic (cf. above, p. 37).

#### 7.2. The Greek /h/ in the medial position

The medial Greek /h/ is written with §h§ in Armenian in two words, both of them from the 5th century<sup>2</sup> (appendix 7.4.).

1 Hübschmann (1897), pp. 3-8.

2 One of them has, however, a form deviating from the Greek: anfihiupatos (7.4,1) = ἀνθύπατος. Thus its value as evidence is slight.

/h/ is not marked in any way in one word occurring twice in the 8th century (appendix 7.5.).

### 7.3. The 'aspirated' rhŏ

The Greek ϖ is represented in three words with \$hr\$ two of which occur in the 5th century (appendix 7.6.).

In four words the counterpart of ϖ is \$r\$ or \$r̄\$ two of these being from the 5th century (appendix 7.7.).

Only one Greek loan word has a medial ϖ. In Armenian it is indicated with \$r\$. The word occurs in the 7th century (7.8,1).

### 7.4. Conclusions

Concerning the initial /h/ it would appear that at least as phonem it had disappeared before the 5th century from the Greek spoken in Eastern Asia Minor. The number of forms differing from the Greek system as compared to the number of correct cases is too great to permit of any other conclusion. However, it is interesting to note that the occurrence of \$h\$ or its absence seems largely dependent upon the position of the stress; thus a word with an initial stress often gets even a non-etymological [h], while in other cases [h] is usually lacking. This kind of development can also be seen in Bohairic Coptic and to some extent in Syriac, as well (cf. above, pp. 40-41 and 31-32).

The medial /h/ does not occur sufficiently clearly or often to enable us to draw any firm conclusions.

The 'aspirated'  $\rho\bar{h}$  already had three different counterparts in the 5th century (§r§, §ṛ§, and §hṛ§) which suggests that the difference of realization between  $\rho$  and  $\rho$  had vanished. §r§ and §ṛ§ were used also in the place of  $\rho^1$ ; thus the third counterpart §hṛ§ indicates that the Greek realization of  $\rho$  was considered to have deviated from the pronunciation of the Armenian /r/ and /ṛ/.

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1 Thumb (1900), pp. 403-404.



## 8. Summary

Concerning the initial Greek /h/ the Greek loan words in Palmyrene Aramaic bear witness to the preservation of the Greek /h/ realized regularly as [h] until the middle of the 3rd century A.D. There are no later texts in that language and thus ca. 250 remains a post quem date for the loss of the Greek /h/. With the material provided by the closely related language, Syriac, we can date the loss to the middle of the 4th century because the deviations from the Greek system begin to occur just at that period, even in words which earlier had correctly included \$h\$ or \$' in their Syriac form. With the help of Coptic it is possible to see that the Greek /h/ was preserved until ca. 300, but it disappeared before the appearance of the Bohairic version which unfortunately can not be dated accurately (cf. above, p. 40). The deviations already found in the Sahidic version (the superfluous use of \$h\$) may be due to the weakness of the Coptic [h] itself; on the other hand they might be omens of the incipient weakness of the Greek /h/. The loan words of Gothic from ca. 350 provide evidence of the survival of /h/ rather than of its decline. Armenian shows clearly that /h/ had lost its phonemic value before the 5th century.

Taken as a whole the evidence suggests that the initial Greek /h/ lost its phonemic status in the middle or second half of the 4th century.

No such firm conclusion can be drawn about the history of the medial /h/. From the evidence provided by the Sahidic New Testament it would seem that the medial /h/ was still pronounced in ca. 300. Syriac indicates that it was lost in the 5th century. It is impossible to fix the date more exactly than to say that the loss happened sometime during the 4th century. After ksī (and presumably also after psī) [h] was obviously not pronounced for a long time but this feature is not associated with the real psilosis.

As regards the 'aspirated' rhō Coptic suggests that the realization of ϝ was still in ca. 300 different from that of ϖ in the initial position but not in the medial. On the basis of the Syriac evidence it seems that the entire distinction disappeared in the first half of the 4th century. Thus it is possible to argue that the realization of ϝ became equal with that of ϖ in the beginning of the 4th century though perhaps it happened later in the initial position than in the medial. The dating remains, however, questionable since a ϝ = §r§ case occurs as early as 212/3 in Palmyrene Aramaic. By virtue of transcriptions it is plausible to suppose that the 'aspirated' rhō was originally realized as an unsounded [r<sub>o</sub>] in Greek.

The reasons for the loss of /h/ are not clearly perceptible but some indications are worthy of mentioning. From the material provided by Syriac it would seem that the initial Greek /h/ disappeared most easily from words in which the stress did not fall on the first syllable. The Armenian and

Bohairic Coptic vocabularies reveal the same development in the initial position in a more apparent form. The phenomenon is - as far as I can see - connected with the change of the pitch accent into the dynamic stress which has a tendency to strengthen the stressed syllable and to weaken the others. The paucity of the material makes it impossible to determine whether the loss of /h/ spread from the initial to the medial position or whether it was a result of a parallel development.

Although the Greek /h/ had disappeared as a phonem [h] occurred as a free variant, often without any etymological basis, scattered in the initial position at least up until the 5th century particularly if the Greek stress of the word falls on the first syllable. How long [h] remained in this form is not apparent from the material available to me.

However, the dates given here are not intended to suggest that all Greek speakers pronounced /h/ as [h] until ca. 350 and distinguished between [r] and [r<sub>o</sub>] until ca. 300. In the first place, the results are valid only in the area of the Eastern Mediterranean, and secondly, the authors from whose works my evidence is collected spoke or at least could when necessary speak more erudite Greek than the average person. Most linguistic developments take place initially in popular speech unconstrained by any awareness of formal rules and such changes are not normally adopted for some time in the literary language. For this reason the dates which I have put forward would suggest that the disappearance of /h/ was accepted as a normal feature of cultivated Greek in

the Eastern Mediterranean area in the middle of the 4th century or soon after the year 350; later [h] was liable to occur as a free variant. The spiritus mistakes in the Odyssey papyrus (Ryland 53) dating back to the 5th century (cf. above, p. 8 ) also lend support to my dating of the loss of the Greek /h/. No conclusions as to the date at which it disappeared in the Greek vernaculars can be ventured in this paper. - The date given for the change of [r<sub>o</sub>] to [r] is, of course, also valid primarily in regard to cultivated Greek and the Eastern Mediterranean area.

In any event I would like to think that my research has brought us nearer to the fulfillment of the wish expressed by THUMB in his dissertation (1888 p. 88): "Ich glaube, dass eine Untersuchung der orientalischen Sprachen hinsichtlich unserer Frage (das Schwinden des Hauches in der griech. Sprache) einmal noch zuverlässigere Bestimmungen ermöglichen wird."

Appendix 1

Transliteration

Palmyrene Aramaic:

Syriac:

'	𐤀	𐤁
b	𐤂	𐤃
g	𐤄	𐤅
d	𐤆	𐤇
h	𐤈	𐤉
w	𐤊	𐤋
z	𐤌	𐤍
h	𐤎	𐤏
t	𐤐	𐤑
y	𐤒	𐤓
k	𐤔	𐤕
l	𐤖	𐤗
m	𐤘	𐤙
n	𐤛	𐤜
s	𐤞	𐤟
c	𐤠	𐤡
p	𐤣	𐤤
s	𐤨	𐤩
q	𐤫	𐤬
r	𐤰	𐤱
s	𐤴	𐤵
t	𐤸	𐤹

Sertō.				Estrangeli.	Nestorianisch.	Namen.	Umschreibung.
Überbunden (ev. Finalbuchstaben).	Nach rechts verbunden.	Nach links verbunden.	Nach rechts und links verbunden.				
𐤀	𐤀	𐤀	𐤀	𐤀	𐤀	Alaf ('Ōlaf)	'
𐤂	𐤂	𐤂	𐤂	𐤂	𐤂	Bēp	b
𐤄	𐤄	𐤄	𐤄	𐤄	𐤄	Ga(ō)mal	g
𐤆	𐤆	𐤆	𐤆	𐤆	𐤆	Da(ō)lap(ā)	d
𐤈	𐤈	𐤈	𐤈	𐤈	𐤈	Hē	h
𐤊	𐤊	𐤊	𐤊	𐤊	𐤊	Uaṣ	w
𐤌	𐤌	𐤌	𐤌	𐤌	𐤌	Zaiṇ, Zēn, Zaj	z
𐤎	𐤎	𐤎	𐤎	𐤎	𐤎	Hēp	h
𐤐	𐤐	𐤐	𐤐	𐤐	𐤐	Tēp	t
𐤒	𐤒	𐤒	𐤒	𐤒	𐤒	Īōd, (Īād)	y
𐤔	𐤔	𐤔	𐤔	𐤔	𐤔	Ka(ō)f	k
𐤖	𐤖	𐤖	𐤖	𐤖	𐤖	La(ō)maḏ	l
𐤘	𐤘	𐤘	𐤘	𐤘	𐤘	Mim	m
𐤛	𐤛	𐤛	𐤛	𐤛	𐤛	Nū(ō)n	n
𐤞	𐤞	𐤞	𐤞	𐤞	𐤞	Semkap	s
𐤠	𐤠	𐤠	𐤠	𐤠	𐤠	'Ē	c
𐤡	𐤡	𐤡	𐤡	𐤡	𐤡	Pē	p
𐤣	𐤣	𐤣	𐤣	𐤣	𐤣	Ša(ō)dē	š
𐤤	𐤤	𐤤	𐤤	𐤤	𐤤	Qōf	q
𐤨	𐤨	𐤨	𐤨	𐤨	𐤨	Rē(r)š	r
𐤫	𐤫	𐤫	𐤫	𐤫	𐤫	Šin	š
𐤬	𐤬	𐤬	𐤬	𐤬	𐤬	Taṣ	t

h̄ = silent šhš, cf. p. 23.

## Coptic:

en memphitique	en ihébaïn	nom	valeur	en memphitique	en ihébaïn	nom	valeur
Majuscules				Majuscules			
Α	Α	alpha	a	Π	Π	pi	p
Β	Β	vita	b	Ρ	Ρ	ro	r
Γ	Γ	gamma	g	Σ	Σ	sima	s
Δ	Δ	delta	d	Τ	Τ	tau	t
Ε	Ε	epsilon	e	Υ	Υ	ypsilon	u
Ϛ	Ϛ	so	chiffre 6	Φ	Φ	phi	ph
Ζ	Ζ	zita	z	Χ	Χ	chi	ch
Η	Η	ita	ē	Ψ	Ψ	psi	ps
Θ	Θ	lita	th	Ω	Ω	oméga	ō
Ι	Ι	iōta	i	Ϙ	Ϙ	šai	š
Κ	Κ	kappa	k	ϙ	ϙ	šai	f
Λ	Λ	laula	l	ϛ	ϛ	hoi	h
Μ	Μ	mi	m	Ϝ	Ϝ	hori	h
Ν	Ν	ni	n	ϝ	ϝ	janja	j
Ξ	Ξ	xi	x	Ϟ	Ϟ	šima	š (ancien g)
Ο	Ο	omicron	o	ϟ	ϟ	ti	ti

Armenian:

<i>ա</i>	<i>բ</i>	<i>գ</i>	<i>դ</i>	<i>ե</i>	<i>զ</i>	<i>ը</i>	<i>թ</i>	<i>ժ</i>	<i>ի</i>	<i>լ</i>	<i>խ</i>	<i>ծ</i>	<i>կ</i>
<i>հ</i>	<i>յ</i>	<i>զ</i>	<i>՛</i>	<i>ճ</i>	<i>ղ</i>	<i>ճ</i>	<i>ւ</i>	<i>ռ</i>	<i>ւ</i>	<i>փ</i>	<i>ք</i>	<i>օ</i>	
<i>ա</i>	<i>բ</i>	<i>գ</i>	<i>դ</i>	<i>ե</i>	<i>զ</i>	<i>ը</i>	<i>թ</i>	<i>ժ</i>	<i>ի</i>	<i>լ</i>	<i>խ</i>	<i>ծ</i>	<i>կ</i>
<i>հ</i>	<i>յ</i>	<i>զ</i>	<i>՛</i>	<i>ճ</i>	<i>ղ</i>	<i>ճ</i>	<i>ւ</i>	<i>ռ</i>	<i>ւ</i>	<i>փ</i>	<i>ք</i>	<i>օ</i>	
<i>ա</i>	<i>բ</i>	<i>գ</i>	<i>դ</i>	<i>ե</i>	<i>զ</i>	<i>ը</i>	<i>թ</i>	<i>ժ</i>	<i>ի</i>	<i>լ</i>	<i>խ</i>	<i>ծ</i>	<i>կ</i>
<i>հ</i>	<i>յ</i>	<i>զ</i>	<i>՛</i>	<i>ճ</i>	<i>ղ</i>	<i>ճ</i>	<i>ւ</i>	<i>ռ</i>	<i>ւ</i>	<i>փ</i>	<i>ք</i>	<i>օ</i>	

*ալ* in echt armenischen Wörtern = *ov*, in griechischen<sup>1)</sup> Wörtern = *ō*;

*ա* vor Consonanten = *u*, vor Vocalen = *v*<sup>2)</sup>;

*ալ* vor Consonanten = *oi*, vor Vocalen und im Auslaut = *oy*;

*ալ* vor Consonanten = *ai*, vor Vocalen und im Auslaut = *ay*;

*ա* vor Consonanten<sup>3)</sup> = *au*, vor Vocalen und im Auslaut = *av*;

*ա* vor Consonanten = *iu*, im Auslaut = *iv*<sup>4)</sup>;

*աա* = *ea*.

1) D. h. aus griechischen Schriften genommenen Namen, die *ω* enthalten, das durch *ալ* wiedergegeben wird, um es von gr. *o* = arm. *o* zu scheiden.

2) Ausser in den Imperfecten der Präsensstämme auf *-u* (wie *zenui*; und einigen biblischen Eigennamen (*Manuēl*, *Samuēl*, *Panuēl*), in denen auch vor Vocalen *u* zu sprechen ist.

3) Für *ա* vor Consonanten tritt im 12. Jhd. *o* = *δ* ein, ausser in *աղաւնի* *alavni* 'Taube' und *հաւթ* *navt* 'Naphtha'.

4) Also Abstractsuff. *աթիւն* = *uθion*, *թիւ* 'Zahl' = *θiv*, aber *θiv* mit dem Artikel *n*: *թիւն* 'die Zahl' = *θivn*.

Hübschmann (1897), p. 2.

On accóunt of the practical obstacles

I have written *կ*, *թ*, and *ի* pro *կ*, *թ*, and *ի*.

## Appendix 2

## Abbreviations and other symbols

arm.	= Armenian.
corr.	= corruptum.
& der.	= there are derivatives of this word but they are without significance for this study.
& var.	= there are variants of this word but they are without significance for this study.
H	cf. Bibliography, Hübschmann (1897).
Gr.	= Greek.
GSL	cf. Bibliography, Baumstark (1922).
LS	cf. Bibliography, Brockelmann (1928).
OSI	cf. Bibliography, Drijvers (1972).
R	cf. Bibliography, Rosenthal (1936).
S	cf. Bibliography, Stark (1971).
SGF	cf. Bibliography, Schall (1960).

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/h/ etc.	= a phonem.
§h§ etc.	= a graphem.
h etc.	= an allophone or realization.
-h- etc.	= a phonem, graphem, or allophone in medial position.
∅	= zero phonem, graphem, or allophone.
ɛ̄	= half closed front vowel.
ɛ̆	= half open front vowel.
ə	= central vowel.
ʊ	= closed central rounded vowel.



r  
o = a voiceless alveolar tremulant pronounced  
by the tip of the tongue. The symbol is  
used also as transliteration of the Greek  
ϱ.

h = a voiceless laryngeal or pharyngeal fri-  
cative found in Semitic languages.

p = a voiceless dental fricative.

x = a voiceless post-velar fricative.

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4th etc. = (in) the 4th century (etc.).

f 4th etc. = (in) the first half of the 4th century  
(etc.).

m 4th etc. = (in) the middle of the 4th century (etc.).

s 4th etc. = (in) the second half of the 4th century  
(etc.).

ca. 300 etc. = around the year 300 (etc.).

4th- etc. = from the 4th century on (etc.).

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For the abbreviations and dates for the books and  
authors, vide appendices 4.8. and 7.8.

## Appendix 3

## Palmyrene Aramaic

Greek form	Aramaic form	Frequency	Date	Source, A.D. page	
3.1. Gr. /h/ = §h§					
1. Ἑρμῆς	hrms	9 x	160/1- 248/9	S, 15.	
Ἑρμησίανος	hrmsyn'	1 x	212/3	S, 15.	
2. ἡγεμών	hgmwn' hygmwn'	4 x	?	R, 91.	
3. Ἡλιόδωρος	hldrs hlydrws hlydwrws hlydyrs	1 x 1 x 1 x 1 x	? 192/3 213/4 213/4	S, 15. S, 15. S, 15. S, 15.	
4. Ἡρακλείδης	hrqlyd'	1 x	?	S, 15.	
Ἡρακλῆς	hrql'	1 x	?	S, 15.	
5. ἵππικός	hpq' hpqws	3 x	?	R, 91.	
6. ὑπατικός	hptyq'	1 x	?	R, 91.	
3.2. Gr. /h/ = §'§					
1. Ἀδριανός	'drynws	1 x	235/6	S, 2.	
2. ὁμολογία	'mlgy'	1 x	?	R, 91, 36.	
3.3. Gr. spiritus lenis = §h§					
1. ὀπτίων	hptyn	1 x	?	R, 91, 36.	
3.4. Gr. /-h-/ = §-h-§					
1. πρόεδρος	plhdrwt'	1 x	?	R, 92, 36.	
3.5. Gr. /-h-/ = §φ§					
1. ἐξέδρα	'ksdr' 'kšdr' 'ksdryn	}over 3 x	?	R, 92, 36.	
3.6. Gr. [r̄] = §r§					
1. Ῥοδών	rdwn		1 x	212/3	S, 49.
	R = Rosenthal (1936). S = Stark (1971).				

## Appendix 4

## Syriac

Greek form	Syriac form	First dat- able occur- rence	Source, page
4.1. Gr. /h/ = ṣhṣ			
1. αἰμορροΐδες	hmwrrwydhs } hmr'ydhs }	HA, 10th.	LS, 178.
2. αἵρεσις	hrsyst hrsywtwt' hrtyqwt'	Bard, s 3th. SE, s 5th. Nar, s 5th.	SGF, 77. LS, 184. LS, 183.
as a verb:	'thrtq	BB, s 10th.	LS, 183.
αἵρεσιώτης	hrsywt'	ES, m 4th.	LS, 184.
αἵρετικός	hrtyq' hrhṭyqhw hrtyqy'	Rabb, f 5th. Ath, 6th. ?	LS, 183. LS, 183. LS, 183.
3. ἀπλῆ ὠνή	hpl' wn'	Recht, s 5th.	LS, 181.
ἀπλῶς	hplws	glherm, f 5th	LS, 181.
4. ἔδρα	hdr'	HA, 10th.	LS, 172.
5. ἑκατοστή	hqṭst'	Sim.Styl, 5th.	LS, 182.
6. ἑκατοστόν	hqṭstwn	Recht, s 5th.	LS, 182.
7. ἔλειος	hlyws	BB, s 10th.	LS, 176.
8. ἔλιξ, ἐλίκη	hlq'	OT, BB, s 10th.	LS, 177.
9. ἐνδεκάτη	hndqt'	JohT, m 6th.	LS, 178.
ἐνωτικόν	hn(w)ṭyqwn	?	LS, 179.
10. ἐξάγωνον	hks'gwn'	Ge, ca. 700.	LS, 176.
ἐξηκοστός	hkshkwst'	Ge, ca. 700.	LS, 176.
ἐκτη	hqṭ'	?	LS, 182.
11. ἔξις	hksyst	BB, s 10th.	LS, 176.
ἐκτικός	hqṭyqws hqṭyqy'	Bh, s 13th. Bh, s 13th.	LS, 182. LS, 182.
12. ἐταιρία	htṛwt'	NT/Pš, f 5th.	LS, 174.
13. ἡγεμών	hgmwn'	{ EC, 4th. Afr, f 4th.	LS, 171. SGF, 95.
	hgmwnwt'	NT/Pš, f 5th.	LS, 171.
14. ἡδικτάλιοι	hdyqṭlyw	ZaRh, 6th.	LS, 172.
15. ἡδύσμον	hdzm'	NT/Pš, f 5th.	LS, 183.
ἡδύχρουν corr.	hdrwkwn	Med, 9th.	LS, 172.
16. ἡμεροβαπτισταί	hmr'dbptst'	Jšd, 9th.	LS, 178.
17. ἡμίθεοι	hmtw'	EC, 4th.	LS, 178.
ἡμίνα	hmyn'	OT, ES, m 4th.	LS, 177.

	ἡμιολίαι	hymwly's	SAL, 668/9	LS, 177.
	ἡμίσειον	hmyn	?	LS, 178
18.	ἡνίοχος	hnywk'	Afr, f 4th.	LS, 179, SGF, 94.
	ἡνιοχῆσαι	hnywkys' <sup>c</sup> br	Bh, f 13th	LS, 179.
	ἡνιοχῆσις	hnykwkwt'	?	LS, 179.
19.	ἡπαῖτις	hwptytys	Geop, 6th-7th.	LS, 179.
20.	ἥρως	hrws	EC, 4th.	LS, 184.
21.	ἵππεύς	hpws	Dura, 243.	OSI, 55, SGF, 40.
	ἵπποκένταυρος	hwpwqntwrwn	St. Paul, 5th.	LS, 182.
22.	ἴμῆρος	hmry'	Afr, f 4th.	LS, 178, SGF, 100.
	ἴμῆρσαι	hwmrys' <sup>c</sup> br	BB, s 10th.	LS, 178.
23.	ἴμῆρον	hwm'tn	Dion bS, m 12th	LS, 178.
	ἴμῆρσιον	hwmwsywn	Eb, ca. 1300.	LS, 178.
24.	ἴμῆρσιον	hwy'qyntws	NT/Ps, f 5th.	LS, 175.
25.	ἴμῆρσιον	hwdrwrgwrwn	DuvB, 7th-.	LS, 172.
	ἴμῆρσιον	hdrw'rgrws	BB, s 10th.	LS, 172.
	ἴμῆρσιον	hdrwl'	St. Thom, 3th.	LS, 172.
	ἴμῆρσιον as a verb:	hdrl'	?	LS, 172.
	ἴμῆρσιον	hdrpyqy'	Jsd, Med, 9th.	LS, 172.
	ἴμῆρσιον	hdrwpyq'	NT/Ps, f 5th.	LS, 172.
26.	ἴμῆρσιον	hwdrws	DuvB, 7th-.	LS, 172.
	ἴμῆρσιον	hwl', hywl'	OT, ES, m 4th.	LS, 173.
	ἴμῆρσιον	hwly'	Bh, s 13th.	LS, 173.
	ἴμῆρσιον	hwlnywt'	Th bK, ca. 800.	LS, 173.
	ἴμῆρσιον	hwlny'	ES, m 4th.	LS, 173.
27.	ἴμῆρσιον	hmtywn	Geop, 6th-7th.	LS, 177.
28.	ἴμῆρσιον	hwprky'	SK, 6th-.	LS, 182.
	ἴμῆρσιον	hwprk'	to, JSt, 506/7.	LS, 182.
	ἴμῆρσιον	hwprkwt'	Jes. Al, 9th.	LS, 182.
	ἴμῆρσιον	hwpryqwn	Med, 9th.	LS, 182.
	ἴμῆρσιον	hpty'	Dura, 243.	OSI, 55.
	ἴμῆρσιον	hptyq'	EC, 4th.	LS, 179.
	ἴμῆρσιον	hwpdyqn'	Bh, s 13th.	LS, 179.
	ἴμῆρσιον	hwptyqn'	Par. Patr, 7th.	LS, 182.
	ἴμῆρσιον	hwpdyqnwt'	?	LS, 179.
	ἴμῆρσιον	hwptyys'	JohE, m 6th.	LS, 179.
	ἴμῆρσιον	hwptws	JohE, m 6th.	LS, 179.
	ἴμῆρσιον	hwpryt'	JohE, m 6th.	LS, 182.
	ἴμῆρσιον	hpdqt'	ES, m 4th	LS, 179.
	ἴμῆρσιον	hwptsys	Ath, 6th.	LS, 182.
	ἴμῆρσιον	hwpwthsys		
	ἴμῆρσιον	hwpwttyqws	herm, f 5th.	LS, 182.
	ἴμῆρσιον	hwpwttyqy'	Bh, s 13th.	LS, 182.
	ἴμῆρσιον	hwpqmwn	BB, s 10th.	LS, 182.
	ἴμῆρσιον	hwpqst̄dys	Med, 9th.	LS, 182.

ὕπολημνίσκος	hwprwlymnysqws	Epiph, 7th.	LS, 181.
ὕπόλη(μ)ψις	hwprwlmsys	Cyr, f 6th.	LS, 181.
	hwprwlpys	Cyr, f 6th.	LS, 181.
ὕπόμνημα	hwpmnym'	Jul, f 6th.	LS, 181.
ὕπομνηστικόν	hwpmwnystyqwn	Epiph, 7th.	LS, 182.
29. ὠρεῖον, ὠριον	hwrywn	Petr Ib, f 6th.	LS, 183.
ὠρειάριος	hwryr'	Petr Ib, f 6th.	LS, 183.

4.2. Gr. /h/ = \$'§ or §y\$

1. ἀγιοπνευματικός	'gywprnwmt̄yqy'	?	LS, 4.
2. αἱματίτης	'm(m)t̄t̄ys	DuvB, 7th-.	LS, 24.
3. αἵρεσις	'rsys	ES, m 4th.	LS, 51.
αἵρεσιώτης	'rsyw̄t̄'	ES, m 4th.	LS, 51.
αἵρετικός	'rt̄yq'	ES, m 4th.	LS, 48.
	'rt̄yqwt'	MiS, s 12th.	LS, 48.
4. ἀλκυών, ἀλκυών	'lq'wn	Nat, 6th-7th.	LS, 23.
5. ἄλς	'ls	DuvB, 7th-.	LS, 22.
6. ἄλυσίδιον	'lysydyn	Bh, s 13th.	LS, 22.
7. ἄπαξ	'p̄zg'	Jšd, 9th.	LS, 40.
	'p̄zgn̄y'	Sbš, f 13th.	LS, 40.
8. ἀπλῶς	'plws	glherm, f 5th.	LS, 40.
9. ἄρματα	'rmt̄'	?	LS, 50.
10. ἄρμονία	'rmwn̄y'	glherm, f 5th.	LS, 50.
	'rmwn̄yqy'	Bh, s 13th.	LS, 50.
11. εἰλιγμένον	'lgmnwn	?	LS, 21.
12. εἰμαρμένη	'mr̄mn'	?	LS, 27.
13. εἰρμός, εἰρμός	'rmws(')	?	LS, 50.
14. ἐκάτοστή	'q̄t̄st̄'	?	LS, 44.
15. ἐκτικός	'q̄tyqws	EN, f 11th.	LS, 44.
16. ἔλκυσμα	'lqws̄m'	DuvB, 7th-.	LS, 23.
17. ἐλλέβορος	'lbwrs, 'lbrwn	Geop, 6th-.	LS, 20.
18. ἔνωσις	'nwsys	JohE, m 6th.	LS, 30.
ἐνωτικόν	'nt̄yqwn	?	LS, 29.
ἐνωμένους, } ἠνωμένους } ἔσαπλα }	'nwmn	Paphn, 5th.	LS, 921.
19. ἔσαπλα	'kspl'	?	LS, 19.
ἐξηκοστή	'q̄syqws̄t̄'	Ge, ca. 700.	LS, 19.
ἔκτη	'q̄t̄'	?	LS, 44.
20. ἔξις	'ksys, 'ksysy'	Bh, s 13th.	LS, 19,
	'ksysywt'	Bh, s 13th.	LS, 19.
21. ἔορτή	'wr̄t̄'	BB, s 10th.	LS, 48.
ἔορταστικά	'wr̄t̄st̄yq'	SE, s 5th.	LS, 48.
ἔορταστικάι	'wr̄t̄'st̄yq's	JE, s 7th,	LS, 48.
22. ἑπταπλά	'p̄t̄'pl'	BB, s 10th.	LS, 40.
ἑβδόμη	'bdwm'	?	LS, 2.
23. Ἐρμῆς	'rm̄ysy'	DuvB, 7th-.	LS, 50.
24. ἔρπυλλος	'rpl'ws	Geop, 6th-7th.	LS, 51.
25. ἦβη(ς)	ybs	Bh, s 13th.	LS, 294.

26.	ἡγεμών	'ygmwn'	ES, m 4th.	LS, 4.
		'ygmnwt'	Phil, ca. 500.	LS, 4.
		'ygmwnyqy'	BB, s 10th.	LS, 4.
27.	ἡδύσμος corr.	'wrsymwn	Med, 9th.	LS, 51.
28.	ἡμιτριταῖος	'mṭryṭ'ws	?	LS, 24.
	ἡμισείας corr.	'wmylyzs	?	LS, 25.
29.	ἱερά	'yr'	Med, 9th.	LS, 16.
	ἱερατεῖον	'yrṭywn	ES, m 4th.	LS, 16.
	ἱεροκόλλα	'yrwqwl'	DuvB, 7th-.	LS, 16.
30.	ἵππος	'yppws	?	LS, 42.
	ἵππικός	'pyqws	Recht, s 5th.	LS, 42.
	ἵππόδρομος	'pdrmw	JohE, m 6th.	LS, 40.
31.	ἱστοκεραία	'sqry'	Afr, f 4th.	SGL, 106,
				LS, 37.
	ἱστοπούς	'stwpd'	BB, s 10th.	LS, 33.
32.	ἱστορία	'ystwry'	BB, s 10th.	LS, 34.
33.	ὁ θεός	'tyws, } 't'ws }	OT, glherm, f 5th.	LS, 55.
34.	ὀλή	'lq'	Epiph, 7th.	LS, 23.
	ὀλήριος	'lyqr'	Par.Patr, 7th.	LS, 23.
35.	ὀλοσηρικόν	'lysryqwn	Petr.Alex, 5th.	LS, 22.
36.	ὀμολόγος	'mwlwgws	Epiph, 7th.	LS, 25.
	ὀμολογία	'mwlwgy's	OT, Epiph, 7th.	LS, 25.
	ὀμολόγημα	'mwlwgy'm'	Epiph, 7th.	LS, 25.
	ὀμονυμία	'mwnwmy'	Jšd, 9th.	LS, 25.
	ὀμώνυμος	'mwnwmws	glherm, f 5th.	LS, 25.
	ὀμως	'mws	Med, 9th.	LS, 25.
	ὀμοούσιον	'my'wsyn } 'mwsywn }	Euagr, 5th-6th.	LS, 25.
37.	ὀρίζων	'wryzwn	Ge, ca. 700.	LS, 47.
38.	ὀκίνθινος	'yqnty'	NT/Pš, f 5th.	LS, 307.
	ὀκίνθος	'yqwnd'	OT, Himyar, 524.	LS, 307.
	ὀκίνθινα	'w'qnty'n'	Hex, f 7th.	LS, 9.
39.	ὀδράργυρον	'drkrwn	Med, 9th.	LS, 46.
40.	ὀπέρδοξον	'wprdwkswn	glherm, f 5th.	LS, 43.
41.	ὀπακοαί	'yb'kwy	?	LS, 2.
	ὀπαπαντή	'pwpntṭy	?	LS, 42.
	ὀπαρχος	'wprk'	Onesimos, ?	LS, 43.
	ὀπαρχία	'wprky'	Onesimos, ?	LS, 43.
	ὀπατοι	'wptw	OT, MiS, f 12th.	LS, 40.
	ὀπάτη	'wptyn	Sbš, f 13th.	LS, 40.
	ὀπατικός	'yp'tyqy'	Probos etc., 8th.	LS, 40.
	ὀπέρεικον	'prqwn	Med, 9th.	LS, 43.
	ὀπηρέτης	'pryt'	JohE, m 6th.	LS, 43.
	ὀπόθεισις	'wpt(h)sys	Bh, s 13th.	LS, 43.
	ὀποδιάκονος	'pwyqn'	dap, s 7th.	LS, 40.
	ὀποκείμενον	'wpyqymnwn	glherm, f 5th.	LS, 42.

	ὑπόληψις	'plwmsys	Recht, s 5th.	LS, 40.
	ὑπολημνίσκος	'pwlymnysqws	?	LS, 40.
	ὑπομνήματα	{ 'wpwmnymt̥' 'ypwmnm̥t̥'	MiS, s 12th.	LS, 41.
42.	ὑπόστασις	'ywpwst̥sys	?	LS, 41.
	ἄρεϊον	'wrywn	?	LS, 49.
	ἄρολόγιον	'wrwlg'	?	LS, 50.
	ἄροσκοπος	'wrwsqwpws	Ge, ca. 700.	LS, 51.

4.3. Gr. spiritus lenis = §h§

1.	αἶθρ	htyr	BB, s 10th.	LS, 184.
2.	ἀξιόλογοι	hksywlgw	glherm, f 5th.	LS, 176.
3.	ἀρώματα	hrwm' hrwmt̥y' hrwmt̥ny' hrwmnyt̥'	ES, m 4th. Bh, s 13th. Bh, s 13th. ?	LS, 184. LS, 184. LS, 184. LS, 184.
4.	ἐγκαίνια	hnqhny'	Ath, 6th.	LS, 179.
5.	ἐγγελος	hnkhlys	Bh, s 13th.	LS, 179.
6.	ἔθος	htws	JohT, m 6th.	LS, 184.
7.	ἐκκεντρον	hqqt̥rwn	Bh, s 13th.	LS, 182.
	ἐκλειψις	hglypsys	Jšd, 9th.	LS, 171.
	ἐκλογή	hqlwg'	SAL, 668/9.	LS, 182.
	ἐξηγηταί	hkshgyt̥'	HA, 10th.	LS, 176.
	ἐξορισθῆναι	{ hkswrystynh ñw'	Ath, 6th.	LS, 176.
8.	ἐλεγχος	hlyk'ws	glherm, f 5th.	LS, 177.
9.	ἐλπίσαι	hlpys'	OT	LS, 177.
10.	ἐπαγωγή	hpgwgy/'	Bh, s 13th.	LS, 179.
	ἐπακτῆ	hp'q̥th	glherm, f 5th.	LS, 182.
	ἐπακτροκέλης	hp'q̥trwq̥lys	glherm, f 5th.	LS, 182.
	ἐπαρχία	hprky'	EC, 4th.	LS, 182.
	ἐπαρχος	hprk'	OT, AM, 4th-.	LS, 182.
	ἐπιδείγματα	hpyrygm't̥'	?	LS, 182.
	ἐπιληψία	hpyly(m)p̥(y)s'/y'	HA, 10th.	LS, 181.
	ἐπίπεδον	hpyphdwn	glherm, f 5th.	LS, 182.
	ἐπίπλοον	hpyplwn	HA, 10th.	LS, 182.
	ἐποχή	hpwky	Sbš, f 13th.	LS, 181.
	ἐφέβδομος	hphybdwmws	Sbš, f 13th.	LS, 179.
	ἐφεκτικοί	hphq̥tyq̥'	glherm, f 5th.	LS, 182.
	ἐφήμεροι	hpymhrw	HA, 10th.	LS, 182.
	ἐφήμερον	hpymhrwn	Bh, s 13th.	LS, 182.
11.	ἐρωδιός	hrwd', hrwdys	ZaRh, 6th.	LS, 183.
12.	ἐστίν	{ hst̥yn hst̥yny'	Bh, s 13th.	LS, 179.
13.	ἐτυμολογία	ht̥wmwlg̥y'	glherm, f 5th.	LS, 174.
14.	εὐαγγέλιον	hw'ng̥hly'wn	Ath, 6th.	LS, 174.

	hw'nggly'	Ath, 6th.	LS, 174.
	hw'ngglystḥ	Ath, 6th.	LS, 174.
εὐπατόριον	hwpt̥rywn	Med, 9th.	LS, 179.
εὐφόρβιον	hwprbywn	EN, f 11th.	LS, 182.
15. ἡδικιτάλιοι	hdyq̣t̥lyw	ZaRh, 6th.	LS, 172.
16. ἰδιώτης	hdywt̥'	Afr, f 4th,	SGL, 92,
		ES, m 4th.	LS, 171.
	hdywt̥wt̥'	ES, m 4th.	LS, 172.
17. οἰκονόμος	hwqwnm'	Sim.Styl, s5th.	LS, 174.
18. ὀποβάλαμον	hwpwblsymwn	Pall, s 7th.	LS, 179.

## 4.3a. Gr. spiritus lenis also = §'§

Numbering same as that of group 4.3.

1. αἰθήρ	'tyr, 't'yr	ES, m 4th.	LS, 56.
2. ἀξία	'ksy'	JohT, m 6th.	LS, 18.
3. ἀρώματα	'rwm̥t̥'	ClrC, 8th.	LS, 50.
4. ἐγκαίνια	'nqny'	JohE, m 6th.	LS, 30.
5. ἕγχελος	'nkls'	Sim.Styl, s5th.	LS, 29.
	'nkhlys	Bh, s 13th.	LS, 29.
6. ἡθικόν	'ytyqwn	glherm, f 5th.	LS, 55.
7. ἐκ- as a rule:	'q-	ES, m 4th, etc.	LS, 44-45.
ἐξ- -"-	'ks-	ES, m 4th, etc.	LS, 18-19.
ἐξορισθῆναι	{ 'kswrystyn'	Rabb, f 5th.	LS, 19.
	{ ḥw'		
10. ἐπι- as a rule:	'py-	EC, 4th, etc.	LS, 39-44.
ἐπακτῆ	'paq̣t̥y	?	LS, 42.
ἐπαρχία	'yprky'	Phil, ca. 500.	LS, 43.
ἐπαρχοι	'prk'	MiS, s 12th.	LS, 43.
ἐπίλη(μ)ψις	'pwlwpsy'	Med, 9th.	LS, 40.
ἐφεκτικοί	'pyq̣t̥yq̣w	glherm, f 5th.	LS, 42.
11. ἐρωδιός	'rwdys	Phys, 6th.	LS, 47.
13. ἐτυμολογία	't̥wmwlg̣y'	ES, m 4th.	LS, 14.
14. εὐ- as a rule:	'w-	Dura, 243,	SGF, 41,
		ES, EC, 4th.	LS, 8.
εὐαγγέλιον	'wnglywn	Afr, f 4th.	LS, 8.
15. ἡδικτον	'ydyq̣t̥wn	JohE, m 6th.	LS, 6.
16. ἰδιότητος	'ydywt̥t̥ws	?	LS, 5
17. οἰκονόμος	'wqwnm'	Recht, s 5th.	LS, 45.
οἰκονόμοι	'wqwnwm'	OT, JohE, m6th.	LS, 45.
18. ὀποβάλαμον	'pwblsmwn	BB, s 10th.	LS, 39.



4.4. Gr. /-h-/ = §-h-§

Such words for which the dictionaries do not distinguish between the with and without §h§ forms are omitted.

1. ἀπό ύπάτων	'p(w)h(w)pt̥w(n)	SE, s 5th.	LS, 40.
ἀπό ύπάρχων	'pwhwprkwn	JohE, m 6th.	LS, 40.
2. *ἀντιύπαρχος	'nt̥yhwprkws	JohE, m 6th.	LS, 28.
3. περιουευτής	pryhdt̥'	Rabb, f 5th.	LS, 596.
περιουεία	prhdy'	Sim.Styl, s 5th.	LS, 596.
περιουεῦσαι	{ pryhds cbr	Recht, s 5th.	LS, 596.
4. ουουουικόν	swnhdyqwn	JohE, m 6th.	SGF, 202.
	swnhwdyq'	Recht, s 5th.	SGF, 202.
5. καθ' ύποκειμένον	qthwpyqmnw	glherm, f 5th.	LS, 705.

4.5. Gr. /-h-/ = §φ§

The treatment is the same as in group 4.4.

1. εῖσοδον	'yswdwn	?	LS, 32.
2. ἔουδρις	'ndrywn/s	Phys, 6th.	LS, 28.
3. ἔουλίον	'nwlywn	Geop, 6th-7th.	LS, 29.
4. ἔουπόγραφος	'n'wpgrp'	Recht, s 5th.	LS, 30.
5. ἔξέδρα	'ksdr'	OT, ES, m 4th.	LS, 18.
6. ἔξορία	'kswry'	Jul, f 6th.	LS, 19.
ἔξορίασαι	{ 'kswrys' cbr	SAL, 668/9.	LS, 19.
ἔξορισηῖναι	{ 'kswrystyn' hw'	Rabb, f 5th.	LS, 19.
7. ἴσημερία	'ysymry'	?	LS, 16.
	'ysym(h)ry'	Ge, ca. 700.	LS, 16.
ἴσημερινός	'ysymrynws	SbS, f 13th.	LS, 16.
	'ysymrynwn	Bh, s 13th.	LS, 16.
8. μεσημβρινός	msymbrynws/n	SbS, f 13th.	LS, 397.
9. πάραλος	pr(h/w)l(w)s	OT, ES, m 4th.	LS, 598.
παράλιον	pr'lywn	Geop, 6th-7th.	LS, 598.
10. πάρεδροι	pr'drw	Petr.Ib, f 6th.	LS, 923.
11. περι ἔρμενείας	prymnys	glherm, f 5th.	LS, 607.
12. περιουευτής	prywdt̥' (&var.)	JS, ca. 500.	LS, 596.
13. πρόδοον	pr(w)dw̃n	Febr, ca. 7th.	LS, 593.
πρόδοος	prw'wds	?	LS, 591.
14. προσδιορισμός	prwsdy(w)rismws	Jsd, 9th.	LS, 601.
	prwsdywrysmws	glherm, f 5th.	LS, 601.
	(& var.)		
15. πρόσοδοι	prwsdn	JohE, m 6th.	LS, 601.
16. ουουέδριον	sndrywn	JohE, m 6th.	LS, 484.

4.6a. Gr.  $\left[ \begin{smallmatrix} r \\ \circ \end{smallmatrix} \right] = \S rh\S$  or  $\S hr\S$ 

The treatment is the same as in group 4.4.

1. ῥάχεις, ὀρέξεις?	hrksys'	OT	LS, 183.	
2. ῥητορεῖον	rhṭryn	Jul, f 5th.	LS, 727.	
ῥητορῆσαι	{ rhyṭwrys' cbr	MiS, s 12th.	LS, 727.	
		rhyṭrwt'	ES, m 4th.	LS, 727.
		rhyṭry'	Bh, s 13th.	LS, 727.
		rhyṭrywt'	Eb, ca. 1300.	LS, 727.
3. ῥωμαῖος	rhmws	Dura, 243.	OSI, 55, SGF, 40.	
	rhwmwt'	Sebaste, 5th.	LS, 722.	
4. ῥοδοδάφνη	corr. hrdwp	BB, s 10th.	LS, 183.	

4.6b. Gr.  $\left[ \begin{smallmatrix} -r- \\ \circ \end{smallmatrix} \right] = \S -rh-\S$ 

The treatment is the same as in group 4.4.

1. ῥῥαβῶν	rhbwn'	Afr, f 4th.	LS, 716, SGF, 98-99.
	rhbwn'yt	ES, m 4th.	LS, 716.
2. παῤῥησία	prhsy'	Afr, f 4th.	LS, 602, SGF, 94.
	prhsystn'yt	ThM, ca. 500.	LS, 602.
	prhsystnwt'	ThM, ca. 500.	LS, 602.

4.7a. Gr.  $\left[ \begin{smallmatrix} r \\ \circ \end{smallmatrix} \right] = \S r\S$ 

The treatment is the same as in group 4.4.

1. ῥαβδίον	rbdyn	DuvB, 7th-.	LS, 708.
2. ῥόγα	rwg'	JohE, m 6th.	LS, 711.
3. ῥοδοδάφνη	rwdd'p	NT/P <sup>ξ</sup> , f 5th.	LS, 715.
	(& var.)		
ῥόδια	rwdy'	Med, 9th.	LS, 715.
4. ῥοπή	{ rwp', rwp	EC, 4th.	LS, 722.
5. ῥόμβος	rmbws	Bh, s 10th.	LS, 734.
6. ῥάμνος	r'mnws	Geop, 6th-7th.	LS, 735.
7. ῥεπούδιον	rypwdyn	Recht, s 5th.	LS, 741.
8. ῥεφενδάριος	rpndr'	MiS, s 12th.	LS, 741.
9. ῥητορικῆ	ryṭwryqy	?	LS, 727.
	r'ṭwryqwt'	ThbK, ca 800.	LS, 727.

4.7b. Gr. [-r-] = §-r-§

The treatment is the same as in group 4.4.

- |                   |                         |                |                                      |
|-------------------|-------------------------|----------------|--------------------------------------|
| 1. αιμορροΐδες    | {hmwrrwydhs<br>hmr'ydhs | HA, 10th.      | LS, 178.                             |
| 2. ἄρρευστον      | 'rstwn                  | DuvB, 7th-     | LS, 51.                              |
| 3. ἀπόρρυμα       | 'pwrwm'                 | Epiph, 7th.    | LS, 43.                              |
| 4. βίρρος         | byrwn'                  | apap, 4th-     | LS, 69.                              |
| βιρρώνιον         | brwnywn                 | JohE, m 6th.   | LS, 97.                              |
| 5. γλυκύρριζα     | glwqryws                | Geop, 6th-7th. | LS, 119.                             |
| 6. ὑπόρρινα corr. | zwpryn'                 | BB, s 10th.    | LS, 203.                             |
| 7. καταρράκτης    | q̄trq̄t'                | OT, JSt,       | LS, 664,<br>506/7; f 3rd?SGF, 49-50. |
| 8. παρρησιάσασθαι | {prrsysst'<br>cbr       | Hex, f 7th.    | LS, 602.                             |
| 9. σκίρρος        | sqyrws                  | BB, s 10th.    | LS, 496.                             |

## 4.8. Abbreviations and dates for books and authors

The dates are according to Baumstark (1922, = GSL) and Schall (1960, = SGF). For the years of publication and the publishers, vide Brockelmann (1923, pp. i-vii or 924-930) and Schall (1960).

- Afr = Afrahaṭ. His works are from the years 337 and 344/5. SGF, p. 86.
- am = Acta martyrum et sanctorum I - VII. The following acta are dated more exactly:
- Febr = Febronia, ca. 7th. GSL, pp. 264-265.
- Himyar = The Himyarite Martyrs, 524. GSL, p. 145.
- JesAl = Isaiah of Aleppo, 9th. GSL, pp. 236-237.
- Onesimus ?
- Paphn = Paphnutius, 5th. GSL, pp. 94-95.
- ParPatr = Paradisus patrum, s 7th. GSL, pp. 201-203.
- PetrAlex = Peter of Alexandria, 5th. GSL, pp. 94-95.
- Probos = Probus, Tarachius, and Andronicus, 8th. GSL, pp. 264-265.
- Sebaste = The 40 Martyrs of Sebaste, 5th. GSL, pp. 93-94.
- SimStyl = Simeon Stylites, s 5th. GSL, pp. 60-61.
- St.Paul = The Biography of St. Paul, 5th-. GSL, pp. 92-93.

- St.Thom = The Acts of Judas Thomas, s 3rd.  
 GSL, pp. 12, 14-15.
- AM = Acta sanctorum martyrum. The oldest parts go back to the 4th century. GSL, pp. 27, 52-53, 55-57.
- apap = Apocryphical acts of the apostles. The oldest passages go back to the 4th century. GSL, pp. 68-69.
- Ath = The festal letters of Athanasius, 6th. GSL, pp. 75, 81-82.
- Bard = Bardesanes, s 3rd. SGF, pp. 71-74.
- BB = Bar Bahlûl lexicon syriacum, s 10th. GSL, p. 241.
- Bh = Barhebraeus, s 13th. GSL, pp. 312-313.
- ClrC = The epistle of St. Clement to the Corinthians in Syriac, 8th. GSL, p. 261.
- dap = Didascalia apostolorum syriace, s 7th. GSL, pp. 248, 263.
- Dion bS = Dionysius bar Şalībī, m 12th. GSL, p. 295.
- DionT = Dionysius Tellmahhrensensis, f 9th. GSL, p. 275.
- DuvB = Duval Berthelot, La chimie au moyen âge. The oldest passages go back to the 7th century. GSL, p. 172.
- Dura = The Syriac Deed of Sale from Dura-Europos, from the year 243. SGF, p. 38.
- Eb = Ebedjesus (<sup>c</sup>Abdišo<sup>c</sup> b. Berika), ca. 1300. GSL, pp. 323-324.
- EC = Eusebius of Caesarea, 4th. GSL, pp. 58-60.
- EN = Elija b. Šinaja, f 11th. GSL, p. 287.
- Epiph = Epiphanius de mensuris ac ponderibus liber, 7th. GSL, pp. 260, 256.
- ES = Ephraem Syrus, m 4th. GSL, pp. 34-35.

- Euagr = Euagrius Ponticus, 5th-6th. GSL, pp. 84, 86-88.
- Febr vide am.
- Ge = Georgius Arabum episcopus epistolae astronomicae, ca. 700. GSL, pp. 257-258.
- Geop = Geoponicon in sermonem syriacum versorum quae supersunt, 6th-7th. GSL, pp. 171-172, 166.
- glherm = Glossarium ad Hermeneutica, f 5th. GSL, pp. 100-102.
- Hex = Versio Hexaplaris, f 7th. GSL, pp. 186, 18.
- HA = Une version syriaque des aphorismes d'Hippocrates, 10th. GSL, p. 231.
- herm = De hermeneuticis apud Syros Aristoteleis, f 5th. GSL, pp. 100-102.
- Himyar vide am.
- JE = Jacob of Edessa, s 7th, died in 708. GSL, pp. 248-249.
- JesAl vide am.
- JohE = The third part of the ecclesiastical history of John bishop of Ephesus, m 6th. GSL, pp. 181-182.
- JohT = Het leeven van Johannes van Tella door Elias, m 6th. GSL, p. 180.
- Jšd = Išō<sup>c</sup>dad of Merv, 9th. GSL, pp. 232-234.
- JSt = The chronicle of Josua Stylites, 506/7. GSL, p. 146.
- Jul = Julianos der Abtrünnige, f 6th. GSL, p. 183.
- Med = Syrian Anatomy, Pathology, and Therapeutics or "The Book of Medicines", 9th. GSL, pp. 227-230.

- MiS = Chronique de Michel le Syrien, s 12th.  
GSL, pp. 298-300.
- Nar = Narsai, s 5th. GSL, pp. 109-110.
- Nat = Das Buch der Naturgegenstände, 6th-7th.  
GSL, pp. 170-171.
- NT/Pš = The Pešitta version of the New Testament,  
f 5th. GSL, pp. 73-74.
- Onesimus vide am.
- OT = The Pešitta version of the Old Testament.  
The date of the completion of the version  
is still uncertain, cf. Noth (1962), pp.  
300-302.
- Pall = The book of Paradise..., s 7th. GSL, pp.  
201-202.
- Paphn vide am.
- ParPatr vide am.
- PetrAlex vide am.
- Petr Ib = Petrus der Iberer, f 6th. GSL, s. 184.
- Phil = Versio Philoxeniana, ca. 500. GSL, p. 144.
- Phys = Physiologus syrus, 6th. GSL, pp. 170-171,  
166-167.
- Prob vide am.
- PsC = The history of Alexander the Great being  
the syriac Version of the Pseudo-Callis-  
thenes, 6th. GSL, p. 125.
- Rabb = Rabbulae opera in Ephraemi al. opera, f  
5th. GSL, p. 71.
- Recht = Syrisch-Römisches Rechtsbuch, s 5th. GSL,  
p. 83.
- SAL = The sixth book of the select letters of  
Severus, patriarch of Antioch, in the syr.

- version of Athanasius of Nisibis, 668/9.  
GSL, p. 259
- SbŠ = Das Quadrivium aus Severus bar Šakkūs Buch  
der Dialoge, f 13th. GSL, pp. 311-312.
- SE = Secundam Synodum Ephesinam..., s 5th. GSL,  
pp. 139-140.
- Sebaste vide am.
- SimStyl vide am.
- SK = Die syr. Kanones der Synoden von Nicaea  
bis Chalcedon nebst einigen zugehörigen  
Dokumenten. The oldest parts go back to  
the 6th century. GSL, p. 82.
- St.Paul vide am.
- St.Thom vide am.
- ThbK = Theodorus bar Kônî, ca. 800. GSL, p. 218.
- ThM = Theodore of Mopsuestia, ca. 500. GSL, pp.  
100-104.
- to = Testi orientali inediti sopra i sette dor-  
mienti di Efeso. The oldest passages go  
back to the 5th century. GSL, p. 97.
- ZaRh = Zacharias Rhetor: Das Leben des Severus  
von Antiochien in syrischer Uebers., 6th.  
GSL, pp. 183-184, 180.



## Appendix 5

## Coptic

Greek form	Coptic form	Frequency	Page in Lefort
5.1. Gr. /h/ = \$h\$			
1. αἵρεσις αἵρετικὸς	hairesis hairetikos	9 x 1 x	12-13. 13.
2. ἅλυσις	halusis	7 x	21.
3. ἅμα	hama	4 x	21.
4. ἅπλους, ἀπλότης, ἀφελότης ἀπλῶς	haplous haplōs	10 x 1 x	29. 29.
5. ἅρμα	harma	4 x	35.
6. ἅρμος	harmos	1 x	35.
7. ἑκατόνταρχος, ἑκατοντάρχη	hekatontarchos	22 x	88.
8. ἕλλην, ἑλληνίς	hellēn	16 x	92.
9. ἕξις	hexis	1 x	98.
10. ἑρμηνεία ἑρμηνεύεσθαι, διερμηνεύεσθαι, μεθερμηνεύεσθαι	hermēneia hermēneue	2 x 4 x	108. 108.
11. ἡγεμονία ἡγεμών, ἡγεμονεύων ἡγούμενος	hēgemonia hēgemōn hēgoumenos	1 x 23 x 1 x	114. 115. 115.
12. (ἁνδάνειν), συνήδεσθαι ἡδονή, φιλήδονος	hēdane hēdonē	1 x 6 x	115. 115.
13. ἡλικία	hēlikia	1 x	115.
14. (ἡμερος), ἀνήμερος	hēmeros	1 x	116.
15. ἱκανός, ἱκανότης	hikanos	3 x	125.
16. ἱλαστήριον	hilastērion	1 x	125.
17. ἵππεύς	hippeus	2 x	125.
18. ὁλοκαύτωμα ὄλως	holokautōma holōs	1 x 1 x	187. 187.
19. ὁμοίως, ὡσαύτως	homoiōs	14 x	187-188.

	ὁμολογεῖν, ὁμολογεῖσθαι, ὁμνύναι	homologeī	26 x	188.
	ὁμολογία	homologia	6 x	188-189.
	ὁμολογουμένως	homologoumenos	1 x	189.
	ὄμως	homōs	1 x	189.
20.	ὄπλον	hoplon	6 x	189.
21.	ὄπου	hopou	3 x	189.
22.	(ὄρμη) βία	hormē	1 x	190.
23.	ὄραμα	horoma	11 x	191.
	ὄρασις	horosis	2 x	191.
24.	ὄσον, ἐν ᾧ, ἕως, ὄταν, ὡς, ἕως ὅτου, ἄχρις οὗ	hoson, enhoson	12 x	191, 95.
25.	ὄτε, ἵνα	hote	3 x	192.
26.	ὄταν	hotan	42 x	191-192.
	ὄτι	hoti	2 x	192.
27.	οὕτως	houtōs	1 x	195.
28.	ὕακινθινος, ὕακινθος	huakinthinon	2 x	302.
29.	ὕδρια	hudria	3 x	302.
	ὕδρωπικός	hydrōpikos	1 x	303.
30.	ὑλη	hulē	1 x	303.
31.	ὑπάρχοντα, ὑπαρξίς, ὅσα ἔχεις	huparchonta	13 x	303.
	ὑπηρέτης	hupēretēs	19 x	303-304.
	ὑποκρίνεσθαι, ἀνυπόκριτος, συνυποκρίνεσθαι	hupokrine	7 x	304.
	ὑπόκρισις	hupokrisis	7 x	304.
	ἀνυπόκρισις			
	ὑποκριτής	hupokritēs	18 x	304-305.
	ὑπομένειν, διαμένειν, ὑπομονή	hypomine	13 x	305.
	ὑπομονή	hupomonē	30 x	305-306.
	ὑποπόδιον	hupopodion	6 x	306.
	ὑποταγή	hupotagē	4 x	306.
	ὑποτάσσειν, ὑποτάσσεσθαι, ἀνυπότακτος, ὑποκεῖσθαι	hupotasse	31 x	306-307.
32.	ὑσσωπος	hussōpon hussōpos	1 x 1 x	307. 307.

33. ὡς	hōs	112 x	325-326.
ὡσαύτως	hōsautōs	1 x	326.
ὡστε	hōste	83 x	326-327.

5.2. Gr. spiritus lenis = \$h\$

1. ἐθνάρχης	hethnarchēs	1 x	78.
ἐθνικός	hethnikos	2 x	78.
ἔθνος, ἐθνικῶς	hethnos	159 x	78-82.
2. εἰκῶν	heikōn	23 x	83-84.
3. ἐλπίζειν	helpize	22 x	92-93.
ἐλπίς	helpis	48 x	93-94.
4. ἰδιώτης	hidiōtēs	5 x	125.
5. ἰσάγγελος	hisaggelos	1 x	125.
6. ὀβολός	hobolos	2 x	186.
7. ἐτάζειν	hetaze	1 x	108.

5.3. Gr. /-h-/ = \$-h-\$

1. πανοπλία	panhoplia	3 x	197.
2. παράλιος	parhalia	1 x	205.
3. παριστάναι	parhista	10 x	207.
4. προιστάναι	prohista	8 x	255.
5. συνέδριον	synhedrion	22 x	287.
6. συνιστάναι	synhista	15 x	289.

5.4. Gr. /-h-/ = \$φ\$

1. ἐξομολογεῖν	exomologeī	9 x	98-99.
2. ἐξορκιστής	exorkistēs	1 x	99.

5.5. Gr. /-φ-/ = \$-h-\$

1. παροιμία	parhoimia	5 x	207.
2. παρουσία	parhousia	20 x	207-208.

5.6. Gr. [ϝ] = \$hr\$

1. ῥήτωρ	hrētōr	1 x	264.
2. ῥητῶς	hrētōs	1 x	264.

5.7. Gr. [ῥ] = \$r\$

1. παρρησία	parrēsia,	32 x	208-209.
	parrousia		
2. παρρησιάζεσθαι	parrēsiazē	9 x	209.

## Appendix 6

## Gothic

Greek form	Gothic form	Frequency	Page in Elias
6.1. Gr. /h/ = §h§			
1. αἵρεσις	hairaisis	1 x	53.
2. Ἑβραῖος	Haibraius	3 x	53.
3. Ἡρώδης	Herodes,	14 x	53.
	Herodeis,		
	Herodis	3 x	53.
Ἡρωδίας	Herodia,		
	Hairodia	2 x	54.
Ἡρωδιανός	Herodianus		
4. Ὑμέναιος	Hymainaius	1 x	54.
6.2. Gr. /h/ = §ϕ§			
1. Ἑρμογένης	Airmogaineis	1 x	42.
2. Ἱεράπολις	Iairaupaulei, Jairupula	2 x	54.
3. Ὑμέναιος	Ymainaius	1 x	54.
6.3. Gr. $\begin{bmatrix} r \\ o \end{bmatrix}$ = §r§			
1. Ροῦφος	Rufus	1 x	69.
2. Ρώμη	Ruma	1 x	69.

Appendix 7  
Armenian

Greek form	Armenian form	First-oc- currence & date	Page in Hübschmann
7.1. Gr. /h/ = §h§			
1. αἵρεσιώτης	heresiōtai-k (& var.)	Euseb, etc, 5th.	361.
αἵρετικός	heretikos	Cyrrill, etc, 5th.	361.
2. Ἕλλην	hellēn (& var.)	MX, etc, 5th.	360.
3. ὄρμος	hormay	Pseud, 5th.	361.
4. ὕλη	hiuļ	Basil, etc, 5th.	361.
5. ὕλλος	hiuļos	GeorgiosPisides,?	361.
6. ὕπατος	hiupatos, hiupat	Euseb, etc, 5th.	361.
7. ὑπερέτης	hiuperet (& var.)	MX, 5th.	361.
7.2. Gr. /h/ = §ø§			
1. ἀλκυών, ἀλκυών	aļkion	Basil, 5th.	340.
2. αἱματίτης	ematitēs	Pseud, 5th.	348.
3. ἀπαλός, ἀπλοῦς	apaļas, apaļas	Ephrem, 5th.	341.
4. ἀψίς	aψse	OT, 5th.	342.
5. εἰμαρμένη	imarminē	Aristot, 8th-9th.	518.
6. εἰρμός, εἰρμός	eimos	Leb.d.Väter, 5th.	349.
7. ἐλικίας	elik	Aristot, 8th-9th.	347.
8. Ἑλλάς	Ellas	} Philo, De vita contemplativa, 5th.	361.
Ἑλλάδα	Elladay		
Ἕλληνες	Ellenaçik		
9. ἡ φήνη	ephenē	Basil, 5th.	349.
10. ὀρμισκος	ormisk	Cyrrill. von Alexandrien, ?	369.
11. ὑάκινθος	yakinť (& var. & der.)	OT, etc, 5th.	366.
12. ὑποδιάκονος	iupodiakon	Lambr, 12th.	351.

## 7.3. Gr. spiritus lenis = \$h\$

1. ἄλιξ	halika	Ephrem, 5th.	360.
2. ἄλόη	haluē	OT, etc, 5th.	360.
3. ἔθνος, ἔθνικός,	hefanos	NT, etc, 5th.	360.
τὰ ἔθνη	(& der.)		
4. ἱρίς	arm. xir? hirik	OT, 5th.	351.

## 7.4. Gr. /-h-/ = \$-h-\$

1. *ἀντιύπατος	an̄t̄ihiupatos	Euseb, etc, 5th.	361.
	(& var. & der.)		
2. σύνοδος	siunhodos	FB, etc, 5th.	380.
	(& der.)		

## 7.5. Gr. /-h-/ = \$ϕ\$

1. εἰκοσάεδρον	ikosaēd̄ron	Grig. Nius, 8th.	350.
ὀκτάεδρον	ok̄taēd̄ron	Grig. Nius, 8th.	369.

## 7.6. Gr. ῥ = \$hr̄\$

1. ῥώμη	H̄rom, Hōrom-ĕ	NT, etc, 5th.	362.
	(& var. & der.)		
2. ῥήτωρ	h̄retor	MX, etc, 5th.	362.
	(& der.)		
3. ῥόγα	h̄rog	Sb, 7th.	362.

## 7.7. Gr. ῥ = \$r\$ or \$r̄\$

1. ῥάβδος	ravdos	Aristot, 8th-9th.	386.
2. ῥαχία	rākia	Nonnos, ?	376.
3. ῥητίνη	retin	OT, 5th.	376.
4. ῥοπή	ropē	Basil, etc, 5th.	386.

## 7.8. Gr. -ῥ- = \$-r-\$

1. ἀπόρρομα	aporiumay	Anan. Shirak, 7th.	341.
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The abbreviation etc. after the book or author indicates that the word occurs also in other texts in the same century, cf. Hübschmann (1897), pp. 3-8.

7.9. Abbreviations and dates for books and authors

The dates are according to Hübschmann (1897, H).  
For the years of publication and the publishers, vide  
Hübschmann (1897), pp. 3-8.

- Anan.Shirak = Anania Širakuni, 7th. H, p. 3.  
Aristot = Aristotle, De mundo, 8th-9th (?). H, p. 338,  
Anm. 1.  
Basil = Basilius, Hexameron, 5th. H, p. 3.  
Cyrill = Cyrillus v. Jerusalem, Katechese, 5th. H, p.  
3.  
Ephrem = Werke des hlg. Ephrem, 5th. H, p. 4.  
Euseb = Eusebius, Chronik und Kirchengeschichte, 5th.  
H, p. 4.  
FB = Faustus von Byzanz, Geschichte, 5th. H, p. 4.  
Grig.Nius = Gregor von Nyssa übers. von Stephannos  
von Siuniĳ, 8th. H, pp. 369, 7, and vii.  
Lambr = Nerses von Lambron, 12th. H, p. 5.  
Leb.d.Väter = Leben der heiligen Väter. The oldest  
passages go back to the 5th century.  
H, p. 5.  
MX = Moses von Chorene, Geschichte von Armenien, 5th.  
H, p. 6.  
NT = The Armenian version of the New Testament, 5th.  
H, p. 6.  
OT = The Armenian version of the Old Testament, 5th.  
H, pp. vi and 284.  
Philo, De vita contemplativa, 5th. H, p. vi.  
Sb = Sebēos, Geschichte des Heraclius, 7th. H, p. 7.

## Bibliography

- Allen, W. Sidney (1968), *Vox Graeca*. Cambridge.
- Altheim, Franz - Stiehl, Ruth (1966), *Spirantisierung der bgdkpt, in<sup>their</sup> Die Araber in der Alten Welt*, Dritter Band (Berlin), pp. 39-58.
- Baumstark, Anton (1922), *Geschichte der syrischen Literatur mit Ausschluss der christlich-palästinsensischen Texte*. Bonn. = GSL.
- Blau, Joshua (1970), *On Pseudo-Corrections in Some Semitic Languages*. Publications of the Israel Academy of Sciences and Humanities. Section of Humanities. Jerusalem.
- Blok, H. P. (1927), *Die griechischen Lehnwörter im Koptischen*. Zeitschrift für ägyptischen Sprache und Altertumskunde 62 (Berlin), pp. 49-60.
- Böhlig, Alexander (1953), *Ein Lexikon der griechischen Wörter im Koptischen. Die griechisch-lateinischen Lehnwörter in den koptischen manichäischen Texten*. Studien zur Erforschung des christlichen Aegyptens, Heft 1. München.
- Böhlig, Alexander (1954), *Die griechischen Lehnwörter im sahidischen und bohairischen Neuen Testament*. Studien zur Erforschung des christlichen Aegyptens, Heft 2. München.
- Böhlig, Alexander (1954a), *Register und Vergleichstabellen zu Heft 2*. Studien zur Erforschung des christlichen Aegyptens, Heft 2 A. München.
- Brockelmann, Carolus (1928), *Lexicon Syriacum*. Editio secunda aucta et emendata. Halis Saxonum. = LS.



- Brockelmann, Carl (1960), Syrische Grammatik. Achte Auflage. Lehrbücher für das Studium der orientalischen Sprachen, Band IV. Leipzig.
- Browning, Robert (1969), Medieval and Modern Greek. London.
- Cohn, L. (1899), Choiroboskos, Georgios. Pauly-Wissowa, Real-Encyclopädie der classischen Altertumswissenschaft, Dritter Band (Stuttgart), pp. 2363-2367.
- Debrunner, Albert - Scherer, Anton (1969), Geschichte der griechischen Sprache II. Sammlung Göschen, Band 114/114a. Berlin.
- Drijvers, H. J. W. (1972), Old-Syriac (Edessean) Inscriptions. Semitic Study Series, New Series No. III. Leiden. = OSI.
- Elis, Carl (1903), Ueber die Fremdworte und fremden Eigennamen in der gotischen Bibel-Übersetzung. Inaugural-Dissertation, Göttingen. Einbeck.
- Frisk, Hjalmar (1960), Griechisches etymologisches Wörterbuch I. Heidelberg.
- Girgis, W. A. (1964), Greek Loan Words in Coptic. Bulletin de la Societe d'archéologie copte 17 (Cairo), pp. 63-73.
- Hammarström, M. (1920), Beiträge zur Geschichte des etruskischen, lateinischen und griechischen Alphabets. Akademische Abhandlung, Helsingfors. Helsingfors.
- Hilgard, Alfredus (1901), Scholia in Dionysii Thracis Artem Grammaticam. Grammatici Graeci, Partis primae vol. III. Lipsiae.
- Hübschmann, H. (1897), Armenische Grammatik, I. Theil, Armenische Etymologie. Bibliothek indogermanischer Grammatiken, Band VI. Leipzig. = H.

- Jespersen, Otto (1912), Elementarbuch der Phonetik. Leipzig - Berlin.
- Kahle, Paul E. (1959), The Cairo Geniza. Second edition. Oxford.
- Krauss, Samuel (1899), Griechische und lateinische Lehnwörter im Talmud, Midrasch und Targum, Teil II, Wörterbuch. Berlin.
- Kutscher, Eduard Yechezkel (1959), Hal-lašon we-hareqa<sup>c</sup> hal-lešoni šel megillat yeša<sup>c</sup>yahu haš-šelema mim-megillot jam ham-melaḥ (The Language and Linguistic Background of the Isaiah Scroll). Jerusalem.
- Laum, Bernhard (1928), Das Alexandrinische Akzentuationssystem. Studien zur Geschichte und Kultur des Altertums, Vierter Ergänzungsband. Paderborn.
- Lefort, L.-Th. (1950), Concordance du Nouveau Testament sahidique I, Les mots d'origine grecque. Corpus Scriptorum Orientalium, Vol. 124, Subsidia, Tome I. Louvain.
- Leipoldt, Johannes (1907), Geschichte der koptischen Litteratur. Geschichte der christlichen Litteraturen des Orients. Die Litteraturen des Ostens in Einzeldarstellungen, Siebenter Band (Leipzig), pp. 131-183.
- Lejeune, Michel (1947), Traité de phonétique grecque. Collection de philologie classique III. Paris.
- Littmann, Enno (1907), Geschichte der äthiopischen Litteratur. Geschichte der christlichen Litteraturen des Orients. Die Litteraturen des Ostens in Einzeldarstellungen, Siebenter Band (Leipzig), pp. 185-269.

- Lupaş, Liana (1972), *Phonologie du grec attique*. *Journua Linguarum, Series Practica*, 164. The Hague. Paris.
- Martinet, André (1955), *Économie des changements phonétiques*. *Bibliotheca Romanica, Series prima X*. Berne.
- Mayser, Edwin (1970), *Grammatik der griechischen Papyri aus der Ptolemäerzeit, Band I, Laut- und Wortlehre, I. Teil, Einleitung und Lautlehre*. Zweite Auflage, bearbeitet von Hans Schmoll. Berlin.
- Merx, Adalbertus (1889), *Historia artis grammaticae apud Syros*. *Abhandlungen für die Kunde des Morgenlandes*, IX. Band, No. 2. Leipzig.
- Morenz, Siegfried (1952), *Die koptische Literatur*. *Handbuch der Orientalistik, Erster Band, Ägyptologie, Zweiter Abschnitt, Literatur (Leiden)*, pp. 207-219.
- Moscatti, Sabatino (1964), *An Introduction to the Comparative Grammar of the Semitic Languages*, ed. by Sabatino Moscati. *Porta Linguarum Orientalium, Neue Serie VI*. Wiesbaden.
- Noth, Martin (1962), *Die Welt des Alten Testaments*. Vierte, neubearbeitete Auflage. Berlin.
- Nöldeke, Theodor (1880), *Kurzgefasste syrische Grammatik*. Leipzig.
- Penzl, Herbert (1957), *The Evidence for Phonemic Changes*. *Studies presented to Joshua Whatmough on his sixtieth Birthday (Copenhagen)*, pp. 193-208.
- Rosenthal, Franz (1936), *Die Sprache der palmyrenischen Inschriften und ihre Stellung innerhalb*

- des Aramäischen. Mitteilungen der vorderasiatisch-aegyptischen Gesellschaft, 41. Band, 1. Heft. Leipzig. = R.
- Saalfeld, Günther Alexander E. A. (1884), *Tensavrvs Italograecvs*. Ausführliches historisch-kritisches Wörterbuch der griechischen Lehn- und Fremdwörter im Lateinischen. Wien.
- Schall, Anton (1960), *Studien über griechische Fremdwörter im Syrischen*. Darmstadt. = SGF.
- Schmitt, Alfred (1952), *Der Buchstabe H im Griechischen*. *Orbis Antiquus* 6. Münster.
- Schwyzler, Eduard (1939), *Griechische Grammatik I*. *Handbuch der Altertumswissenschaft*, II. Abteilung, I. Teil, I. Band. München.
- Stark, Jürgen (1971), *Personal Names in Palmyrene Inscriptions*. Oxford. = S.
- Sturtevant, Edgar H. (1940), *The Pronunciation of Greek and Latin*. Second Edition. Philadelphia.
- Thumb, Albert (1888), *Untersuchungen über den spiritus asper im Griechischen*. Inaugural-Dissertation, Freiburg I. B. Strassburg.
- Thumb, Albert (1900), *Die griechischen Lehnwörter im Armenischen*. *Byzantinische Zeitschrift*, IX. Band, Jahrgang 1900 (Leipzig), pp. 388-452.
- Till, Walter C. (1961), *Koptische Grammatik (saidī-scher Dialekt)*. 2., verbesserte Auflage. *Lehrbücher für das Studium der orientalischen Sprachen*, Band I. Leipzig.
- Tucker, R. Whitney (1969), *Chronology of Greek Sound Changes*. *American Journal of Philology*, Vol. XC, 1 (Baltimore), pp. 36-47.
- Tumanjan, E. G. (1971), *Drevnearmjanskij jazyk*. Moskva.

Vergote, J. (1945), Phonétique historique de l'égyptien. Les consonnes. Bibliothèque du Muséon, Vol. 19. Louvain.

Worrell, W. H. (1934), Coptic Sounds. University of Michigan Studies. Humanistic Series, Vol. 26. Ann Arbor.

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