# A HISTORY OF
# ANCIENT GREEK

From the Beginnings to Late Antiquity

Edited for the Centre for the Greek Language
by

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# 3 The pronunciation of Classical Greek*

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## 1 Introduction

The pronunciation of a given language is determined by the combination of its abstract phonological system (see IV.1) and the actual articulation and sound of each individual speech sound. The task of phonetics is the precise observation of the organs of speech during the articulation of the various sounds and the systematic measurement of the acoustic parameters of those sounds. It should therefore be obvious that it is more difficult to reach conclusions about the exact sounds of earlier forms of a language than it is with the abstract entities, such as its phonemes, since there are no longer any native speakers nor are there tape recordings from the time when the earlier form of the language was spoken. In IV.2 are mentioned the basic considerations which help us to draw conclusions about the pronunciation of Ancient Greek.
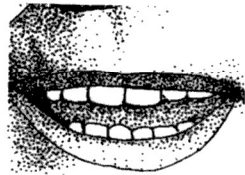
## 2 The vowel system

### 2.1 Vowels

The vowels of Classical Greek (on their phonemic status see IV.1) are assumed to have been realized in pronunciation approximately as follows (see Figs. 54–9):

The long [i:] and the short [i] (both written <ι>: <μῖσος> "hatred," <φίλος> "friend") were perhaps rather like Modern Greek [i] in the word εἰμαι "I am." More precisely, the long vowel was perhaps a little



**Figure 54** Opening of the lips for the close vowel [i]
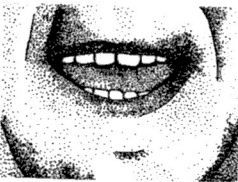


**Figure 55** The mouth slightly more open for the close vowel [e]



**Figure 56** The mouth and the lips even more open for the open vowel [ε]

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* The symbols used are those of the International Phonetic Alphabet. A colon (:) after a symbol for a vowel denotes length, like the macron ( ¯ ) used in classical philology.

The examples from modern languages are no more than suggestive. It should not be assumed that any modern language has any special similarity in pronunciation with Ancient Greek.

For ease of reading, ancient words are here written in small letters, as ancient Greek texts are printed today, rather than in capitals as they would have been written in antiquity.

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closer, almost like the corresponding French vowel in the word *aussi* "also."

A little lower, i.e., with the mouth open more widely, were the long close [e:] (written <ει>: εἶναι, infinitive of the verb εἰμί "to be") and the short [e] (written <ε>: <νέος> "new, young"), which must have both been articulated in the region of the French or German close [e] in words such as *après* "after," *beten* "pray." The short [e] was pronounced a little lower than the long close [e:]. Perhaps both these vowels, or at least the long one, were somewhat closer than Modern Greek [e]. Gradually, and before the end of the classical period, the long close [e:] fell together with the long [i:].

It is assumed that the long open [ε:] (written <η>: δῆμος "deme") was approximately like the French or German open [ε:] in words such as *père* "father," *werden* "to become," but that it was longer than them. During the course of the classical period it became a close [e:], finally merging with it into a close [i:].

The front rounded close vowels, long [y:] and short [y] (both written <υ>: <κῦμα φύλλον> "wave," "leaf"), were perhaps pronounced approximately like the corresponding French and German vowels in words such as *plus* "more," *Bühne* "stage," if not a little lower, as in the words *pure* "pure," *dünn* "thin." Both vowels derive from the older [u:], [u] through forwarding of the articulation, i.e., the tongue continues to articulate in a high position (the mouth being relatively closed), and the lips continue to be rounded, but instead of the back of the tongue articulating near the velum to produce [u], the front part articulates near the palate to produce [y].

Of the back vowels, the older, long close [o:] became closer and finally developed to a long close [u:] (written <ου>: <ἐλθοῦσα>). This was perhaps closer than Modern Greek [u:] in the word πού /pu/ "where," and was perhaps accompanied by greater rounding of the lips.

The long close [o:] (written <ου>: <οὐρανός, οὔτε>, "sky," "not") and the short [o] (written <ο>: <φόβος> "fear") were most likely articulated somewhere between Modern Greek [u] and [o], perhaps with a greater rounding of the lips than in words such as Modern Greek τόσο /'toso/ "so much," approximately like French *beau* "beautiful" or German *Sohn* "son." The long vowel was produced by monophthongization of the diphthong [oᵘ]: οὔτε: to a single sound [óᵘ:te > ó:te]. The close vowel later became identical to [u:]: [ó:te] > [ú:te] (monophthongization). As with the corresponding front short [e], it is likely that the short [o] was articulated rather lower than the long [o:], near the region of the long open [ɔ:].



**Figure 57** Rounding of the lips for the front rounded vowel [y]



**Figure 58** Rounding of the lips for the back rounded vowel [u]



**Figure 59** Opening of the lips for the low open vowel [a]

**Table I:** Diagram of the ancient vowels

| | | front | | back | |
| --- | --- | --- | --- | --- | --- |
| | | unrounded | rounded | unrounded | rounded |
| high (close) | | i: | y: | | u: |
| | | i | y | | |
| | mid-close | e: | | | o: |
| mid | | e | | | o |
| | mid-open | ε: | | | ɔ: |
| | | | | a | |
| low (open) | | | | | |
| | | | | a: | |

The vowels [a], [a:] are articulated close to the middle of the mouth, relatively farther forward than [o], [ɔ:], than which they are evidently lower.

The long open [ɔ:] (written <ω>: <φῶς> "light") was articulated with the mouth open wider, perhaps somewhat like the German open [ɔ] in the word *Sonne* "sun," but longer.

Finally, the low short [a] and long [a:] (both written <α>: πάθος "passion," πᾶς "you go"), which were not accompanied by rounding of the lips, were perhaps pronounced more openly than Modern Greek [a], perhaps like the corresponding vowels in the Italian word *amare* "to love." It does not seem likely that Classical Greek possessed the central vowel schwa, so common in Modern English, French, and German in words such as *above* (both vowels are identical in American English; in British English the second vowel is articulated lower), *petit* "small" (usually in reciting poetry and in songs), *bitte* "please."

For the remaining vowels, except the front rounded ones, examples could be given from English. But the long English vowels are usually accompanied by a glide, which could cause the reader some confusion. It is likely that long vowels were articulated closer to the periphery of the mouth than short ones, especially since they were more numerous.

Table I gives a diagram of the ancient vowels. It presents a general, abstract form of a system which was evolving rapidly. It is impossible to identify any particular historical moment during the course of the



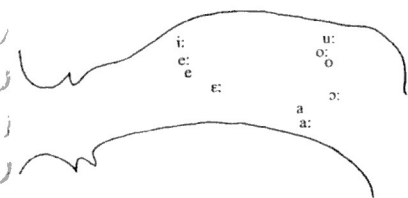**Figure 60** Approximate position of the tongue for the vowels in Ancient Greek



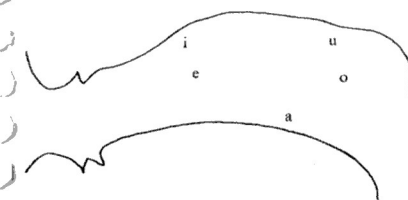**Figure 61** Approximate position of the tongue for the vowels in Modern Greek

**Table II:** Examples of vowels

| | | front | | back | |
| --- | --- | --- | --- | --- | --- |
| | | unrounded | rounded | unrounded | rounded |
| high (close) | | μῖσος φίλος | κῦμα φύλλον | | ἐλθοῦσα |
| | mid-close | εἶναι | | | οὐρανός |
| mid | | νέος | | | φόβος |
| | mid-open | δῆμος | | | φῶς |
| | | | | πάθος | |
| low (open) | | | | | |
| | | | | πᾶς | |

classical period when the vowel system was precisely as it is presented in the diagram.

### 2.2 *Diphthongs*

Diphthongs occur when two vowels belong to the same syllable, in which one of them "shortens" into a semivowel (see also IV.1). The tongue moves from the position for one sound to that for the other, while the rounding of the lips may also change. Diphthongs differ according to whether the semivowel precedes or follows the vowel. In the older period of Ancient Greek there was a back semivowel before a vowel which was written ϝ (the *digamma*). An idea of the pronunciation of such a semivowel may be obtained, for example, from that of the Greek word όχι "no" in the dialects of Thessaly today (represented in script as: ουόχι [ᵘoçi]), or that in English *weather*, French *pourquoi* "why" or Italian *uomo* "man." This semivowel no longer occurred in the classical period. In an even earlier period, there also occurred the equivalent front semivowel [ⁱ] before vowels.

After the disappearance of these semivowels, only diphthongs with the semivowel after the vowel occurred during the classical period. There were two such semivowels, the front [ⁱ], which approaches the pronunciation of the vowel [i], and the back [ᵘ] which approaches the articulation of the vowel [u], but both are closer than the equivalent homorganic vowels. The front semivowel could occur with both the short [u e ɔ a] and the long vowels [ε: ɔ: a:], i.e., it was involved in the formation of the diphthongs [yⁱ (originally uⁱ) eⁱ oⁱ aⁱ ε:ⁱ ɔ:ⁱ a:ⁱ]. The last three diphthongs are usually designated "long."

The front semivowel was written with the letter *iota* <I> after the vowel, whether this was short: e.g., <EI AI>, or long: e.g., <HI ΩI AI>, as in <υἱός "son," λείπω "to leave," λοιπός "rest," παῖς "boy," λῃστής "robber," τῶι (article, dat. sing.), ἡμέραι "day, dat." >, since it continued to be pronounced, at least for a time, during the classical period. Accordingly it is represented in this manner (though with lower case letters) in the examples here. It was not written under the long vowels as a *subscript*, i.e., <Η Ω Ą>. The *iota* began to be written below the preceding letter during the Hellenistic period, by which time the diphthongal pronunciation had disappeared, and long diphthongs are still written in this way in texts of ancient literature today, although more recently there has been an international trend towards writing the *iota* on the line again and not as a subscript: τῇ ἡμέρα/τῆι ἡμέραι (see also IV.2).

An idea of the pronunciation of the diphthongs can be formed by rapidly pronouncing the modern Greek words ρολόι /ro'loi/ "watch" (two syllables) and λέει /'lei/ "says" (one syllable), or even better by observing how the words *say*, *boy* and *by* are pronounced in English, or *heute* "today" and *sein* "to be" in German, or *noi* "we" and *hai* "you have" in Italian.

The back semivowel could occur with the vowels [e o a], i.e., it could form with them the diphthongs [eᵘ oᵘ aᵘ], approximately as in the words λέω /'leo/ "I say" and πάω /'pao/ "I go" as they are pronounced today in northern Greek dialects or as in the words *house*, *Haus*, in English and German. It was written with the letter <υ>: ποῦ, αὔριον "tomorrow," εὔχομαι "to wish." There also occurred a rare long diphthong [ε:ᵘ]: ηὐχόμην. In the position before a vowel it is likely that the semivowel of a diphthong was pronounced long.

Diphthongs tended to become monophthongs (see IV.2). First the [oᵘ] changed to [o:] (and thereafter into [u:]). Later followed the changes from [uⁱ] to [y:] and from [eⁱ] to [e:]. Thus the older diphthongs [oᵘ], [eⁱ], [uⁱ] became monophthongs, and this occurred in all likelihood at the beginning of the classical period. The diphthong [a:ⁱ] also fell together with the long [a:]. After the end of the classical period the diphthong [aⁱ] also became a vowel, a very low open front [æ:], something like the [æ] in the English *cat*, but long. It eventually became closer and became identical to the short [e] by the Hellenistic period, when the distinction between long and short vowels disappeared. The diphthong [oⁱ] finally fell together with [y:], retaining the rounding of the lips of the first element and the height of the second. Thus all the

diphthongs with the front semivowel [ⁱ] as their second element eventually became simple long vowels. The other two diphthongs, with a back semivowel, i.e., [eᵘ] and [aᵘ], later developed into a vowel followed by a consonant pronounced approximately as today ([ev/ef], [av/af]). The long vowels, as well as the diphthongs, are related to the "long" (better perhaps "heavy") syllables in metrics, *although they are not to be completely identified with them* (see IV.1, IV.2, VII.A.6).

## 3 The consonant system

The consonants can be more easily understood today than the vowels or diphthongs.

### 3.1 *Obstruents*

*3.1.1 Stops*    *Stops* are formed by a complete closure within the oral cavity, which opens abruptly thereafter because of the pressure of air coming from the lungs. In Greek the closure is effected either between the lips or by the contact of some part of the tongue with a part of the upper portion of the mouth from the alveolar ridge to the velum.

There were three triads of *stops*. Each triad consisted of a voiceless, "plain" (unaspirated), a voiceless aspirated, and a voiced consonant. The consonants of the first triad were articulated with both lips (*bilabials*), those of the second with the tip of the tongue behind the upper teeth and towards the alveolar ridge (*alveodentals*) and those of the third with the back of the tongue against the soft palate (*velars*).

The voiceless unaspirated [p t k], bilabial, alveodental, and velar respectively, were most likely pronounced as they continue to be in Modern Greek today, in words such as πώς [pos] "how," τότε ['tote] "then," κακό [ka'ko] "bad." They were written with the letters <π τ κ>.

The aspirates [pʰ tʰ kʰ] are like their (preceding) unaspirated counterparts, but after their articulation, the vocal chords, which are in fact two membranes in the larynx, do not close immediately, with the result that for a short space of time air passes between them, until the articulation of a following vowel. In other words, they are related to an articulation which resembles the consonant [h] (see below). Such consonants exist today in Cypriot Greek, where they do not represent a continuation of the ancient pronunciation, and in English and in German, in words such as *pie, two, cow*; *Papa* "dad," *Tante* "aunt," and *Kuh* "cow." They were written with the letters <φ θ χ>.

**Table III:** The three triads of stops classified by place of articulation with examples

| bilabials | alveodentals | velars |
|---|---|---|
| p  b | t  d | k  g |
| pʰ | tʰ | kʰ |
| πῶς βωμός | τότε δέος | ἄκος ἄγος |
| φῶς | θεός | ἄχος |

For the articulation of voiced consonants, as well as vowels, the "vocal chords" come closer together, so that the air coming from the lungs and passing through them makes them vibrate and produce a sound. The voiced consonants [b d g] were pronounced about like the voiced stops in the modern Greek words **μπ**αίνω ['beno] "to get in," **ντ**ύνομαι ['dinome] "to dress," **γκ**ρεμός [gre'mos] "precipice." They were written with the letters <β δ γ>.

Stops may also be assigned to three groups on the basis of voicing and aspiration (both depending on the contribution of the vocal chords):

voiceless: p t k (**π**ῶς **τ**ότε ἄ**κ**ος)
voiceless aspirates: pʰtʰkʰ (**φ**ῶς **θ**εός ἄ**χ**ος)
voiced: b d g (**β**ωμός **δ**έος ἄ**γ**ος).

In the Hellenistic period (see IV.6), the aspirate and voiced consonants (the latter except when they occurred after nasals) became *fricatives*: [f θ x v ð γ] as they have remained to this day in Standard Modern Greek. In modern Greek voiced stops continue the ancient Greek pronunciation only after nasals, e.g., δέντρο ['ðendro] "tree," άντρας ['andras] "man" (respectively from Anc. Gk. δένδρον [déndron], accusative ἄνδρα [ándra]). The remaining voiced stops of Modern Greek (e.g. κάμπος ['ka(m)bos] "plain," έντομο ['e(n)domo] "insect") are later creations, results of voice assimilation after nasal.

*3.1.2 Fricatives*   Besides the above nine consonants the two allophones [s] and [z] of the alveolar fricative phoneme (written with the letter <σ>) were most likely pronounced in approximately the same way as the corresponding modern Greek consonants in the words σήμερα ['simera] "today" and κόσμος ['kozmos] "world" respectively. In their production either the tip or the dorsum of the tongue approaches the alveolar ridge, but does not make a complete closure as

for the stops [t] and [d], so that air coming from the lungs can pass through in a continuous stream and create friction.

It is possible that up until the beginning of the classical period there also occurred an affricate consonant [d͡z], written with the letter <ζ> (see also IV.1): πεζός "pedestrian." An affricate is a consonant which consists of two homorganic parts (i.e., articulated in the same part of the mouth), beginning as a stop and ending as a fricative. In this particular case, the affricate begins as a [d] and ends as a [z] and therefore resembles the similar Modern Greek [dz] in the word τζιτζίκι [dzi'dzici] "cicada." In the classical period this consonant fell together with the cluster [zd], whose sound was approximately the opposite of [dz] and which was written with the same letter <ζ>: Ἀθήναζε < Ἀθήνας + δε "towards Athens." Later, when the cluster [zd] became [z], its pronunciation became identical to [z], the allophone of the alveolar fricative.

### 3.2 Sonorants: Nasals and liquids

*3.2.1 Nasals*   For the production of nasal consonants a closure is created within the oral cavity, either between the lips or between the tongue and some part of the roof of the mouth, while simultaneously the velum (soft palate) is lowered, so that air passes through the nasal cavity. The bilabial nasal [m] (written with the letter <μ>) as in the word μένω ['meno] "to stay," for instance, was pronounced like the Modern Greek [m] in the same example. The alveolar allophone [n] (written with the letter <ν>) of the second nasal consonant, as in the word νέος ['neos] "young," for example, was pronounced as in the corresponding modern Greek word. Its velar allophone [ŋ] probably sounded as it is pronounced in modern Greek words such as άγχος ['aŋxos] "anxiety," αγκώνας [aŋ'gonas] "elbow" by those speakers who pronounce a prenasalized [g], i.e., who produce a nasal before [g]. This velar nasal [ŋ] was written, however, with the letter <γ>: <ἀγκών>. (The palatal [ɲ] as in the Modern Greek word εννιά [e'ɲa] "nine" did not yet exist.)

*3.2.2 Liquids*   The *liquids* [l] and [r] (written with the letters <λ ρ> respectively) were probably pronounced as in modern Greek words such as λέω ['leo], "to say," ώρα ['ora] "hour," although the latter may have been trilled more than it is today. (A palatal [ʎ] as in Mod. Gk. ελιά [e'ʎa] "olive" did not yet exist.) For the production of [l], the tongue

touches the alveolar ridge, but leaves an opening at the side for the passage of air, while for [r] the tip vibrates against the alveolar ridge. At the beginning of a word and in certain other positions (see IV.2), [r] was pronounced as a voiceless [r̥], without any vibration of the vocal chords. In the modern way of writing Ancient Greek this is indicated by a rough breathing above the letter: ῥοή "flow." There is a similar voiceless pronunciation of [r] in Modern English and French after a voiceless consonant: *tray, très* "much, very" (though in Northern French the latter has become uvular). In antiquity this voicelessness could be written with the symbol [h] (the precursor of the "rough breathing") as is clear from the written form of Greek loanwords in Latin: **rh**etor (ῥήτωρ) "public speaker."

### 3.3. *The consonant [h]*

Finally, the consonant [h], or the ***rough breathing*** as it was later mistakenly called, was pronounced like the corresponding sound in English and German: ***house, Haus***. As a consonant, [h] presents certain peculiarities, since it is pronounced without any contact of the speech organs, with the mouth open, the tongue low, and the vocal chords open so that air coming from the lungs escapes without any obstruction. It is pronounced with the *glottis* (the opening at the upper part of the larynx between the vocal chords) open, which is why it is also known as *glottal*. It can be conceived as a voiceless low vowel.

In IV.2 it was mentioned that the consonant [h] was originally written with the letter <H>. With the orthographical reform in Athens (the official adoption of the Ionic form of the alphabet) in 403 BC, [h] ceased to be written (<H> now came to represent [ɛː]). Later, during the Hellenistic period (see IV.6), when it had disappeared completely from the pronunciation, [h] began to be written with the *rough breathing*, which initally had the form ⊢ (i.e., the left half of the old H). By the same token, the *smooth breathing* was initially written ⊣ (i.e., with the other half of the old H). So the older written form ΗΕΛΛΑΣ (where <H> does not denote an article, as a modern Greek would suppose) became the Hellenistic: Ἑ̓ΛΛΑΣ. These conventions were adopted to facilitate the work of the philologists of the time.

### 3.4 *Double consonants*

The consonants [p t k s m n l r] in Ancient Greek could also occur as double consonants or geminates, and in this case they were written with

**Table IV:** The consonants of Ancient Greek

|          |         | bilabials | alveodentals | velars | glottal |
|----------|---------|-----------|--------------|--------|---------|
| stops    |         | p  b      | t  d         | k  g   |         |
|          |         | pʰ        | tʰ           | kʰ     |         |
| fricatives |       |           | s  (z)       |        | h       |
| nasals   |         | m         | n            | (ŋ)    |         |
| liquids  | lateral |           | l            |        |         |
|          | trilled |           | (r̥)  r       |        |         |

The voiceless series appears to the left of each column, the voiced to the right. Allophonic variants appear in parentheses.

**Table V:** Examples of consonants

|          |         | bilabials   | alveodentals       | velars       | glottal |
|----------|---------|-------------|--------------------|--------------|---------|
| stops    |         | πῶς βωμός   | τότε δέος          | ἄκος ἄγος    |         |
|          |         | φῶς         | θεός               | ἄχος         |         |
| fricatives |       |             | σήμερον (κόσμος)    |              | Ἑλλάς   |
| nasals   |         | μένω        | νέος               | (ἀγκών)      |         |
| liquids  | lateral |             | λέγω               |              |         |
|          | trilled |             | (ῥοή) ὥρα          |              |         |

a reduplication of the same letter. Double consonants can still be heard today in south-eastern modern Greek dialects such as Rhodian and Cypriot: θάλασσα ['θalassa] "sea," Ελλάδα [el'lada]. Many words with double consonants retain their ancient pronunciation in these dialects, as in the two previous examples. There are also double consonants in Italian, in words such as *doppio* "double," *posso* "I can," *nonno* "grandfather," *ellenistico* "Hellenistic," as well as in English, in combinations of words or morphemes such as: white **t**ie, **unkn**own.

If an aspirate consonant happens to be double, its "aspiration" will be heard only at the end. It is hardly likely that a speaker would attempt to open the closure of the mouth, e.g., in order to articulate [p], then

allow the air flow to pass through the vocal chords in order to produce aspiration and then immediately afterwards repeat the whole process with the same vocal organs. It is natural, therefore, for the first part of such a double consonant to lose its aspiration and to be heard as unaspirated: pp͡ʰ tt͡ʰ kk͡ʰ and not *pʰpʰ tʰtʰ kʰkʰ. It is this situation which produced written forms such as: Σαπφώ and not *Σαφφώ.

The place of articulation of the ancient greek consonants is essentially the same as that of the corresponding Modern Greek, the most important difference being that Modern Greek also has palatal consonants.

## 4  Stress

In the modern Greek sentences ήρθ' ο Γιώργος "George came" and ήρθ' ο Γιώργος; "Has George come?" – affirmative and interrogative respectively – the syllables ηρ and γιωρ are articulated with greater intensity and loudness since greater energy is required for their production with respect to the air coming from the lungs, the tension of the vocal chords and so on. In the modern language, such stress is characterized as "dynamic" (see also IV.1, Appendix 1.1). At the same time, such stressed syllables can be heard at different pitches, i.e., on a higher or a lower note (such as the syllable γιωρ in the second example), and are slightly longer than the unstressed syllables. In the syllable γος, which is at the end of both sentences, the voice has a falling pitch in the affirmative sentence and a rising pitch in the interrogative, without being articulated with greater intensity. Thus the contrast between falling and rising pitch is characteristic of the sentence and serves, among other things, to distinguish the interrogative from the affirmative. It is not a feature of the word itself.

In Ancient Greek the rising and falling pitch of the voice was a feature not only of the sentence but also of the word. In other words, a "stressed" (or accented) syllable presented a different pitch of the voice, specifically either a rising or falling. The basic accent in Ancient Greek was "prosodic" or "melodic" (see IV.1), but it was also supplemented by dynamic stress. Certain varieties of Modern Serbo-Croatian and Norwegian most likely approximate ancient prosody. (In Serbo-Croatian this is a case of genetic relationship, while in Norwegian it is a modern development.)

In the modern practice of writing Ancient Greek, the acute accent indicates a rising pitch, although in antiquity no accent marks were used. If another syllable follows in the same word, it is assumed that it

would have had falling pitch. The circumflex accent represents a combination of both pitches, rising–falling, in the same syllable. Absence of any accent mark denotes low pitch.

It is not easy to estimate how much more strength was required for the production of a vowel with dynamic stress than for the production of the remaining vowels.

## 5  Correspondence between writing and pronunciation: Later developments

In most cases the current practice in writing Ancient Greek makes use of lower case rather than capital letters. Especially in the case of the vowels and diphthongs individual letters represent certain stages of evolution. It must be made clear that the tables below showing correspondences between sounds and letters represent an abstract schema, because in this period the manner in which vowels and diphthongs were pronounced was constantly developing. It is on the basis of successive alterations observable in various types of inscriptions that scholars attempt to draw conclusions today about the development of pronunciation during the classical period, as can be seen particularly in the work of Teodorsson (see the bibliography for this and succeeding chapters).

**Table VI**: Correspondences of vowels and graphemes in Ancient Greek
*This table should be read in conjunction with Tables I and II*

| sounds | graphemes | sounds | graphemes | sounds | graphemes |
|---|---|---|---|---|---|
| [iː]<br>[i] | <ι> | [yː]<br>[y] | <υ> | [uː] | <ου> |
| [eː] | <ει> | | | [oː] | <ου> |
| [e] | <ε> | | | [o] | <ο> |
| [ɛː] | <η> | | | [ɔː]<br>[aː]<br>[a] | <ω><br>
<α> |

The few inconsistencies of the ancient alphabet are here apparent: (1) For the three pairs: long and short [i], long and short [y] (earlier [u]), and long and short [a], there is only one letter in each instance. For this reason these letters were later erroneously said to be "of two lengths." (2) The close long [eː] and the close long [oː] were written with digraphs.

**Table VII**: The successive stages of the ancient diphthongs and their written form

| Classical period | | Hellenistic period | | Byzantine period | | Modern Greek | |
|---|---|---|---|---|---|---|---|
| *"long"* | | | | | | | |
| [ε:ⁱ] | <HI> | [i:] | <Ḥ> | [i] | <η> | [i] | <η> |
| [ɔ:ⁱ] | <ΩI> | [ɔ:] | <Ω> | [o] | <ῳ> | [o] | <ω> |
| [a:ⁱ] → [a:] | <AI> | [a:] | <Ạ> | [a] | <ᾳ> | [a] | <α> |
| *"short"* | | | | | | | |
| [eⁱ] → [e:/i:] | <EI> | [e:/i:] | <EI> | [i] | <ει> | [i] | <ει> |
| [oⁱ] | <OI> | [y:] | <OI> | [y] | <οι> | [i] | <οι> |
| [aⁱ] | <AI> | [æ:/ɛ:] | <AI> | [e] | <αι> | [e] | <αι> |
| [yⁱ] | <YI> | [y:] | <YI> | [y] | <υι> | [i] | <υι> |
| [oᵘ] → [o:] | <OY> | [u:] | <OY> | [u] | <ου> | [u] | <ου> |
| [eᵘ] | <EY> | [eᵘ] | <EY> | [ef/ev] | <ευ> | [ef/ev] | <ευ> |
| [aᵘ] | <AY> | [eᵘ] | <AY> | [af/av] | <αυ> | [af/av] | <αυ> |

On the left of each column, the symbol [ ] indicates the pronunciation, while on the right the symbol < > shows the spelling.

Note: the diphthong [oᵘ] had already become the long vowel [o:] by as early as the beginning of the classical period, and the same was soon true of the corresponding [eⁱ] → [e:].

**Table VIII**: Representation of ancient consonants in writing

*This table and the following should be read in conjunction with Table IV.*

| sounds | graphemes | sounds | graphemes |
|---|---|---|---|
| [p] | <π ψ> | [s] | <σ ψ ξ> |
| [b] | <β> | ([z]) | (<σ>) |
| [pʰ] | <φ> | [h] | <·> |
| [t] | <τ> | [m] | <μ> |
| [d] | <δ> | [n] | <ν> |
| [tʰ] | <θ> | ([ŋ]) | <γκ γγ> |
| [k] | <κ ξ> | [l] | <λ> |
| [g] | <γ> | [r] | <ϱ> |
| [kʰ] | <χ> | [r̥] | <ῥ> |
| | | [dz], [zd] | <ζ> |

The current practice of writing Ancient Greek is given here. In antiquity, especially during the first centuries after the introduction of writing, there were many variants in use. In Athens, after the spelling reform of 403 BC, the consonant [h] was no longer represented in writing.

Minor inconsistencies in writing are apparent: the letters <ψ ξ> each represent a combination of two consonants, as does <ζ> in part.

**Table IX**: Examples of consonants in Ancient Greek

| sound | ancient written form | ancient pronunciation | modern written form | Modern Greek pronunciation |
|---|---|---|---|---|
| p | ΠΟΡΟΣ "passage" | póros | πόρος | ˈporos |
| | ΨΕΥΔΟΣ "lie" | pseʷdos | ψεῦδος | ˈpsevðos |
| b | ΒΑΡΟΣ "weight" | báros | βάρος | ˈvaros |
| pʰ | ΦΟΡΟΣ "contribution" | pʰóros | φόρος | ˈforos |
| t | ΤΕΡΑΣ "monster" | téras | τέρας | ˈteras |
| d | ΔΕΡΑΣ "fleece" | déras | δέρας | ˈðeras |
| tʰ | ΘΕΡΟΣ "summer" | tʰéros | θέρος | ˈθeros |
| dz,zd | ΠΕΖΟΣ "pedestrian" | pedzós → pezdós | πεζός | peˈzos |
| k | ΑΚΟΣ "remedy" | ákos | άκος | ˈakos |
| | ΕΞ "six" | héks | ἕξ | eks |
| g | ΑΓΟΣ "guilt" | ágos | άγος | ˈaγos |
| kʰ | ΑΧΟΣ "worry" | ákʰos | άχος | ˈaxos |
| s | ΣΩΙΟΣ "alive" | sɔ̀ⁱos | σῷος | ˈsoos |
| | ΨΕΥΔΟΣ | pseʷdos | ψεῦδος | ˈpsevðos |
| | ΕΞ | héks | ἕξ | eks |
| (z) | ΚΟΣΜΟΣ "ornament" | kózmos | κόσμος | ˈkozmos |
| h | ΕΝ "one" | hén | ἕν | ˈen |
| m | ΕΜΟΣ "mine" | emós | ἐμός | eˈmos |
| n | ΕΝ "one" | hén | ἕν | ˈen |
| (ŋ) | ΑΓΚΩΝ "elbow" | aŋkɔ̀ːn | ἀγκών | aˈŋgon |
| l | ΟΛΟΣ "whole" | hólos | ὅλος | ˈolos |
| r | ΩΡΑ "period of time" | hɔ̀ːra | ὥρα | ˈora |
| (r̥) | POH "flow" | r̥oɛ́ː | ῥοή | roˈi |

The modern Greek pronunciation (the last column at the right) shows how the ancient words are read by classicists in Greece who do not use the "Erasmian pronunciation" (see IX.6).

**Table x:** Value of the graphemes of the alphabet near the end of the classical period

| grapheme | phoneme | grapheme | phoneme | grapheme | phoneme |
|---|---|---|---|---|---|
| A | a, a: | I | i, i: | P | r |
| B | b | K | k | Σ | s ([s, z]) |
| Γ | g | Λ | l | T | t |
| Δ | d | M | m | Y | y, y: |
| E | e | N | n ([n, ŋ]) | Φ | pʰ |
| Z | zd | Ξ | ks | X | kʰ |
| H | e: | O | o | Ψ | ps |
| Θ | tʰ | Π | p | Ω | ɔ: |

*digraphs*

| | | | | | |
|---|---|---|---|---|---|
| AI | aⁱ | OI | y: | AI | a: |
| AY | aᵘ | OY | u: | HI | ε: |
| EI | e: | YI | y: | ΩI | ɔ: |
| EY | eᵘ | | | HY | ε:ᵘ |

The *rough breathing mark* had not yet been created and consequently before the end of the classical period the consonant [h] ceased to be marked in writing.

In the eastern alphabets, the old letter ϝ (the *digamma*) remained only as a symbol for the number six. During the Middle Ages, since it resembled the abbreviation for the combination of letters στ, it was eventually replaced by στ as the notation for the number "six."

The value of the letters in the western alphabets is referred to in IX.6. Here it need only be mentioned that the Latin alphabet derives from the western Greek alphabets. Since the small letters were created much later in the West and independently of Byzantium, their divergence from the Byzantine lower-case letters is greater than it is in the case of the capitals.

# 4 The morphology of Classical Greek

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## Introduction

By the term *Classical Greek* we mean the Ancient Greek language of the fifth and first half of the fourth centuries BC, especially the Attic-Ionic dialect of that period (see III.3), which is better known than the other Greek dialects of the classical age because of the numerous inscriptions which have been found and, principally, because of the wealth of texts which have come down to us and the attendant status with which this dialect has been invested. The information we draw from these two sources provides us with a complete picture of the inflectional morphology of the dialect and assists us, in many cases, in understanding both the preceding stages in the evolution of the inflectional system of Ancient Greek and also the developments which followed and which, with Hellenistic Koine as the new starting point (see IV.6–8), led to the formation of the inflectional system of Medieval and Modern Greek (see IV.15).

More generally, the inflectional morphology of Ancient Greek is especially complex in form and goes back to the morphology of Indo-European (see II.1–II.4). Both these languages are synthetic, i.e., they exhibit inflection, both external, with the addition of inflectional affixes, and internal, with the mutation of the root which takes various forms (e.g., λείπ-ω, ἔλιπ-ον, λέ-λοιπ-α). The inflectional affixes have a morphosyntactic role, i.e., they define the relationship of a particular word with the rest of the syntactic sequence. In Ancient Greek, as in the other Indo-European languages, the overwhelming majority of these are suffixes, i.e., they appear at the end of the word, which is why they are usually called *endings*, e.g., in the preceding examples -ω, -ον, -α. Inflectional prefixes are much rarer, e.g., ἔ-λιπ-ον (see below for the "augment" and reduplication). Finally, there are also infixes, i.e., affixes which appear in the middle of the word, though these, too, are very rare. An example of such an infix is the -v- which occurs in certain verbs