Greek and Latin Roots: Part II - Greek

Greek and Latin Roots
for Science and the Social Sciences

PART II: GREEK

Sixth Edition (*Adapted*)

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Preface to 5th Edition

It was at the end of the 1980s that I decided to produce an in-house manual for what was then called Classical Studies 250. At that time, the price of our commercial textbook had already soared beyond fifty dollars, and was still climbing. If only for economic reasons, a course manual seemed to make excellent sense.

But cost considerations were not the only factors. Although I regarded our former textbook[1] as the best of its kind on the market, it was over forty years old, and was hardly ideal for the Canadian undergraduate of the 1990s. Moreover, it contained too much detail for a thirteen-week course, and had some inaccurate and confusing features.

Probably all of us who teach language and etymology courses get the itch to construct a textbook that perfectly matches our own approach. A successful course manual will obviously reflect the instructor's methodology and academic priorities. However, a good one should also be well organized, clearly written, and interesting to read. That adds up to a tall order, and I can only hope that I've approached the goal.

I invite every student to offer criticisms and suggestions for change. Because this work has now gone through several editions, most of the glaring errors should have been caught; but there is still bound to be room for improvement. If any explanation is puzzling or confusing, please let me know. If more examples or more exercises are needed, that lack can be remedied. There are now also computer exercises available in the University Language Centre.

Part I of the book covers Latin material. **Part II**—shorter in length, but no less challenging—deals with Greek. Each section is designed to provide roughly six weeks of instruction, before and after Reading Break.

Students can rest assured that these materials are being sold at cost, with no financial profit to the author or the Department. Indeed, preparation expenses have been absorbed by the Department, and the price reflects only the actual cost of printing and distribution.

Peter L. Smith
University of Victoria
November 1997 (5th Edition)

1. Eli E. Burriss and Lionel Casson, Latin and Greek in Current Use, 2nd edition (Englewood Cliffs, N.J.: Prentice-Hall, 1949).

Foreword

The legacy of Professor Peter L. Smith at the University of Victoria is great. Born in Victoria, Peter graduated high school with the highest marks in the province and took his undergraduate degrees at Victoria College and the University of British Columbia. Having won the Governor General's Award he attended Yale University where he wrote his PhD focused on the Roman poet and teacher of rhetoric Ausonius. He then had a brief teaching year in Ottawa, but by the early 1960s Peter was home again and began his professional career as a teacher and administrator with the newly formed University of Victoria. In addition to his Classical scholarship, which focused on Latin lyric poetry and drama, Peter wrote a history of the university, *A Multitude of the Wise: UVic Remembered* (1994) reflecting on the many transformations he witnessed here as UVic became a world-renowned university. Peter had an exacting but jovial manner that students and colleagues can never forget. His demand for excellence impressed anyone who had the pleasure of knowing him.

The Department of Greek and Roman Studies is extremely happy to have assisted the University of Victoria library staff with the publication of this textbook which served one of the many popular courses Peter taught for our Department. This book would not be possible without the help and support of Peter's family, and we gratefully acknowledge his wife Mary Jean, his son Dr. Daniel Hinman-Smith, and daughter Sarah Smith.

The open-access publication of this book in digital format, freely available, follows very much in character with Peter's efforts to enrich the educational life of students of British Columbia. This book serves as a lasting memorial to one of the University of Victoria's most revered teachers and friends.

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Chapter 15: The Greek Language

§97. The Legacy of Greek

In a course on classical roots in English, there are several good reasons to examine the Latin influence first, despite the historical priority of Greek. A primary consideration is the fact that Latin—directly, or through French—has had a far greater impact on standard English vocabulary, at every level of usage. In learning Latin roots, we are often just meeting old and familiar friends in a slightly different guise. Greek, in contrast, is likely to seem rather more exotic, since much of its influence has been felt in technical or academic areas of English usage. To be sure, there is a large stock of common, everyday Greek words in English, as we saw at the very beginning of the course (Part I, §3 and §16). But many of these came into English only after they had been borrowed first by the Romans, in order to fill semantic gaps in Latin. When they entered English, they followed the pattern of Latin loan-words, and you will therefore understand their English form better if you know some Latin.[1] A familiarity with Latin will now help you in another way. Greek and Latin are strikingly parallel in many aspects of their morphology—noun and adjective declensions, for example. Even though they belonged to different branches of the Indo-European family, the two languages developed side by side as Mediterranean neighbours, so it isn't surprising that they share common characteristics. This convenient fact means that we can survey many basic features of Greek word formation without laboriously repeating all the steps that we took in the early chapters of Part I.

In tracing Greek vocabulary to its source, we'll usually be going back in time to a period before the great age of Rome. As the extant evidence of an historical culture, the ancient Greek language is centuries older than Latin. A recognizable form of Greek was spoken and written in the era of the Mycenaean Bronze Age, some 1500 years before the birth of Christ and the rule of Augustus Caesar. Documents from this palace civilization of the second millennium BC, the celebrated "Linear B tablets," were discovered only in our century, and were revealed in the 1950s to be an early form of the Greek language. The Hellenic world lapsed into illiteracy during the so-called "Dark Age" that followed the collapse of the Bronze-Age kingdoms; but the art of writing Greek was re-invented when a new system of alphabetic symbols was borrowed from the Phoenicians (see §98).

From the 8th to the 4th centuries BC, before Rome emerged as a major force in the Mediterranean world, the Greek city-states enjoyed an astonishing level of intellectual and cultural energy. This was a 400-year period that began with the epic poet Homer, whose *Iliad* and *Odyssey* are among the supreme works of world literature, and closed with Aristotle and Alexander the Great—a teacher and his pupil whose combined influence on human history can hardly be overstated.

1. By the same token, it is often essential to know some French in order to understand the final stage in a complex transmission from Greek to Latin to French to English. Although the French influence may appear neglected in the following chapters, that is a deliberate oversimplification that will not seriously misrepresent the historical facts.

Any mention of ancient Greece will likely conjure up the image of Athens, the most dynamic and often the most dominant—if not always the most gentle—of the Greek city-states. This democratic *polis* was the birthplace of all the major dramatists, and enjoyed an unparalleled period of creativity under the great statesman Pericles, in the 5th century BC. Thanks to the fame of Socrates, Plato, and Aristotle, Athens became also the city most renowned for philosophical and intellectual studies. Still, it would be a serious mistake to equate ancient Greek culture with this one community. The classical city-states extended from Asia Minor and the Black Sea in the east to Sicily and southern Italy in the west. The epic poems of Homer had likely been composed in Ionia (western Turkey in our day); the historian Herodotus, the mathematician-philosopher Pythagoras, and the physician Hippocrates—to name just three great pioneers—all came from that same general area on the eastern fringe of the Greek world. In contrast, such towering figures as Empedocles and Archimedes lived and worked in Sicily, a Greek sphere of influence far to the west.

It would be another grievous error to suppose that Greek civilization ended with Alexander the Great. Many of the intellectual accomplishments reflected today in English vocabulary can be traced to the Hellenistic Age, the period between the death of Alexander and the Roman supremacy. Though Athens continued to play a prominent role in these later centuries, a more important centre of creativity and scholarship was Alexandria, the multicultural capital city from which a Macedonian-Greek dynasty ruled Egypt. Even under Roman rule, the eastern Mediterranean world continued to speak Greek as its first and common language, and Greece still provided traditional intellectual leadership. Centuries later (in AD 330), Byzantium on the Bosporus was chosen by Constantine as the new capital of the Roman Empire; and Constantinople (“Constantine’s polis,” modern Istanbul) became the focal point of a Byzantine civilization that endured until its fall to the Turks in AD 1453. Therefore Greek culture and the Greek language can be viewed as an unbroken continuity extending even to our own day. In considering the Greek linguistic influence on English, however, we are dealing mainly with the archaic, classical and Hellenistic Greek world that preceded the Roman conquest. It was the legacy of this creative period that Rome absorbed and then transmitted to medieval and modern Europe.

In the centuries between Homer and Archimedes, the Greeks had invented almost all the major genres of ancient poetry (most notably, epic, lyric, and drama), and had pioneered such branches of prose literature as history, philosophy, and rhetoric—including specialized vocabulary to express the theoretical and practical aspects of these disciplines. Art and architecture, of course, were areas of major achievement that also had extensive special vocabularies. The same is true of astronomy and mathematics, two fields in which the Greeks excelled. Music and athletics—kindred activities, as many believed—were given conspicuous status in Greek education and society. Medicine, a traditional art whose discovery was credited to the god Asclepius, became a true scientific discipline in the 5th century BC, thanks to Hippocrates and his followers; and Greek physicians still enjoyed international esteem at the time of Galen, in the second century AD.

After the Romans conquered the Mediterranean world, they so absorbed Greek ideas and Greek values that the fusion of cultures is generally viewed as one civilization (called “Greco-Roman,” if not simply “Hellenic”). Because all educated Romans were bilingual in Latin and Greek, hundreds of useful Greek words were taken over and adapted to Latin morphology. These words came especially from fields where the Greeks had shone: the literary and visual arts, philosophy, pure science, mathematics, and medicine.

It was the Romans who passed the cultural legacy of Hellenic civilization to western Europe. In the Middle Ages, the knowledge of Greek declined drastically in the west, and the direct influence of Greek was almost non-existent. However, when Renaissance scholars re-discovered ancient Greek texts, the languages

of Europe began to acquire new loan-words from classical Greek. In the medical and biological sciences, in particular, Greek has been the primary source of technical vocabulary every since. The knowledge explosion of the 20th century has greatly intensified this process of linguistic borrowing.

§98. The Greek Alphabet

Although the Greek alphabet may seem at first glance to be alien and incomprehensible (“It’s all Greek to me!”), we must realize that it is the origin of our own Roman alphabet, which evolved in central and southern Italy as the result of Greek and Greco-Etruscan influence. Speakers of English generally need only a few days’ practice before becoming perfectly comfortable with the Greek alphabet, which is really very much like our own.

The Greek ALPHABET, so called from the names of its first two letters, was itself adapted from the Phoenician alphabet, probably in the eighth century BC. (This was a rather remarkable adaptation, considering the fact that Phoenician was a Semitic language outside the Indo-European family.) In the early centuries of this new literacy, Greek letter-symbols varied from one regional dialect to the next, including some forms that would later disappear—most notably, a prototype of Q that was called a koppa (Ϙ). Eventually, however, there evolved an alphabet of 24 letters, all written in capitals. The lower-case letter system, which is the more important for our purposes, is a convention that we owe to Byzantine Greek scribes and the pioneer printers of the Renaissance.

Greek Letter	*Letter Name*	*Transliteration*	*Examples*		
Α	α	alpha	**a**	δραμα	**drama**
Β	β	bēta	**b**	βαθος	**bathos**
Γ	γ	gamma	**g**	γραφη	**graphē**
Δ	δ	delta	**d**	δημος	**dēmos**
Ε	ε	epsilon	**e**	πεταλον	**petalon**
Ζ	ζ	zēta	**z**	τραπεζα	**trapeza**
Η	η	ēta	**ē**	ἡλιος	**hēlios**
Θ	θ	thēta	**th**	θεατρον	**theatron**
Ι	ι	iōta	**i**	ἰδιος	**idios**
Κ	κ	kappa	**k (c)**	καρδια	**kardia**
Λ	λ	lambda	**l**	λογος	**logos**
Μ	μ	mu	**m**	μανια	**mania**
Ν	ν	nu	**n**	ἀντι	**anti**
Ξ	ξ	xi	**x**	ἀξιωμα	**axiōma**
Ο	ο	omicron	**o**	μονος	**monos**
Π	π	pi	**p**	πολις	**polis**
Ρ	ρ	rhō	**r**	ἀγορα	**agora**
Σ	σ ς	sigma	**s**	στασις	**stasis**
Τ	τ	tau	**t**	τραυμα	**trauma**
Υ	υ	upsilon	**u (y)**	ὑβρις	**hubris**
Φ	φ	phi	**ph**	φιλια	**philia**
Χ	χ	chi	**kh (ch)**	χαρακτηρ	**kharaktēr**
Ψ	ψ	psi	**ps**	ψευδω	**pseudō**
Ω	ω	ōmega	**ō**	σωμα	**sōma**

§99. Notes on Letter Formation

The following lower-case Greek letters are not likely to cause much trouble, since they closely resemble some printed or written form of their Roman counterparts. They are presented in two different fonts, to demonstrate that their shape can vary according to taste:

α β δ ε ι κ μ ο ς τ υ

a b d e i k m o s t u

α β δ ϵ ι κ μ ο ς τ υ

You will have noticed that sigma (= s) has two forms: σ at the beginning or in the middle of a word (INITIAL or MEDIAL sigma) and ς at the end of a word (FINAL sigma).

Here are the more difficult or confusing lower-case letters:

γ ζ η θ λ ν ξ π ρ σ ϕ χ ψ ω

g z ē th l n x p r s ph ch ps ō

γ ζ η θ λ ν ξ π ρ σ ϕ χ ψ ω

Notice these letters that descend below the base-line:

.. β .. γ .. ζ .. η .. μ .. ξ .. ρ .. ς .. ϕ .. χ .. ψ ..

.. β .. γ .. ζ .. η .. μ .. ξ .. ρ .. ς .. ϕ .. χ .. ψ ..

§100. Notes on Classical Greek Pronunciation

A. VOWELS:

Alpha (α) and **iota** (ι) were pronounced very much like Latin **a** and **i** (long or short).

Epsilon (ε) and **omicron** (ο) were always short vowels in Greek, like Latin **ĕ** and **ŏ**—very much like the English vowels in *get* and *got*.

Eta (η) and **omega** (ω) were always long vowels, like Latin **ē** and **ō**—something like the English sounds in *gate* and *goat*. THESE TWO VOWELS SHOULD ALWAYS BE TRANSCRIBED as **ē** and **ō**, in order to distinguish them from epsilon and omicron.

Upsilon (υ) was not pronounced like Latin **u**, but rather like the *u* in French *pur* or German *grün*. The Romans transliterated it as **y** (i.e., capital upsilon).

B. CONSONANTS:

β, γ, δ, κ, λ, μ, ν, ξ, π, σ (ς), τ much like English
ζ like *dz* in English *adze*
ρ lightly trilled (?); at the beginning of words, aspirated as ^{h}r or r^{h}
θ an aspirated τ = (t^{h}), like *th* in English *coathook*
φ an aspirated π = (p^{h}), like *ph* in English *uphill*
χ an aspirated κ = (k^{h}), like *kh* in English *backhoe*
ψ always pronounced like *ps* in English *capsule*, even at the start of words

C. BREATHINGS:

If a word begins with a vowel, a **BREATHING MARK** is placed above it to indicate whether or not that vowel is ASPIRATED—that is, whether or not there is an *h* sound at the start of the word.[1] If there is an *h* sound, the **ROUGH BREATHING** mark is used (῾ as in ἡλιος = **hēlios**). If there is no *h* sound, the **SMOOTH BREATHING** mark is used (᾽ as in ἀγορα = **agora**). One or the other must be present on all such words. Because rho is aspirated at the beginning of words, initial rho is written ῥ as in ῥυθμος = **ruthmos** or **rhythmos**.

1. If a word begins with a diphthong, the breathing mark is placed over the second letter of the diphthong; e.g., αἰ, αὐ, εἰ, εὐ, οἰ, οὐ, υἱ. If the word begins with a capital vowel, the breathing mark is placed to the left of the capital; e.g., ᾽Αθηυη, ῾Ομηρος = **Athēnē**, **Homēros** (E *Homer*).

§101. Transliteration and Latinization

The transfer of a Greek word, letter for letter, from the Greek alphabet to the Roman alphabet, is called TRANSLITERATION. The most precise method of doing so was shown earlier in this chapter, by means of the equivalencies in §98. For most letters of the Greek alphabet, the suggested equivalents create no problems: transliterations such as δραμα = **drama**, βαθος = **bathos**, and γραφη = **graphē** are perfectly straightforward, given the principles of pronunciation that we have now examined. However, when we have to deal with the Greek letters κ, χ, ῥ, and υ, we may start to wonder. If we are to be as exact as possible, we ought to transliterate καρδια as **kardia**, καρακτηρ as **kharaktēr**, and ῥυθμος as **ruthmos**. But wouldn't our English derivatives from these three words suggest the transliterations **cardia**, **charactēr**, and **rhythmos**? In fact, these three alternative versions are perfectly acceptable transliterations, preferred by many authorities. Historically, the Latin language rendered Greek kappa (κ) by the consonant **c**, chi (χ) by the two Roman letters **ch**, and aspirated rho (ῥ) by **rh**; as we saw in §100, Latin represented Greek upsilon (υ) by the Roman letter **y**. In pondering what to do with these four Greek letters, we must come to terms with the whole question of LATINIZATION, a broader issue which complicates the process of exact transliteration. It is the Latinized spelling of Greek words that will often determine the form of our English derivatives.

The problem can be neatly illustrated by taking a few Greek proper names, either historical or mythological. An exact transliteration of Σωκρατης and Περικλης ought to produce **Sōkratēs** and **Periklēs**; but because the Latin language knew these two men as **Socrates** and **Pericles**, their names have been spelled with a *c* for over 2,000 years. Nonetheless, there are Greek purists who prefer the English spellings *Sokrates* and *Perikles*, however pedantic that may seem. What are we to do with Αἰσχυλος — **Aiskhulos** or **Aischylos** or **Aeschylus**? The first version is an exact transliteration; the second can also be described as a transliteration, using Roman alphabet conventions (χ = **ch**, υ = **y**); but the third is a full-blown LATINIZATION, where a Greek diphthong (αι) has been spelled as its Latin counterpart (**ae**), and where the Greek noun ending -ος has been rendered by the equivalent Latin declension form (**-us**). Examine the following cases, and observe how the Latinized form has affected the traditional English spelling:

GREEK NAME	TRANSLITERATION		LATINIZATION	ENGLISH
	EXACT	CONVENTIONAL		
’Αχιλλευς	**Akhilleus**	**Achilleus**	**Achilles**	*Achilles*
Μυκηναι	**Mukēnai**	**Mykēnai**	**Mycenae**	*Mycenae*
Τηλεμαχος	**Tēlemakhos**	**Tēlemachos**	**Telemachus**	*Telemachus*
Θουκυδιδης	**Thoukudidēs**	**Thoukydidēs**	**Thucydides**	*Thucydides*
Οὐρανος	**Ouranos**	**Ouranos**	**Uranus**	*Uranus*
’Απολλων	**Apollōn**	**Apollōn**	**Apollo**	*Apollo*
‘Ηφαιστος	**Hēphaistos**	**Hēphaistos**	**Hephaestus**	*Hephaestus*
‘Ροδος	**Rodos**	**Rhodos**	**Rhodos (-us)**	*Rhodes*

From this small sampling it will be obvious that Latinization went far beyond the four simple conventions that we noted above (κ = **c**, χ = **ch**, ῥ to **rh**, and υ = **y**). In modifying the spelling of Greek words that they brought into Latin, the Romans were mainly trying to represent, in an accurate and familiar form, the sounds that they heard in Greek. For example, the Greek diphthong αι sounded to them exactly like their own Latin diphthong **ae**, whereas the Greek diphthong ου apparently sounded very much like the Latin vowel **u**. In addition, the ending of a Greek noun might be adapted to the parallel Latin noun declension. Occasionally, the Latin version evolved into a completely new word: thus the Romans knew the Homeric hero ’Οδυσσευς (**Odysseus**) as **Ulixes** or **Ulysses**, and changed the name of his fellow-warrior Αἰας (**Aias**) to **Aiax** (E *Ajax*); similarly, they transformed the Queen of Troy from ‘Εκαβη (**Hekabē**) to **Hecuba**, and they came to know the great ‘Ηρακλης (**Hēraklēs**) as **Hercules**. Today, in a Greek context, we usually refer to him as *Herakles* or *Heracles*; in a Roman context, the name is *Hercules*.

There was one special circumstance where the Greek consonant gamma (γ) was represented not by Roman **g**, but by Roman **n**—a surprising change, one might suppose. Again, however, the Romans were simply using phonetic spelling. In classical Greek, whenever gamma occurred before another palatal consonant (γ, κ, χ, or ξ), it was nasalized, changing in sound from [g] to [ŋ]. The principle can be illustrated as follows:

G	ἀγγελος	L	**angelus**
G	ἐγκωμιον	L	**encomium**
G	κογχη	L	**concha**
G	λαρυγξ	L	**larynx**

The exact transliteration of the four Greek words would be **aggelos**, **egkōmion**, **kogkhē**, and **larugx**. These precise versions, however, are almost unreadable and unpronounceable in the Roman alphabet. Even a purist might here be tempted to use the **n** convention, and write **angelos**, **enkōmion**, **konkhē** and **larunx**. It would be standard and acceptable to transliterate the last two as **konchē** and **larynx**.

If you are asked to give a TRANSLITERATION of a Greek word, you can normally use your own judgement in choosing between the exact and the conventional Roman alphabet options.[1] Under no circumstances,

1. Major English-language reference works differ in their preference for exact or conventional Greek transliteration. Very few dictionaries favour a rigidly exact system, though professional Greek scholars are increasingly moving in that direction.

however, should you change diphthong spellings or word endings. By doing so, you would be definitely crossing the boundary between TRANSLITERATION and LATINIZATION. Try to keep the two procedures separate.

When we examine Greek noun declensions, we'll see how Latinization affected the word-endings of Greek words adopted into Latin. For reference purposes, here is a summary of changes caused by the **LATINIZATION OF GREEK DIPHTHONGS**:

αι	**ai > ae**	G	αἰθηρ, δαιμων	L	**aethēr, daemōn**
αυ	*no change*		αὐτογραφος		**autographus**
ει	**ei > ī** *or* **ei > ē**		εἰκων, εἰρωνεια		**īcōn, īrōnīa**
			μονσειον		**mūsēum**
ευ	*no change*		εὐχαριστια		**eucharistia**
οι	**oi > oe**		ἀμοιβη, Φοιβος		**amoeba, Phoebus**
ου	**ou > ū**		μουσα, 'Επικουρος		**mūsa, Epicūrus**

§102. Exercises, Chapter 15

A. WITHOUT USING ANY LATIN SPELLING CONVENTIONS, transliterate **EXACTLY** from the Greek alphabet to the Roman. Mark long vowels wherever appropriate.

1.	ἀγων	_____
2.	χορος	_____
3.	σκηνη	_____
4.	γενεσις	_____
5.	ἐξοδος	_____
6.	ψυχη	_____
7.	κλιμαξ	_____
8.	κωλον	_____
9.	θωραξ	_____
10.	μαθηματικα	_____
11.	μητροπολις	_____
12.	φαινομενον	_____
13.	λαβυρινθος	_____
14.	χρυσανθεμον	_____
15.	ζωδιακος	_____
16.	παθητικος	_____
17.	ὀλιγαρχια	_____
18.	ὁριζων	_____
19.	δυσπεψια	_____
20.	Σισυφος	_____
21.	’Αφροδιτη	_____
22.	’Ωκεανος	_____
23.	Εὐριπιδης	_____
24.	‘Ομηρος	_____

B. Transliterate from the Roman to the Greek alphabet, marking all breathings:

1. barbaros _____
2. katharsis _____
3. aretē _____
4. mimēsis _____
5. turannos _____
6. moira _____
7. aristeia _____
8. parenthesis _____
9. antithesis _____
10. katastrophē _____
11. rhododendron _____
12. xenophobia _____
13. arakhnophobia _____
14. kharaktēr _____
15. exēgēsis _____
16. orkhēstra _____
17. prōton _____
18. phusikon _____
19. hubris _____
20. Sophoklēs _____
21. Gorgias _____
22. Dēmosthenēs _____
23. Alexandros _____
24. Hellēspontos _____

For **Key to Exercises (Greek)**, see **Appendix III**.

Chapter 16: The Greek Noun (Declensions 1 and 2)

§103. An Overview of the 1st and 2nd Declensions

At the start of Chapter 15 (§97), it was mentioned that Greek morphology (word formation) is often closely parallel to Latin. If you recall the patterns of the 1st and 2nd noun declensions in Latin—or if you are prepared to review them now—you will find the transition to Greek relatively easy. For historical reasons, we must be aware of these linguistic correspondences, since they explain the form that many Greek nouns assumed after they had been Latinized in the Roman alphabet.

Here is a table that summarizes the 1st and 2nd declension noun endings in Latin and Greek. The Greek 2nd declension, as you can see, is precise and straightforward in its correspondence with its Latin counterpart. The 1st declension is rather more complicated, and its various endings will not make much sense until we have looked at a few examples.

	1st Declension		**2nd Declension**	
Gender	*Feminine*	*Masculine*	*Masculine*	*Neuter*
LATIN	**–a**	**(-a)**	**-us**	**-um**
GREEK	-η or -α	-ης	-ος	-ον

Except to help remember declension categories, you needn't worry very much about NOUN GENDER. However, you will recall that almost all native Latin **1st declension** nouns in **-a** are feminine. In Greek, we'll see that the -η and -α types are always feminine, but that there are quite a few nouns in -ης, a masculine word-ending. These were sometimes Latinized as 1st declension masculine loan-words in –**a**. The grammatical gender of the **2nd declension** is parallel in both languages: most nouns in **-us** (Latin) or -ος (Greek) are masculine, and all nouns in **-um** (Latin) or -ον (Greek) are neuter.

In both the 1st and 2nd declensions, a noun **BASE** is identified by removing its characteristic ending. In this respect, Greek is exactly analogous to Latin.

§104. Greek Nouns of the First Declension

There are Greek nouns of the 1st declension that appear in English without change in form (other than conventional transliteration into the Roman alphabet). Some are proper names derived from Greek mythology: *Aphrodite* (’Αφροδιτη), *Hera* (‘Ηρα), *Athene* or *Athena* (’Αθηνη, ’Αθηνα), *Daphne* (Δαφνη, Apollo’s beloved, transformed into a laurel), *Penelope* (Πηνελοπη or Πηνελοπεια, wife of Odysseus), *Lethe* (Ληθη, the river of forgetfulness). A few others are English common nouns: *mania* (μανια, “madness”), *orchestra* (ὀρχηστρα, “dancing place”), *psyche* (ψυχη, “spirit,” “soul”), *acme* (ἀκμη, “[highest] point”).[1] More often, however, Greek nouns entered English after Latin adaptation; their derivative forms may also include suffixes from Greek and/or Latin.

Here is a sampling of 1st declensions nouns ending in -η and -α:

Table 16.1: **GREEK FIRST DECLENSION NOUNS**

GK. NOUN	TRANSLITERATION[2]	ENG. MEANING	ENG. DERIVATIVE
γη	**gē** (base **gē-**)	earth	geography
κεφαλε	**kephalē**	head	cephalic
μορφη	**morphē**	form	morphology
τεχνη	**technē**	art, skill	technical
φωνη	**phōnē**	voice, sound	phonograph
ψυχη	**psychē**	breath, spirit, soul	psychology
γλωσσα	**glōssa**	tongue	gloss, glossary
(γλωττα)	**(glōtta)**		(polyglot)
καρδια	**kardia**	heart	cardiac
μουσα	**mousa**	muse	music, musical
σφαιρα	**sphaira**	ball, globe	spherical

Ancient Greek was a language with many dialects—a reflection of the geographical and political fragmentation of early Greek society. In the epic dialect of Homer and Hesiod, the word for “earth” was γαια (**gaia**), often personified as Γαια (**Gaia**) or “Mother Earth.” In Attic (Athenian) dialect, however, the word was γη; and this is the form in which it has influenced English vocabulary. The forms γλωσσα and γλωττα also reflect

1. A strange doublet of *acme* is *acne*, that dread scourge of the adolescent complexion. Although the etymology is obscure, *acne* seems to have evolved as a corruption of the correct spelling.
2. These vocabulary tables will use the following conventional transliterations: κ > **k**, χ > **ch**, υ > **y**, and initial ῥ > **rh**.

variations in dialect. In its Latin usage, **glossa** came to mean an "unusual word"; to *gloss* a text, therefore, was to explain an unusual word, and a *glossary* (< L **glossarium**) was a place in which to find unusual words.

The last two words on the list illustrate the pervasive influence of Latin. From Homer and his successors, Roman poets inherited the concept of the Muse as the source of literary inspiration. (Indeed, there were nine separate Muses, the daughters of **Mnēmosynē** [Μνημοσυνη], whose name meant "Memory.") By a standard principle of Latinization (diphthong ου > **ū**, §101), Greek μουσα became Latin **mūsa**, and the English root *mus-* can thus be said to have a Greco-Latin pedigree. Similarly, the Romans borrowed the Greek word σφαιρα as Latin **sphaera**, with the minor adaptation of diphthong αι > **ae**.

Among 1st declension Greek masculine nouns in -ης", many are proper names like Σωκρατης, Περικλης, ’Αριστοφανης, Θουκυδιδης (*Socrates*, *Pericles*, *Aristophanes*, *Thucydides*). Here are several common nouns that received predictable treatment in Latin:

G	ναυτης	**nautēs**	"sailor"	> L	**nauta**
	χαρτης	**khartēs**	"sheet of papyrus"		**charta**[3]
	κομητης	**komētēs**	"long-haired" [star]		**comēta**
	πλανητης	**planētēs**	"wanderer"		**planēta**

An *Argonaut* (< ’Αργοναυτης) was a sailor on Jason's fabulous ship, the Argo. By analogy, we have the modern coinages *cosmonaut* and *astronaut* (a "universe-sailor" and a "star-sailor," respectively). Latin **comēta** and **planēta** entered French as *comète* and *planète*, whence their English forms *comet* and *planet.*

3. Like other Greek 1st declension nouns in -ης, χαρτης was masculine in gender. It is unusual that the Latin adaptation **charta** should be a feminine noun; **nauta**, **cometa**, and **planeta** are all masculine.

§105. The Greek Adjective-forming Suffix -ικος (> E -ic)

Before going any further, it will be helpful for you to learn how the Greek language turned nouns into adjectives. Earlier in the course, we saw that this was quite a complex problem in Latin—it formed the subject matter of a whole chapter (Part I, Chapter 5). You may be relieved to discover that the principle is much simpler in Greek.

The straightforward rule for turning a Greek noun into an adjective is to add -ικος to the noun base; this will produce an English derivative in *-ic:*

κεφαλη	“head”	κεφαλικος	“pertaining to the head”	> E	*cephalic*
φωνη	“voice”	φωνικος	“pertaining to the voice”		*phonic*
ψυχη	“soul”	ψυχικος	“pertaining to the soul”		*psychic*
μουσα	“muse”	μουσικος	“pertaining to the muse”		*music*

There is only one exception to this rule, and it is phonetically consistent. If the noun base ends in the vowel iota (ι), the adjective forming suffix is not -ικος but -ακος; in this case, the English derivative will end in *-ac*:

καρδι-α	“heart”	καρδι-ακος	“pertaining to the heart”	> E	*cardiac*

As you have perhaps noticed already, there is an odd complication to this otherwise very easy rule. Because of the profound influence of Latin on all English vocabulary, our English adjectival derivatives from Greek nouns often display the suffix *-al*, which you will shrewdly (and correctly) identify as the legacy of the Latin suffix –**alis**. Thus the Greek adjective σφαιρικος (“like a ball”) has acquired an extra syllable in assuming its English form *spherical*. Educated ancient Romans would have shunned such redundant hybrids; the extra suffix has usually been added by speakers of English. But sometimes there was a good historical reason for the additional element; for example, once the feminine adjective **musica** (> E *music*) had become a Late Latin noun, the adjective **musicalis** (> E *musical*) made perfectly good sense. In English, it is not uncommon to find the pure Greek derivative co-existing with its hybrid counterpart. Thus the 1st declension Greek noun λυρα (“lyre”) has two English adjectival derivatives: *lyric* (< G λυρικος) and *lyrical*, with the hybrid Latin suffix added. Both words appear to have entered English in the same year (1581). The similar English pair of adjectives *comic* and *comical* are derived from a 2nd declension Greek noun (κωμος); *comical* is actually the older of the two English words.

§106. Greek Nouns of the Second Declension

When we first met Latin masculine nouns of the 2nd declension, we noticed a good many (like **circus**, **focus**, and **stimulus**) that have come into English without any change in form. There are extremely few unchanged derivatives from the Greek -ος declension, though the English word *cosmos* ("universe") is very close to its Greek etymon, κοςμος. This is only because the noun κοςμος was not used as a Latin loan-word. When the Romans borrowed nouns of this type, they consistently adapted the ending to the Latin 2nd declension **-us**, and made other standard changes in spelling:

G	χορος	**khoros**	"dance," "chorus"	> L	**chorus**
	ἰσθμος	**isthmos**	"neck of land"		**isthmus**
	Οὐρανος	**Ouranos**	"Sky" [a god]		**Uranus**
	ὑμνος	**humnos**	"festive song"		**hymnus**
	θρονος	**thronos**	"elevated seat"		**thronus**

In the English derivatives *hymn* and *throne*, we can recognize common patterns of Anglicizing Latin words that we first met in Part I, §14.

Here are some useful 2nd declension Greek nouns in -ος:

Table 16.2: **GREEK SECOND DECLENSION NOUNS IN -ος**

GK. NOUN	TRANSLITERATION	ENG. MEANING	ENG. DERIVATIVE
ἀνθρωπος	**anthrōpos**	man (= human)	*anthropology*
βιος	**bios**	life	*biology*
γαμος	**gamos**	marriage	*bigamy*
δακτυλος	**daktylos**	finger	*dactyl*
δημος	**dēmos**	people	*demography*
θεος	**theos**	god	*monotheism*
κυκλος	**kyklos**	wheel, circle	*cycle*
λιθος	**lithos**	stone	*lithograph*
νεκρος	**nekros**	corpse	*necropolis*
ξενος	**xenos**	stranger	*xenophobia*
οἰκος	**oikos**	house	*ecology*
ὀφθαλμος	**ophthalmos**	eye	*ophthalmologist*
τοπος	**topos**	place	*topic*
χρονος	**chronos**	time	*chronicle*

Most of the compound derivatives—words with endings like *-logy*, *-graphy*, and *-phobia* —will be explained in the next chapter. Notice the English adjectives *dactylic*, *cyclic*, *ophthalmic*, *topic*, and *chronic*; these are all regular derivatives from Greek forms in -ικος. (English *cyclical* and *topical* show the extra Latin suffix.)

Table 16.3: **GREEK SECOND DECLENSION NOUNS IN –ον**

GK. NOUN	TRANSLITERATION	ENG. MEANING	ENG. DERIVATIVE
ζωον	**zōon**	animal	*zoology*
θεατρον	**theatron**	viewing-place	*theatre*
κεντρον	**kentron**	sharp point, goad	*centre*
μετρον	**metron**	measure	*metre*, *metric*
νευρον	**neuron**	sinew, [nerve]	*neurology*
ὀργανον	**organon**	tool, instrument	*organ*
ὀστεον	**osteon**	bone	*osteopath*
πτερον	**pteron**	feather, wing	*pterodactyl*

§107. Interesting Words

There are some Greek 1st declension nouns that have entered English with only a minimum of change. Though it comes through French from Latin **zona**, our word *zone* is derived ultimately from Greek ζωνη (**zōnē**), "belt," "sash," "girdle." The word πληθωρη (**plēthōrē**) meant "fullness" or "satiety"; we use its Latin adaptation *plethora* to describe a superabundance or excess of something—as in "Canada has had a plethora of Royal Commissions." The shellfish κογχη (Latin **concha**) is the source of the English *conch*. The precious resin μυρρα (L **myrrha**[1]) was the *myrrh* given by the Magi to the infant Christ. And the χιμαιρα, a goat-lion-serpent monster of Homeric legend, has lent its name to the English *chimera* (or *chimaera*), a "wild fancy," and *chimeric(al),* "fanciful."

Because the Greeks began the tradition of western drama, it should be no surprise that a great many theatrical words are of Greek origin. So far, we have seen *theatre* (θεατρον), *orchestra* (ὀρχηστρα), and *chorus* (χορος). We could add the 1st declension noun σκηνη (**skēnē**), the stage building that served as the backdrop for early Attic tragedies; the Romans adapted this as *scaena* (not an exact transliteration), and of course the word became *scene* in English.[2] The area in front of the **skēnē** was known as the προσκηνιον (**proskēnion**), a word that was regularly Latinized as **proscenium**. The English word *actor* is a pure Latin agent noun (Part I, §73). The Greek word for "actor" was ὑποκριτης (**hypokritēs**), a 1st declension masculine noun that meant "answerer"—because the actor replied to the words of the chorus. If someone plays an actor's role in real life, he may be considered a *hypocrite*.

Two common Greek nouns that generated an amazing number of English derivatives were the 1st declension χαρτης ("sheet of papyrus") and the 2nd declension δισκος. From the first came *chart*, *card* (< L **charta**), *charter* (< L **chartula**), *cartel* (< Ital. *cartello*), *carton, cartoon* (< Ital. *cartone*), *cartouche* and *cartridge* (< Ital. *cartoccio*). From δισκος came *discus, disc, disk, dish, desk,* and *dais.*

Greek neuter nouns of the type θεατρον, κεντρον, and μετρον became **theatrum**, **centrum**, and **metrum** in their Latin adaptations. After French transmission, these Latin words assumed an English spelling in *–re*: *theatre, centre,* and *metre*. Since the time of Noah Webster's reforms, however, the words have had an *–er* ending in American usage. Originally, κεντρον denoted a sharp spur or goad; it was the Greek equivalent of the Latin **stimulus**. From the sharp point of the compass, it acquired the force of "centre," the only meaning that it carried in its Latin form **centrum**. The English word *concentric* ("having a centre together with") uses the Latin prefix **con-** and the standard Greek adjectival suffix.

1. When double *rho* occurred in the middle of a word, the first ρ was unaspirated and the second ρ carried a rough breathing: μυῤῥα. This combination of sounds was represented in Latin by he letters **-rrh-**.
2. Our word *scenario* is an Italian derivative of the Latin **scaenarium**.

The noun ἀνθρωπος denotes a human being—like Latin **homo** (cf. **homo sapiens**). In the long tradition of the English language, this generic concept has always been rendered by the word *man*—an ambiguous term, since *man* means also the male human being (Greek ἀνηρ, ἀνδρος; Latin **vir**). Quite understandably, modern feminist concerns have brought this usage into disrepute, and we are urged to replace the generic *man* with *human* (and *mankind* with *humankind*). However worthy the motive, it will be hard to purge the English language of a strong Germanic word so steeped in literary and popular tradition.

The 2nd declension noun ξενος (**xenos**, "stranger") is one of the oldest and most highly charged words in the Greek language. From the time of the prehistoric Bronze Age that is reflected in the epic poems of Homer, the stranger was viewed as someone under the protection of the god Zeus, and a person who must be treated with the utmost cordiality and respect. Reverence for strangers became a central feature of the creed of hospitality that has continued to be a powerful force in Greece through some four millennia of human history. As a result of this attractive belief, the word ξενος came to mean not only "stranger," but also "guest" and "host" (= L **hospes**, **hospitis**). The reciprocal guest-host relationship is characterized by what the Greeks still call *philoxenia* ("love of strangers," "hospitality"); it is an attitude that leaves no room for *xenophobia*.

The word χρονος (**khronos**, "time") has many English derivatives—*chronic*,[3] *chronicle* (< χρονικα), *chronology*, *chronometer* ("time-measure"), and the like. In its form and pronunciation, this Greek word was very close to the unrelated name of the god Κρονος (**Kronos**), father and predecessor of the Olympians Zeus, Hera, and Poseidon. Kronos, divine king of the generation of Titans, had assumed heavenly power through a singularly violent act: in league with his mother Gaia (Earth), he castrated his father Ouranos[4] (Sky), emasculating this unfortunate deity by means of a sickle. As Greek mythology evolved, Χρονος and Κρονος became confused and conflated, and the symbolic representation of Time acquired the iconography of the divine Titan. This, we think, is the origin of that wicked scythe in the hands of Father Time. He's a Grim Reaper, indeed; any man who sees him coming would be wise to run in the opposite direction!

3. The Greek adjective χρονικος is etymologically parallel to the Latin **temporalis**, in the sense that they both mean "pertaining to time." The English derivatives *chronic* and *temporal* are not exact synonyms, but they do retain this etymological kinship. We can find other such pairs of bilingual Greek-Latin parallels; for example, G *phonic* and L *vocal*, which both mean "pertaining to the voice." More surprising, perhaps, is the etymological kinship between G *psychic* and L *animal* (or *spiritual*?).
4. As we have already seen, this Greek name was adapted in Latin as **Uranus**. The Roman god who was the counterpart of Kronos gave his name to another planet in our solar system-**Saturnus** or *Saturn*.

§108. Exercises, Chapter 16

A. In order to test your knowledge of Greek capital letters, exactly transliterate the following proper names. Mark long vowels wherever appropriate.

1. ‘ΕΛΛΑΣ _____
2. ΖΕΥΣ _____
3. ΔΗΜΗΤΗΡ _____
4. ‘ΗΡΟΔΟΤΟΣ _____
5. ΣΑΠΦΩ _____
6. ΚΥΚΛΩΨ _____
7. ΠΑΝΔΩΡΑ _____
8. ’ΗΧΩ _____
9. ΝΑΡΚΙΣΣΟΣ _____
10. ’ΙΗΣΟΥΣ ΧΡΙΣΤΟΣ _____
11. ΜΑΘΘΑΙΟΣ _____
12. ΜΑΡΚΟΣ _____
13. ΛΟΥΚΑΣ _____
14. ’ΙΩΑΝΝΗΣ _____

B. Write the following words in the Roman alphabet, spelling them as they would appear after regular adaptation into Latin (i.e., the “Latinized” forms):

1. σταδιον _____
2. ἀμοιβη _____
3. Βακχος _____
4. γαγγραινα _____
5. Οἰδιπους _____
6. κρανιον _____
7. Δαιδαλος _____
8. Λιβυη _____

For **Key to Exercises (Greek)**, see **Appendix III**.

Chapter 17: Compound Words in Greek

§109. General Principles of Greek Compounds

Before reading this chapter, you may wish to review Part I, §91 and §92, where compound words were first introduced in the Latin section of our course.

The fact that we are dealing with Greek compounds at such an early stage is a signal of their greater importance in English vocabulary, relative to Latin. English words that contain two separate Latin bases (*deification*, *manufacture*, *carnivora*, etc.) represent only a small fraction of the thousands of Latin derivatives in our language. However, English words with multiple Greek bases probably comprise our largest category of Greek derivatives. The Greek language itself was unusually rich in compounds, and those who have turned to Greek for modern borrowings have exploited that word-building capacity. Greek compounds are especially prominent in the technical language of biology, medicine, and other scientific disciplines. They may combine various parts of speech: noun + noun, adjective + noun, noun + verb, etc. Perhaps you already know the etymological meanings for many of these compounds—words like *dermatology*, *democracy*, or *pyromania*; but you may need a little help with examples such as *rhododendron* or *nephrolithotomy*.

One important principle to notice is the use of the CONNECTING VOWEL omicron (o = English *o*), which is as much the norm in Greek as the connecting vowel **-i-** is the rule in Latin. Notice the role of this connecting vowel *o* to link the base elements in the Greek compounds just mentioned:

dermatology	**dermat-o-logy**	"study of the skin"
democracy	**dem-o-cracy**	"government by the people"
pyromania	**pyr-o-mania**	"fire madness"
rhododendron	**rhod-o-dendron**	"rose tree"
nephrolithotomy	**nephr-o-lith-o-tomy**	"cutting (removal) of kidney stones"

The connecting vowel is present for reasons of euphony: it is needed to permit a smooth phonetic transition from one base to the next. It is not required, therefore, when the second base begins with a vowel, as in the word *hierarchy* (**hier-archy**, "sacred rule"). Also there are some words where (for various reasons) the final vowel of the first word-base is retained; a good example is *agoraphobia* (**agora-phobia**, "fear of the market-place"). The final *-e* (epsilon) of the adverb τηλε (**tēle**, "far," "far off") is kept in compounds like *tele-phone* ("far voice"), *tele-pathy* ("far feeling"), and the Greek-Latin hybrid *tele-vision* ("sight from afar").

The hyphenated word-divisions in the last paragraph represent a very simple method of compound

WORD ANALYSIS. Probably the most important step in understanding the structure of these Greek compound derivatives is getting the hyphens in the right place.[1] That isn't always as easy as it may seem. Because you know that βιος means "life," you may be tempted to assume that *biology* can be analysed as **bio-logy**, "the study of life." However, the 2nd declension noun βιος loses its -ος ending in yielding the base βι-; and therefore the English compound should be divided as **bi-o-logy**. That is the reason why *zoology* (**zō-o-logy**) ought not to be pronounced "zoo-ology." Sometimes the division points in a Greek compound can be very surprising. If you asked a random group of intelligent people to divide the word *helicopter* into its elements, most of them would probably assume it was a **heli-copter**, whatever that meant—a "sun-beater," maybe? In fact, this Greek compound derivative is a **helic-o-pter**, a "spiral wing" (from ἑλιξ, ἑλικ-ος, "spiral," the connecting vowel omicron, and πτερον, "wing"). It was a precise and ideal name for that type of aircraft; amazingly enough, the word came into English way back in 1872, via the French *hélicoptère*.

1. In normal usage, we use the hyphen to divide a word into syllables; here we are dividing the word into morphological components. Don't confuse the two procedures.

§110. Some Common Greek Combining Forms

The main objective of this chapter will be to introduce several standard forms that are often combined with other bases in English compounds derived from Greek. By learning a handful of these elements, we can demystify literally hundreds of English words. With even the limited Greek noun vocabulary now at our disposal, we'll then have a precise understanding of many specialized compounds that might previously have seemed obscure or incomprehensible.

The following list of word-building elements consists, for the most part, of noun or verb bases to which have been added the abstract noun suffix -ια (**-ia**). The form *-logia*, for example, can be explained as λογ- + -ια. Unlike μανια, which existed as an independent noun, -λογια was used only as a combining form in Greek—always in the second position, as in θεολογια (**the-o-log-ia**, E *theology*). Quite clearly, -λογια should not be described as a suffix, though its derivative *–logy* may have assumed the status of a virtual suffix in the English language.[1]

In this list, the declension number of the noun base is often identified as (1), (2M), (2N), and (3); the 2nd declension is subdivided into **-os** (2M) and **-on** (2N) types.

1. The same can be said of *-graphy.* A word like βιογραφια, which actually existed in ancient Greek, consists of the two bases βι- and γραφ-, the connecting vowel -ο-, and the abstract noun suffix -ια. Thus the derivative can be analysed as **bi-o-graph-ia**. However, most English compounds of this type were never Greek words, and look silly if written in the Greek alphabet.

1. **-logia** > English ***-logy***: “study of”; “science of”

   (1) *ge-o-logy, cardi-o-logy, morph-o-logy, phon-o-logy, psych-o-logy, techn-o-logy*

   (2M) *anthrop-o-logy, bi-o-logy, chron-o-logy, dendr-o-chron-o-logy, cosm-o-logy, ec-o-logy, necr-o-logy, ophthalm-o-logy, the-o-logy, top-o-logy*

   (2N) *etym-o-logy, neur-o-logy, zo-o-logy*

   (3) *anth-o-logy* (here **-logia** means “collection”), *dermat-o-logy, ethn-o-logy, gynec-o-logy, odont-o-logy*

   This is a brief sample of a huge class of compound derivatives.

2. **-graphia** > English ***-graphy***: “writing”; “art or science of writing”

   (1) *ge-o-graphy*

   (2M) *bi-o-graphy, dem-o-graphy, cosm-o-graphy, lith-o-graphy, top-o-graphy*

   (3) *phot-o-graphy, chromat-o-graphy*

   cf. **-graphos** (> E ***-graph***): *cardi-o-graph, phot-o-graph*

   -gramma (> E ***-gram***): *cardi-o-gram, tele-gram*

3. **-metria** > English ***-metry***: “measurement”; “art or science of measurement”

   (1) *ge-o-metry*

   (2M) *chron-o-metry*

   (3) *phot-o-metry*

   cf. **-metron** (> E ***-meter***): *chron-o-meter; bar-o-meter, therm-o-meter*

4. **-nomia** > English ***-nomy***: “law”; “system of laws”

   ec-o-nomy (< οἰκος)*; gastr-o-nomy* (also *agronomy*, *astronomy*)

5. **-mania** > English ***-mania***: “madness”

   pyr-o-mania (also *bibliomania, dipsomania, egomania, kleptomania, megalomania, monomania, nymphomania)*

   cf. **-maniakos** (> E ***-maniac***, both adjective and noun)

6. **-philia** > English ***-philia***: “love”: *necr-o-philia, hem-o-philia*

   cf. **-philos** (> E ***-phile***): *angl-o-phile, franc-o-phile, bibli-o-phile, ped-o-phile*

   phil-: *phil-anthropy, phil-o-logy* (“love of words”), *phil-o-sophy, phil-hellene*

7. **-phobia** > English ***-phobia***: “fear”

   acr-o-phobia, agora-phobia, hom-o-phobia, hydr-o-phobia, necr-o-phobia, xen-o-phobia, claustr-o-phobia (L hybrid, < **claustrum**, “closed place”)

   cf. **-phobos** (> E ***-phobe***), “fearer”: *angl-o-phobe, franc-o-phobe, xen-o-phobe*

8. **-skopos** > English ***-scope***: “instrument for viewing”

   fluor-o-scope, gyr-o-scope, hor-o-scope, micr-o-scope, peri-scope, stere-o-scope, tele-scope, steth-o-scope, spectr-o-scope

   cf. **-skopia** (> E ***-scopy***): *tele-scopy, arthr-o-scopy,* etc.

9. **-archia** > English ***-archy***: “rule”

   hier-archy, patri-archy, matri-archy, mon-archy, olig-archy

   cf. **-archēs** or **-archos** (> E ***-arch***), “ruler”: *patri-arch, mon-arch,* etc.

   arch- or **archi-** (“chief”): *arch-angel, archi-tect, archi-pelago*

10. **-kratia** > English ***-cracy***: “power,” “government,” “rule”

arist-o-cracy, dem-o-cracy, gynec-o-cracy, techn-o-cracy, the-o-cracy

cf. **-kratēs** (> E ***-crat***): a*rist-o-crat, aut-o-crat, dem-o-crat, plut-o-crat, techn-o-crat, the-o-crat*

You should not expect to understand at once all the examples given above. Those that are based on 3rd declension nouns will obviously make better sense after Chapter 18. Others involve adjective bases to be studied in Chapter 19.

§111. Interesting Words

Appropriately enough, the "study of humankind"—*anthropology*—appears to be the earliest of the "-ologies" to have entered the English language, in 1593. Originally, it was used to describe human enquiry in the broadest sense; its modern application to a more limited field dates from about 1860. There are now hundreds of academic disciplines and other studies that use this Greek word-building element, -λογια. If you are confronted with one that is unfamiliar to you, the challenge, of course, will be to identify the etymological meaning of the element that precedes the "-ology." Even in the 20th century, the tradition is generally maintained that this element should be derived from Greek; recent hybrids like the jewellers' *gemmology* (< L **gemma**) are rather exceptional.

You have met the noun base of *metrology*, the study of weights and measures. The study of causes, either medical or mythical, is *aetiology* (*etiology*).[1] Of particular interest to theologians and philosophers is *eschatology*, the study of last things—such as death and final judgement. Here are a few other examples that have a good Greek pedigree:

dendrology	the study of trees	*ombrology*	the study of rain
limnology	the study of lakes	*penology*	the study of punishment
herpetology	the study of reptiles	*oenology*	the study of wine
eremology	the study of deserts	*cartology*[2]	the study of maps

Compounds ending in *-meter* (< G μετρον) are measurement devices. The first element of *barometer* means "weight" or "pressure"; the instrument measures air pressure. Although their measurement function differs, the hybrid *speedometer* is an etymological equivalent of a *tachometer*. What does an *anemometer* measure? A *sphygmomanometer*?

Many of us suffer from phobias. The film *Arachnophobia* popularized one such affliction, named after ἀραχνη or ἀραχνης, the 1st declension Greek word for "spider." According to an aetiological myth, Arachne was an arrogant young weaver, who was changed into a spider because of her foolish wish to rival the goddess of weaving, Athena. Though phobias are a serious matter, some of the descriptive labels are tongue-in-cheek. You may have encountered *tris-kai-deka-phobia*, a morbid fear of the number thirteen. Laurence J. Peter (author of *The Peter Principle*) defined *papyrophobia* (< G παπυρος, L **papyrus**) as "an abnormal desire for a clean desk." (In a brilliant play on *pyromania*, he also coined the word *papyromania*, "the compulsive accumulation

1. G αἰτια ("cause") > L **aetia**; English usage varies on the further reduction of the diphthong *ae* > *e*.
2. From its Latinate spelling, this form might be identified as a hybrid; if strictly Greek, it ought to have been *chartology*. The word is modelled on *cartography* (1859), which was also spelled *chartography*.

of papers.") Other facetious and improbable coinages have included *zonasphalophobia* ("fear of seat-belts"), *opsogalactophobia* ("fear of omelettes"), and even *pectocarpochylophobia* ("fear of Jello").

To judge by Greek compound derivatives, the opposite of love (φιλ-) may be either fear (φοβ-) or hate (μισ-).[3] Thus we have the antonyms *anglophile* and *anglophobe*—one who loves or fears the English. Often the *phil-* element comes first, as in *philharmonic*, "loving harmony" (ἁρμονια), *philhellene*, "lover of Greece," and *philanthropist*, "lover of humanity." The opposite of *philanthropist* is *misanthrope.* An aberration as old as time (alas!) is *misogyny*, male hatred of women (root γυν-). There now exists a counterpart word *misandry*, female hatred of men (root ἀνδρ-). It would be a better world if all members of both sexes practised *philanthropy* (φιλανθρωπια).

3. The parenthetical forms are the Greek roots, which may occur in both noun and verb bases. For our purposes, we needn't worry whether the source of the compound was a noun or a verb.

§112. Exercises, Chapter 17

A. Write in Greek the 1st or 2nd declension noun that forms the first element in each of the following compounds, and provide its English meaning:

e.g.,	phonology	φωνη	voice
1.	anthropology	_____	_____
2.	geometry	_____	_____
3.	demography	_____	_____
4.	theosophy	_____	_____
5.	ecology	_____	_____
6.	ophthalmology	_____	_____
7.	organology	_____	_____
8.	cardiography	_____	_____
9.	technocracy	_____	_____
10.	zoology	_____	_____
11.	psychometric	_____	_____
12.	osteopathy	_____	_____

B. Using a dictionary if necessary, give the etymological meaning of the following:

e.g.,	lithography	stone writing
1.	etymology	_____
2.	chronometry	_____
3.	bibliomania	_____
4.	economy	_____
5.	telescopy	_____
6.	oligarchy	_____
7.	necromancy	_____
8.	philosophy	_____

For **Key to Exercises (Greek)**, see **Appendix III**.

Chapter 18: The Greek Noun (Declension 3)

§113. Stem and Base in the Greek Third Declension

Because the Greek 3rd declension is quite closely parallel to its Latin 3rd declension counterpart, you will understand why nouns of this class may have bases that are not apparent from their nominative (vocabulary) forms—cf. **rex**, **REG-is** and **nomen**, **NOMIN-is**, where the Latin bases are capitalized. In Latin, the noun stem that precedes the **-is** ending of the genitive case is regularly used as the BASE for all derivative words. In Greek, where the 3rd declension genitive ending is -ος, this same situation usually prevails; see, for example, the noun ἀνηρ, ἀνδρ-ος (base **andr-**), "man", which we met in §111. However, we'll find an occasional 3rd declension Greek noun with a base that differs from its stem—e.g., ὑδωρ, ὑδατ-ος (base **hydr-**), "water"; and there will be others that have two alternative bases—e.g., γυνη, γυναικ-ος (base **gyn-** or **gynaik-**), "woman." Here the best advice is to remember the combining form(s) and not worry too much about the original Greek word.

§114. Greek Nouns of the Third Declension

To a greater extent than in the 1st and 2nd declensions, the Greek 3rd declension contains many words that appear in English in exact or conventional transliteration. Some of these are proper names from religion and mythology: Ζευς, Προμηθευς, ’Οδυσσευς, ’Ατλας, Τιταν, Καλυψω, Κυκλωψ, Στυξ = *Zeus, Prometheus, Odysseus, Atlas, Titan, Calypso, Cyclops, Styx.* Many 3rd declension common nouns have also entered English without adaptation: μαρτυρ, νεκταρ, λαρυγξ, κλιμαξ, ἀρωμα, κωμα, πολις, μητροπολις, πυλων, κυδος, ὑβρις = *martyr, nectar, larynx, climax, aroma, coma, polis, metropolis, pylon, kudos, hubris.* (Both these lists could be extended substantially.)

What follows is a fairly daunting word-list; perhaps you can subdivide it into two or three instalments for learning purposes. If only one Greek word is listed, that will be the nominative (vocabulary) form, which provides an obvious base or combining form. If two Greek words are given, the second will be the genitive singular (= base + -ος).

Table 18.1: **GREEK THIRD DECLENSION NOUNS**

GREEK NOUN	TRANSLITERATION (BASE)	ENG. MEANING	DERIVATIVE
ἀηρ	**aēr**	air	*aerodynamic*
πυρ	**pyr**	fire	*pyromania*
ὑδωρ	**hydōr (hydr-)**	water	*hydraulic*
δαιμων	**daimōn**	god, spirit	*demonic*
χειρ	**cheir**	hand	*chiropractor*
πους, ποδος	**pous, pod-**	foot	*podiatrist*
γαστηρ, γαστρος	**gastēr, gastr-**	stomach	*gastronomy*
ὀδους, ὀδοντος	**odous, odont-**	tooth	*orthodontic*
ῥις, ῥινος	**rhis, rhin-**	nose	*rhinoceros*
φως, φωτος	**phōs, phōt-**	light	*photograph*
ἀνηρ, ἀνδρος	**anēr, andr-**	man	*polyandry*
γυνη, γυναικος	**gynē, gynaik-**	woman	*gynecology*
παις, παιδος	**pais, paid-**	child	*p(a)ediatric*
γερων, γεροντος	**gerōn, geront-**	old man	*gerontology*
πολις	**polis**	city	*acropolis*
ἀλγος	**algos (alg-)**	pain	*neuralgia*
βαρος	**baros (bar-)**	weight	*barometer*
ἐθνος	**ethnos (ethn-)**	nation	*ethnic*
ἠθος	**ēthos (ēth-)**	custom, character	*ethos*
αἱμα, αἱματος	**haima, haimat-**	blood	*haemophilia*
δερμα, δερματος	**derma, dermat-**	skin	*hypodermic*
ὀνυμα, ὀνυματος	**onyma, onymat-**	name	*synonym*
(ὀνομα, ὀνοματος)	**(onoma, onomat-)**		*onomatopoeia*
σωμα, σωματος	**sōma, sōmat-**	body	*psychosomatic*
χρωμα, χρωματος	**chrōma, chrōmat-**	colour	*chromosome*

First, a few comments on English spelling. You have learned that the Greek diphthong αι became regularly adapted in Latin as **ae**. That convention is reflected in the derivatives of γυναικ- (**gynaik**– "woman"), παιδ- (**paid**– "child"), and αἱμ- (**haim**-, "blood"). What can be confusing is that this **ae** may be either maintained in English or reduced further to **e**. The full development is illustrated in the progression from G δαιμων to L **daemon** to E *demon*.[1] Thus there are two correct spellings for the medical specialist who treats children—*paediatrician* or *pediatrician.* If you look under "Physicians and Surgeons" in the Victoria Yellow Pages, you will find both spellings used (probably revealing the geographical or educational origin of the specialist). The same is true of *gynaecology* or *gynecology*, *haemorrhage* or *hemorrhage.* In Canadian usage, there is an overwhelming trend towards the simpler *e* spelling. The only problem with this simplification is that it

1. In the semantic area, this word is a fine example of PEJORATION or deterioration of meaning (§15), since the original Greek word had a very positive denotation—a divinity or spirit (Socrates' inner voice).

can sometimes create minor confusion. A perfect example is the Greek root παιδ- (**paid-**, "child"). If it is kept as **paed-**, the etymology of its derivatives will be abundantly clear; if, however, it is reduced to **ped**– (as is customary in North America), it becomes identical in form to the unrelated Latin root for "foot." Because of Latin derivatives like *pedal* and *pedicure*—and the hybrid *pedometer* (an instrument to measure walking speed)—one may run the risk of associating *orthopedic* (*orthopaedic*) with feet, or of wrongly viewing *pedophilia* as some kind of foot fetish. Other derivatives of παιδ- include *pedagogue* (G παιδ-αγωγος, "child-leader" > L **paedagogus**), *pedagogy*, *encyclopedia*,[2] *pederast* ("child-lover," now almost completely supplanted by *pedophile*, a word that dates only from 1951), and *pedodontist* (< παιδ-οδοντ-ιστης,[3] a dentist who works on children's teeth). Notice, by the way, that the first *-o-* of *ped-odont-ist* is not a connecting vowel, since it begins the base form that means "tooth"; we should similarly divide the words *orth-odont-ist* and *peri-odont-ist*.

The first noun in Table 18.1, ἀηρ, became the Latin loan-word **aēr**, after exact transliteration; this was the source (through Old French) of English *air*. To make it clear that this Latin word has two syllables, we may wish to use the diaeresis[4] mark, spelling the form as **aër**. When the word *aerial* first entered the English language, it was pronounced "a-er-i-al." If the initial two letters had evolved from the Latin diphthong **ae**, the modern English spelling would likely have become *"erial."* Our word *airplane* was originally (1866) adapted from French as *aeroplane*, and may still be spelled that way; the form was apparently intended to mean "air wanderer" (cf. *planet*), though its second element soon became associated in usage with the more obvious *plane* (< L **planus**).

The alternative bases of γυνη, γυναικος (gun- and gunaik-) are apparent in the contrast between *mis-o-***gyn**-*y* or *andr-o-***gyn**-*ous*, on the one hand, and **gynec**-*o-logy*, on the other. Words like σωμα and χρωμα may have two combining forms; see English **chrom**-*o*-**some**, as opposed to **chromat**-*ic* and *pysch-o-***somat**-*ic*. Again, **phos**-*phorus* (< φωσφορος, "light-bearing") can be contrasted with **phot**-*o-graph*. Greek was unlike Latin in this capacity to use two different forms of the same noun in forming derivatives or compounds. The phenomenon does represent a complication in English word analysis.

If your physician is a foot specialist, (s)he is perhaps a *podiatrist* ("foot healer"). However, if the medical practice is concerned with hands and feet, the doctor will be a *chiropodist* (< χειρ-ο-ποδ-ιστης). Some other medical specialties from Table 18.1 are *gynecology, gerontology, dermatology, and haematology.*

2. The word *encyclopedia* (still often spelled *encyclopaedia* in the U.K.), is derived from G παιδεια (**paideia** < παις), "education" (of children). The compound meant "circular (i.e., complete) education."
3. We'll be meeting the suffix -ιστης many times. A 1st declension masculine ending, it may be viewed as the Greek counterpart of the Latin AGENT SUFFIX **-or**. Occasionally a Greek noun in -ιστης was adapted as a 1st declension Latin noun in **-ista**. Whether or not there was an intermediate Latin form, the suffix appears in English as *-ist.*
4. The word *diaeresis* looks as if it might have been derived from ἀηρ. That is not the case; however it is a Greek derivative, from δια + αἱρειν ("to take apart").

§115. Some Noun-forming Suffixes in Greek

Though the topic doesn't logically belong in a chapter on the 3rd declension noun, this may be a convenient place to introduce a few casual comments on noun-forming suffixes in Greek—in this case, suffixes that turn nouns of all three declensions into other nouns.

The 2nd declension neuter suffixes -ειον and -αιον (**-eion**, –**aion**) were regularly used in Greek to create derived nouns that meant "a place for." They correspond in this sense with the Latin nouns in –**arium** that we met in Part I, §38. Even though Latin had a way of expressing this concept in its native vocabulary, that language sometimes borrowed Greek forms in -ειον and -αιον, adapting them in a predictable fashion as Latin forms in –**eum** and –**aeum**. This may be illustrated as follows:

G NOUN	DERIVATIVE	TRANSLIT.	ENG. MEANING	LATIN FORM
Μουσα	Μουσειον	**Mouseion**	"a place for the Muses"	**Museum**
’Ορφευς	’Ορφειον	**Orpheion**	"a place for Orpheus"	**Orpheum**
Μαυσωλος	Μαυσωλειον	**Mausōleion**	"a place for Mausolos"[1]	**Mausoleum**
Κολοσσος	[Κολοσσειον]	[**Kolosseion**]	"place for the Colossus"[2]	**Colosseum**
’Αθηνη	’Αθηναιον	**Athēnaion**	"a place for Athena"	**Athenaeum**

There is no need to devote much space to the topic of Greek **DIMINUTIVES**, as we did in Latin (Part I, Chapter 7). That is not because the diminutive was unimportant in Greek; on the contrary, ancient Greek was very rich in suffixes that could connote smallness or endearment. The reason why the question can be summarily treated is because Greek diminutives have had a very minor effect on English vocabulary. One such suffix was -ιον (**-ion**), which appears in G ποδ-ιον ("little foot"), regularly adapted as L **podium**, our English *podium*. If you are interested in musical theory, look up the etymology of the Italian term *appoggiatura* (< Vulgar Latin ***appodiare**), which involves a little step. Another Greek diminutive suffix was -ισκος, the origin of the *-isk* in *asterisk* (ἀστηρ, ἀστερος, star; ἀστερ-ισκος, "little star"). This suffix explains the etymology of *obelisk* ("little spit"), which today is either a tapered pillar or a reference mark (†).

1. A tyrant in Caria on the east coast of the Aegean Sea, **Mausolos** (L **Mausolus**) became famous in death for his magnificent tomb in Halicarnassus (ca. 350 bc). One of the Seven Wonders of the ancient world, this monument gave our language a generalized term for a grandiose tomb—*mausoleum*.
2. The Colossus of Rhodes, a gigantic statue of Apollo erected ca. 280 BC, was another of the Seven Wonders of antiquity. The word Κολοσσειον was not used in ancient Greek, but is the hypothetical source of the Latin word **Colosseum**, applied eventually to the huge Flavian Amphitheatre in Rome (ca. 80 AD). The historically correct spelling is *Colosseum*, but the form *Coliseum* has become an acceptable alternate.

§116. Interesting Words

The word *hydraulic* combines the noun base **hydr-** (“water”) with the noun base **aul-** (αὐλος, “pipe”), adding the standard -ικος suffix. (An αὐλος was also a pipe played by a musician—a kind of ancient double oboe.) In Canadian usage, *hydro* has become a virtual synonym for *electricity*; the second element of *hydro-electric* is derived from ἠλεκτρον, Greek for “amber” (a substance in which static electricity was first observed).[1] The term *hydrophobia* was commonly used as another name for rabies, because those who are afflicted with this disease suffer convulsions if they try to swallow water. Browse in your dictionary to discover many other English words that begin with *hydr-*.

Biologists will recognize πους, ποδος as the source of many names that end in *-pod*. A *gastropod (gastr-o-pod),* logically enough, is a “stomach foot”; this is a class of molluscs that includes snails, slugs, and limpets. A *cephalopod* (e.g., squid, octopus, cuttlefish) has “feet on its head.” An *arthropod* is an animal with an articulated foot (< ἀρθρον, “joint”); the phylum *Arthropoda* includes insects, arachnids (spiders) and crustaceans. The *octopus* just mentioned is a Latinized adaptation of ὀκτω-πους, “eight-feet.” The Greek form of this word makes it obvious why one should not pluralize *octopus* as *octopi*—though that incorrect plural is gaining respectability in English. The legendary Greek hero Oedipus (Οἰδι-πους) had a name that was generally thought to mean “Swollen-Foot” (he suffered from a limp, the result of a mysterious childhood injury). In his tragedy *Oedipus Tyrannos* (Οἰδιπους Τυραννος), Sophocles puns upon the hero’s name, suggesting that the real etymology may be “Know-Foot.” If Oedipus acquires true self-knowledge, he will realize that the secret of his identity is to be found in his own foot, deformed when he was abandoned in infancy by his parents, the King and Queen of Thebes.

An *acropolis* (“top city”) was a Greek fortified hill, and a *necropolis* (“corpse-city”) was an ancient cemetery. A *metropolis* was a “mother-city” (μητρ-) that continued to play a protective role toward its colony or colonies; the meaning has changed today, of course. A *cosmopolis* is a “world-city,” and a *cosmopolite* (κοσμοπολιτης, **kosm-o-poli-tēs**) a “citizen of the world.” We heard that Japan had planned a utopian city in the sky, to be known as *Aeropolis 2001*. This excellent Greek coinage is offset, unfortunately, by another less happily named Japanese utopian community that was apparently to be called *Undergroundopolis*.

1. Greek ἠλεκτρον appears in English in three separate forms: *electron*, *electrum* (Latin spelling), and *electre* (French spelling). The first term has been adopted by physics, the last two by metallurgy.

§117. Analysing Greek Compound Words

When we first looked at WORD ANALYSIS, in Part I, §43, we saw that it involved "breaking up" a word into its component parts; this, as we'll soon discover, is what ἀνα-λυσις means in Greek.

When we were dealing with Latin derivatives, it was usually possible to start with a hypothetical reconstruction of the Latin etymon; for example, we might trace the English *collaboration* from a Latin source-word **collaboratio**, which could then be identified and explained, element by element. This same element-by-element explanation is desirable in analysing Greek derivatives; but it will seldom be a good idea to invent an original Greek compound form. Indeed, complex English words derived from Greek are more often than not modern inventions, and they would look ludicrous in the Greek alphabet. If you know that our word began life as a Greek compound—that *metropolis*, for instance, was a Greek word μητροπολις —then give that Greek form, by all means. Otherwise or when in doubt, it's probably better merely to explain the component parts; and you can display your knowledge of Greek, if you wish, in identifying these separate elements.

Here are a few typical examples of how you might perform this exercise. You are encouraged to develop your own way of conveying this information, as clearly and as succinctly as possible.

pterodactyl	< G pter-o-dactyl:	pter– (πτερον, "wing") + –o– (connecting vowel) + –dactyl (δακτυλος, "finger")
photography	< G phōt-o-graphy:	phōt– (φως, φωτος, "light") + –o– (connecting vowel) + –graphy (-γραφια, "writing")
psychologist	< G psych-o-log-ist:	psych– (ψυχη, "soul") + –o– (connecting vowel) + –log– (-λογια, "study") + –ist (-ιστης, agent noun suffix)

Chapter 19: Greek Adjectives and Adverbs

§118. Greek Adjectives: 1st and 2nd Declension Type

It is an oversimplification to say that classical Greek adjectives are exactly parallel in morphology to their Latin cousins. After learning the Latin types, however, you will find the Greek system quite familiar. There is one group of Greek adjectives whose forms are drawn from the first and second declensions (cf. L **magnus**, **magna**, **magnum**), and another whose forms belong wholly or in part to the third declension (cf. L **fortis**). Rather than worry about details of grammar that concern only the serious student of Greek, we can concentrate on the roots and combining forms of these adjectives, in order to see how they affect English vocabulary.

Just as the Latin adjective meaning "equal" had the three forms **aequus** (M), **aequa** (F), and **aequum** (N), so its Greek semantic counterpart had the three forms ἰσος (M), ἰση (F), and ἰσον (N). For simplicity's sake, we'll ignore gender distinctions and use only the masculine form ἰσος, whose base is obviously ἰσ- (**is-**). Here is a useful group of Greek 1st and 2nd declension adjectives:

Table 19.1: **GREEK 1ST AND 2ND DECLENSION ADJECTIVES**

ADJECTIVE	TRANSLITERATION	ENG. MEANING	ENG. DERIVATIVE
ἀκρος	**akros**	top(most)	*acropolis*
αὐτος	**autos**	self	*autograph*
ἑτερος	**heteros**	other	*heterodox*
ὁμος	**homos**	same	*homomorphic*
ἰσος	**isos**	equal	*isometric*
ὀρθος	**orthos**	straight, right	*orthodontic*
νεος	**neos**	new	*neologism*
παλαιος	**palaios**	old	*palaeography*

You will surely be able to provide many other English derivatives from the adjectives in this list. The base **aut-** has given us *autonomy* ("self rule"), *autobiography* (aut-o-bi-o-graphy, "self-life-writing"), *automaton, automatic, autopsy, autochthonous,*[1] and the Latin hybrid *automobile*—shortened to *auto*. Alongside *acropolis* we can place such words as *acrophobia* (acr-o-phobia, "fear of the top"—i.e., fear of heights), *acrobat* (a "top walker"), and *acronym*—literally, "top name" (acr-onym), where the top or end letters of a series of words are combined to provide a convenient label. Nowadays we are exposed to a plethora of acronyms, like *NATO* (**N**orth

1. The exotic specimen *aut-o-chthon-ous* means "[sprung] from the earth itself"; the second element is **chthōn-** (χθων, "earth"), a base that appears in E *chthonic* or *chthonian*, "pertaining to the earth." The ancient Athenians liked to call themselves *autochthonous*, implying that they had always inhabited the land of Attica. Today we would be more likely to use the Latin equivalents, *aboriginal* or *indigenous*.

Atlantic **T**reaty **O**rganization), *radar* (**RA**dio **D**etecting **A**nd **R**anging), and that most sinister and ironic word *AIDS* (**A**cquired **I**mmune **D**eficiency **S**yndrome). There's nothing new about acronyms, however. It has been almost two millennia since the early Christians devised a secret acronym to identify their faith: this was the Greek word ΙΧΘΥΣ ("fish"; cf. *ichthyology*), or a stylized drawing of a fish, used in antiquity as a graffito and still seen on modern bumper stickers. If you are puzzled by the acronym, here is its explanation:

’Ιησους	**Iēsous**	Jesus
Χριστος	**Christos**	Christ ("the Anointed")
Θεου	**Theou**	Of God
Υἱος	**Huios**	The Son
Σωτηρ	**Sōtēr**	Saviour

Table 19.1 has some pairs of adjectives with opposite meanings (antonyms). In Greek, ἑτερος ("other") and ὁμος ("same") were often opposed, as reflected in the modern adjectives *heterogeneous* ("other in kind") and *homogeneous* ("same in kind"). Here the *-geneous* element goes back to Greek γενος ("race," "kind"), but the English words bear the marks of Latin adaptation. The adjectives *heterosexual* and *homosexual* are modern hybrids, using the Latin 4th declension noun **sexus** and the Latin suffix **-alis**. A curious recent coinage is *homophobia*; its etymological meaning ("fear of the same") is vague, but we all recognize it as denoting fear or suspicion of homosexuals. Occasionally the opposite of **heter**–**o**– may be **orth**–**o**-, as in *heterodox* and *orthodox*—"other opinion" and "straight (correct) opinion." The scholar's word for "straight" (or correct) spelling is *orthography*. The semantic concepts of "old" and "new" are often contrasted by **palae**–**o**– and **ne**–**o**-; the most familiar pair, perhaps, are *Palaeolithic* and *Neolithic*, describing the Old Stone and the New Stone Ages. The Greek adjective base **ne**– has become so familiar that *neo-* now enjoys a life of its own as an English combining form: *neo-Nazi, neo-Fascist,* etc.

§119. Greek Adjectives: 3rd Declension Type

As mentioned earlier, Greek and Latin adjectives are not exactly parallel in morphology. Some Greek adjectives are exclusively 3rd declension, whereas others combine features of the 3rd and 1st declensions. In the following list, do not worry about declension numbers; you will actually find some more adjectives of the 1st and 2nd declension pattern, which are included here because of semantic relationships. If there is anything unusual about an adjective's combining form(s), the base or bases are shown in parentheses.

Table 19.2: **GREEK 3RD DECLENSION (AND OTHER) ADJECTIVES**

ADJECTIVE	TRANSLITERATION	ENG. MEANING	ENG. DERIVATIVE
μεγας	**megas** (**mega-**)	great, large	*megaphone*
	(**megal-**)		*megalomania*
μακρος	**makros**	long, (large)	*macrocephaly*
μικρος	**mikros**	small	*microscope*
πας	**pas** (**pan-**, **pant-**)	all	*pantheon, pantomime*
πολυς	**polys (poly-)**	(much), many	*polygamy*
ψευδης	**pseudēs (pseud-)**	false	*pseudonym*

The first three adjectives on this list can cause some confusion in meaning. In Greek, the opposite of μεγας is μικρος; so *megaphone* has a semantic contrast with *microphone*, and *mega-* (M) is the opposite of *micro-* (m) in the metric system (SI). Because of their closeness in form, however, the elements *macro-* and *micro–* have become associated as opposites meaning "large" and "small" (e.g., *macroscopic* and *microscopic*). As in the case of *neo-* and *pseudo-*, the connecting vowel is now viewed as an integral part of the combining form (e.g., *macroeconomics*, *microanalysis*). What is understood by the words *microcosm* and *macrocosm*? Is it logical that a *microskirt* should be shorter than a *miniskirt*?

There's a rich supply of English derivatives from the adjectival bases **pan-** and **pant-** ("all"). A *pantheon* is a temple for "all the gods"; a *pantomime* (pant-o-mime) was an ancient theatrical performance that was "all mime"—though its modern British descendant has an abundance of words. We have extended the ancient term *panhellenic* ("involving all the Greeks") to forms like *pan-American* and *pan-Pacific*. A truly inspired derivative is the Miltonic coinage *pandemonium* (< παν- + δαιμων + -ιον, "a place for all the demons").[1] If you're feeling energetic, you can look up the etymologies of *panacea, pancreas, panegyric,* and *panoply.* But whatever you do,

1. In Greek, this suffix -ιον (**-ion)** is sometimes used to mean "a place for someone," as in the noun Παλλαδιον (**Palladion**), a place for Pallas Athena—source of the Latinized theatre name Palladium.

don’t *panic*. That powerful emotion is aroused by a direct human encounter with the shepherd god Pan. His name is not connected with πας, despite a movement in late antiquity to view him as a quasi-Christlike figure who embraced “all” goodness.

§120. Greek Adverbs

This topic can be dismissed even more summarily than it was on the Latin side (Part I, §30). Although Greek had no shortage of adverbs (verb modifiers), not many are important in English vocabulary. At this point in the course, we'll pass over the adverb εὐ ("well"), since it will be treated later as a combining prefix (**eu-**). Two adverbs worth noticing are τηλε (**tēle**, "far") and παλιν (**palin**, "back," "again"). The first has the obvious derivatives *telephone*, *telegraph*, *telepathy*, and *television*. The second appears in the English words *palindrome* (a "running back"[1]) and *palingenesis* ("being born again"), a synonym for *reincarnation* (Latin) or *metempyschosis* (Greek). *Palindromes* are those ingenious sentences that read the same in both directions. Among the most familiar are "Madam, I'm Adam" (allegedly the first words spoken in the Garden of Eden[2]); Napoleon's apocryphal "Able was I ere I saw Elba"; and that brilliant slogan devised for U.S. Presidential candidate Theodore Roosevelt: "A man, a plan, a canal—Panama!" The most incredible (and the most contrived) is attributed to the late British poet W. H. Auden: "T. Eliot, top bard, notes putrid tang emanating, is sad. I'd assign it a name: gnat dirt upset on drab pot toilet."

1. The *-drome* part of *palindrome* comes from Greek δρομος ("running," "race-course"), which occurs also in *hippodrome* (ἱππος + δρομος, "race-course for horses") and *velodrome* (< F < L **velox**, "swift").
2. To which the demure lady replied laconically (and palindromically): "Eve."

§121. Interesting Words

Table 19.1 contains the Greek derivative *neologism* (νεος, “new” + λογος, “word” + -ισμος, noun-forming suffix), a newly coined word or expression. Conservative word-lovers are usually leery of neologisms, which occur often in trendy bureaucratic usage—forms like *privatize* and *priorize*, for example. In contrast, adventurous English stylists are delighted to see new words added to the language, provided that they enrich the possibilities for communication (and that is an important proviso). Sometimes neologisms are deliberately facetious, like the delicious coinage *affluenza* (“an affliction brought on by suddenly having too much money”). If you want to keep abreast of new developments, you’ll find a whole book on the subject—*Longman’s Dictionary of Contemporary English*.

A close relative of *acronym* (§118) is *acrostic* (ἀκρος, “top” + στιχος, “line”), a poem or other composition in which the first letters of each line, when read vertically, form an independent word. There have been times in literary history when convoluted ingenuity of this sort—crossword puzzle skills, applied to poetry—have been highly treasured.

There are other common Greek adjectives with which you should have a nodding acquaintance. Close in meaning to ἑτερος (“other”) is ἀλλος (“another”). It is found in the linguistic term *allophone*, which is a nondistinctive variant of a phoneme (e.g., the English sounds [p^h] and [p] in *pin* and *spin*). In Quebec, the word *allophone* (“another voice”) has a very different meaning: it is applied to those whose first language is neither French (*francophone*) nor English (*anglophone*). A Greek synonym for ραλαιος (“old”) is ἀρχαιος (“ancient”); thus the kindred disciplines of *palaeontology* (palae-ont-o-logy, “the study of old existing things”[1]) and *archaeology* (archae-o-logy, “the study of ancient things”). *Palaeozoic* (US *Paleozoic*, “pertaining to old life”) and *Mesozoic* (< μεσος, “middle”) are two geologic eras. That adjective meaning “middle” occurs in *Mesopotamia*, “the land in the middle of the rivers” (Tigris and Euphrates). The word *sophomore* combines two Greek adjectives that are opposite in meaning: σοφος (“wise”) and μωρος (“foolish,” “dull”). A paradoxical and contradictory expression like “wise-foolish” or “bittersweet” may be called an *oxymoron* (ὀξυς, “sharp” + μωρος (“dull”). Perhaps you have a favourite unintentional oxymoron, like “military intelligence” or “jumbo shrimp.”

The possibility of etymological confusion is acute in derivatives of κενος (“empty”), κοινος (“common”[2]), and καινος (“new” or “recent”)—all of which may appear in English as *cen-*. In North American dictionaries, you will find the spellings *cenotaph* (“empty tomb”), *cenobite* (“one who lives a common life”—a type of monastic regimen), and *Cenozoic* (“pertaining to new life”—the most recent geologic era). In British practice, as reflected

1. The element **-ont-** is derived from οντα (“existing things”), the present participle of the Greek verb that means “to be.”
2. The “common” Greek dialect of late antiquity—the language of the Greek New Testament—is known as the κοινη (koinē), a feminine adjective form.

in the *Oxford English Dictionary*, the etymological distinctions are made clearer by the historically accurate and distinctive spellings *cenotaph*, *coenobite*, and *Caenozoic*.

If you want a challenging experience in etymology, consult a geological time scale in any encyclopedia. You will learn, for example, that the *Cenozoic* era—the last 65 million years on earth—is divided into seven epochs: *Holocene* ("whole new"), *Pleistocene* ("most new"), *Pliocene* ("more new"), *Miocene* ("less new"), *Oligocene* ("little new"), *Eocene* ("dawn new"[3]), and *Paleocene* ("old new"). The last is an excellent *oxymoron*.

3. Greek "dawn" is ἠως; the prehistoric ancestor of all horses was the *eohippus* ("dawn horse").

§122. Exercises, Chapter 19

A. For each of the following words, change the first element so as to create a word that is either exactly opposite or strongly contrasted in meaning:

e.g.,	microcosm	macrocosm
1.	palaeolithic	_____
2.	polygamous	_____
3.	orthodox	_____
4.	cacophony	_____

B. Using a dictionary if necessary, give the ETYMOLOGICAL MEANING of the following:

e.g.,	palaeography	old writing
1.	autodidact	_____
2.	orthodontist	_____
3.	isochromatic	_____
4.	heterophyllous	_____
5.	macropterous	_____
6.	polydactylism	_____
7.	neophyte	_____
8.	panacea	_____

C. Using the format given in §117, write out ANALYSES for the following English words:

1. *stereophonic* _____
2. *megalomania* _____
3. *heterogamy* _____

For **Key to Exercises (Greek)**, see **Appendix III**.

Chapter 20: Numerals in Greek and Latin

§123. Greek and Latin Number Concepts

First, let us make it clear that we are not talking about number symbols in Greek and Latin—for example, the "Roman numerals" I, V, X, L, C, D, and M—interesting though that topic may be. What this chapter will consider are the actual words developed in the Greek and Latin language to identify and describe numbers. There is some advantage in viewing both languages in the same chapter. All Indo-European number words tend to have a cognate relationship, and that in itself may be revealing. Also, by looking at Greek and Latin side by side we may be able to clarify points of confusion in English, so as to determine which of our number words are descended from one or the other of these classical languages.

As you learned in Part I, Table 2.2, the Latin noun for "number" is **numerus**—and that is the source of our English word *number*. The regular Latin ADJECTIVE, therefore, is **numeralis** ("pertaining to number"), though we use its English derivative *numeral* more often as noun than adjective. It is an easy step from **numerus** to the DENOMATIVE verbs (§76) **numerare** and **e-numerare** (> E *numeration*, *enumerate*).

A *cardinal* number (< **cardo**, **cardinis**, "hinge") may be considered to be in a pivotal position; in a variety of semantic areas, *cardinal* came to have the general meaning "chief" or "important." An *ordinal* number, in contrast, stands in a "row" or "rank" (**ordo**, **ordinis**); its etymology makes it easy to remember this adjectival label that is attached to numbers like "first," "second," and "third."

The Greek equivalent of Latin **numerus** was ἀριθμος (**arithmos**), a word that has not given us a simple English noun. Our word *arithmetic* derives from G ἀριθμητικη, which is short for ἡ ἀριθμητικὴ τέχνη (**hē arithmētikē tekhnē**, "the numbering art"). In a later chapter, we'll see that ἀριθμη-τικος is a standard adjective form, derived regularly from the verb ἀριθμειν (base ἀριθμη-), "to number," "to count."

We already know that *geometry* was originally "earth measurement." Among the other branches of *mathematics* (< μαθη, "things learned"), *algebra* is a loan-word from Arabic (< *al-jabr*), and *trigonometry* will be explained later in this chapter.

§124. A Table of Greek and Latin Number Words

	LATIN			GREEK		
	Cardinal 1, 2, 3	*Ordinal* 1st, 2nd, 3rd	*Other*[1]	*Cardinal*	*Ordinal*	*Other*
1/2	demi-[2]		semi-	hemi-		
1	un(i)-	prim-	singul-	hen-	prot(o)-	mon(o)-
1-1/2			sesqui-			
2	duo	secund-	bi-, bin-	dy-	deuter(o)-	di-
3	tri-	terti-	ter-, tern-	tri-	trit(o)-	tri-
4	quadr(i)- quadr(u)-	quart-	quarter(n)-	tetr(a)-		
5	quinqu(e)-	quint-	quin-	pent(a)-		
6	sex-	sext-	sen-	hex(a)-		
7	septem-	septim-	septen-	hept(a)-		
8	octo-	octav-	octon-	oct(o)-, octa-		
9	novem-	non-	noven-	enne(a)-		
10	decem- DECI-[3]	decim-	den-	dec(a)-		
100	cent(i)-	centesim-	centen-	hecaton: HECT(O)-[3]		
1000	mill(i)-	millesim-	millen-	chili(o): KILO-[3]		

NOTES:

[1] The *"other"* Latin numeral forms include adverbs ("twice," "thrice," etc.) and distributives ("one each," "two each," etc.). Note these additional sequences:

primarius, secundarius, tertiarius, quart*ilis*, . . . decim*alis*
singularis, binarius, ternarius, quaternarius, quinarius, . . . centenarius, millenarius
simplex, duplex, triplex, quadruplex, quintuplex ("twofold," "threefold," etc., < **plicare**)

[2] The Latin word for "half" was **dimidium**, which became *demi-* through French. The regular combining prefix

in Latin was **semi-** (not an independent word). In musical notation, a 64th note is a *hemidemisemiquaver*—the shorter the note, the longer the word.

[3] The forms DECI-, HECT(O)- and KILO- are metric prefixes, adopted from French. In the metric system (SI = Système International), units of measure are divided by Latin prefixes, and multiplied by Greek. See §128.

§125. Latin Number Words in English

You will observe that there are a few English number words that closely reflect original Latin number words. These include *duo*, *cent* (along with *percent*); *prime, second, quart;* and *single.* Modern month names, from *September* to *December*, are adapted without change from their Latin counterparts—though there seems to be something wrong with the arithmetic of the Roman calendar.[1]

In general, however, Latin number vocabulary has entered the English language as COMBINING FORMS, which—in the Latin language itself—were sometimes quite different from the independent number words. The Latin cardinal number "four," for instance—**quattuor**—is of no relevance to English; but the Latin combining form **quadr-** has been very useful. Similarly, the Latin word "two" (**duo**) is far less essential to English than the form **bi-**. Therefore the numerical vocabulary of §124 consists mainly of combining forms, as you may infer from the hyphens following most items. Remember that Latin generally uses the connecting vowel **-i-** to link a combining form with another word base (see Part I, §92; for example, *un-i-verse, cent-i-pede)*. That standard principle will usually apply, though there are some exceptions—*primo-geniture* (an adverbial first element) and *quadr-u-ped* (the archaic connecting vowel **-u-** was sometimes used with **quadr-**).

The best way to see these principles at work may be to look at several parallel English words that use Latin combining forms for "one" and "two" (**un-** and **bi-**):

un-i-cameral	*bi-cameral*	one or two chambers (**camera**)
un-i-lateral	*bi-lateral*	one or two sides (**latus**, **later-is**)
un-i-lingual[2]	*bi-lingual*	one or two tongues or languages (**lingua**)
un-i-corn	*bi-corne*[3]	one or two horns (**cornu**, 4th decl. N)
un-i-foliate	*bi-foliate*	one or two leaves (**folium**)
un-i-nucleate	*bi-nucleate*	one or two "little nuts" (**nucleus**)
un-i-cycle	*bi-cycle*	one or two wheels (G κυκλος)

As these examples suggest, numerical prefixes often draw our attention to contrasts; *unilateral* decisions may be opposed to those that are *bilateral* or *multilateral*. (Although Latin **mult**– and Greek **poly-** [πολυ-] are not, strictly speaking, number words, they play an obvious role in compounds of this type.) A *biped* may be contrasted

1. The reason why September was called "Seven-month" and not "Nine-month" is that the original Roman year began in March, rather than January.
2. This form coexists in English with the Greco-Latin hybrid *monolingual*.
3. The *bicorne* is the Napoleonic cocked hat. There is also an English adjective *bicornuate*.

with a *quadruped* or a *multiped*—not to mention a *centipede* or a *millipede*. In the muscle names *biceps*, *triceps* (upper arm), and *quadriceps* (thigh), the *-ceps* element is derived from L **caput** (“head”). Numerical compounds are conspicuous in geometry, of course: *triangle* and *quadrangle* derive from L **angulus** (“corner,” “angle”).[4]

We could list many more English words containing the Latin combining form **bi-**: *bifocal*, *bicultural* (v. *multicultural*), *bicuspid* (L **cuspis**, “point”), *bifurcate* (denominative, from L **furca**, “fork”), and *bigamy* (hybrid, from G γαμος, “marriage”). If the second element begins with a vowel, one may meet the related Latin combining form **bin-**[5]: *binocular, binaural.* However, *biovular* —more easily read if spelled *bi-ovular*—is a term that describes the origin of fraternal twins.

Among the “other” Latin numeral words given in §124 (and note 1) we find the direct source of English *primary, secondary, tertiary, quartile, decimal, singular, binary, ternary, centenary,* and *millenary*. The commemorative terms *centenary* (100), *sesquicentenary* (150), and *bicentenary* (200) are used to mark significant dates in the history of cities and nations. Unlike those words, the adjectives *centennial, sesquicentennial,* and *bicentennial* are based on a modified form of the Latin noun **annus**, “year.” A *millennium* (adjective *millennial*) is a period of a thousand years. Even well-educated people often leave out an *-n-* in spelling the word *millennium*; don’t confuse it with *millenary*.

The root of Latin **singuli** (“one at a time,” E *single*) was combined with the root **plic-** (“fold”) to produce L **simplex** (< ***sin-plic-s**). So **duplex**, **triplex**, etc.[6] The regular abstract nouns were **simplic-itas** and **duplic-itas** (E *simplicity, duplicity, multiplicity*). In medieval Latin, the 3rd declension adjective **simplex** developed a 2nd declension variant **simplus**, source of E *simple*. (So **duplus**, **triplus** > *duple*, *triple*.)

4. Thus a *rect-angle* has the etymological meaning of “straight corner.”
5. The Latin distributive adjective **bini** meant “two by two,” “two at a time,” like the animals in Noah’s Ark.
6. In English as in Latin, *twofold* (**duplex**) and *threefold* (**triplex**) do not mean “folded twice” and “folded three times.” If you are being quite literal, a flat object folded twice has four parts, not two. Thus a large sheet of paper that early printers called a *folio* (L *folium*, “leaf”), became known as *quarto*, if folded twice, and *octavo*, if folded three times. In strict logic, Latin **simplex** (“onefold”) has no fold at all.

§126. Greek Number Words in English

Greek ordinal adjectives regularly use the connecting vowel omicron: E *prototype* (prot-o-type, “first imprint”), *Deuteronomy* (deuter-o-nomy, “second law”). This same linking vowel is found in derivatives of **mon**– (μονος, “only,” a quasi-numerical form that often provides the concept of “one”): *monolithic*, *monomorphic*, *monomania*, *monopoly*. Of course, no linkage is needed if the second base begins with a vowel: *protagonist* (πρωτ-αγων-ιστης, “first combatant”[1]), *monocular* (G **mon**– + L **oculus** + L –**aris**). Unlike the ordinals, most Greek cardinal numbers have stems or bases that already end in vowels, and therefore do not show that omicron link: *dyarchy* (“two rule”), *tripod* (“three foot”), *pentameter* (“five measure”), *Decalogue* (δεκα + λογοι = Ten Commandments).

Relative to Latin, Greek number words have had limited influence on English, being perhaps most familiar in the fields of plane and solid geometry. Here are two such groups:

-γωνον (γωνια, **gōnia**, “angle”) > E *-gon: tetragon, pentagon, hexagon, octagon, trigonometry* (τριγωνομετρια, **tri-gōn-o-metria**, “triangle measure”);

-έδρον (έδρα, **hedra**, “seat,” “base”) > E *-hedron: tetrahedron* (a three-dimensional solid), *hexahedron* (e.g., a cube), *octahedron*, *dodecahedron* (12), *polyhedron.*

Students of literature will recognize the words *dimeter, trimeter, pentameter, hexameter*, all of which combine numerals with **metron** to count the “measures” in a verse of poetry. A *triptych* (πτυχη, “fold”; = L **triplex**), is an altarpiece or other work of art in three sections. Since antiquity, the Olympic games have had a *pentathlon* (ἀθλον, “contest”; cf. ἀθλητης, E *athlete*); today we have a *heptathlon* and a *decathlon*.

1. The *protagonist* was the leading actor in a Greek tragedy; there was also a *deuteragonist* and usually a *tritagonist*. In any modern dramatic situation, there can be only one *protagonist*; sometimes people refer to “the two *protagonists*,” when they probably mean “the two *antagonists*.”

§127. Interesting Words

From L **unus** came the abstract noun **unitas** (“oneness”), whence E *unity*. There was a Latin synonym **unio**, source of E *union*—and, believe it or not, of *onion*. L **unicus** gave us *unique*. The Latin noun **quadra** (“square”) clearly shows its numerical origin; English *square*, *squad*, and *squadron* are all well disguised derivatives of vulgar Latin ***exquadra**. The poet Horace popularized the term *sesquipedalian*, used humorously to describe words “one and a half feet” in length. Number systems based on twelve are called *duodecimal*, from L **duodecem** (12), ultimate source of E *dozen*, a French transmission. (Only a mischievous librarian would claim that *duodecimal* is related to Dewey Decimal.)

It is perhaps confusing that English forms in *tri-* may be from either Latin or Greek. Some Latin derivatives include *triangle, tricolor, triennium, trimester* (3 months), *trisect*, and *triumvirate.* A bang-up Latin “**tri-**” word is TNT (*tri-nitro-toluene* = $C_7H_5N_3O_6$). Greek derivatives in English include *trilogy, trimeter, tripod, triptych, trilobite* (a Palaeozoic fossil with 3 lobes), and *triceratops* (**tri-cerat-ops** < τρι- + κερας, κερατ-ος, “horn” + ὀψ, “face”)—one of many familiar dinosaurs[1] to bear a thoroughly Greek name.

SPECIAL NOTE: The next two sections (§128 and §129) are inserted for those who are curious to explore the nomenclature of the metric system and other specialized aspects of numerical terminology. **The two sections are intended for reference only.** Readers with less interest in these matters may skip immediately to §130.

1. E *dinosaur* < modern Latin **dinosaurus** < G δεινος (“terrible”) + σαυρος (“lizard”).

§128. The Metric System

The METRIC SYSTEM was developed in France during the decade that followed the French Revolution (1790-1799); the terminology was all drawn from Greek or Latin. The SYSTÈME INTERNATIONAL (SI) is a 20th century refinement and extension of metric, formally approved in 1960; its terminology goes beyond Greek and Latin. An excellent summary can be found in the *Encyclopedia Britannica*.

		Some original metric measures:
length	**METRE**	(< G μετρον): originally defined as "one ten-millionth part of a meridional quadrant of the earth" (the quadrant of the earth's circumference running from the North Pole through Paris to the equator)
area	**ARE**	(< L **area**): 10 m x 10 m (= 100 m^2) HECTARE (100 ares): 100 m x 100 m (= 10,000 m^2)
mass	**GRAM**	(< Late L **gramma**, "small weight" < G γραμμα): 1 cc of distilled water at maximum density (4°C), weighed *in vacuo*
volume	**LITRE**	(< ML **litra** < G λιτρα, "a measure"): a cube 10 cm x 10 cm x 10 cm (1,000 cc); thus l litre of pure water has a mass of 1 kg
	STERE	(< G στερεος): 1 cubic metre, or a cube 100 cm x 100 cm; thus 1 stere is equivalent to 1 kilolitre.

Prefixes in SI Measurement:

	Multiple	*Prefix*	*Symbol*	*Etymology*		
trillion	10^{12}	**tera-**	T	G	τερας	"monster"
billion	10^{9}	**giga-**	G	G	γιγας	"giant"
million	10^{6}	**mega-**	M	G	μεγας	"big"
thousand	10^{3}	**kilo-**	k	G	χιλιοι	
hundred	10^{2}	**hecto-**	h	G	ἑκατον	
ten	10	**deka-**	da	G	δεκα	

	Submultiple	*Prefix*	*Symbol*	*Etymology*		
tenth	10^{-1}	**deci-**	d	L	decem	
hundredth	10^{-2}	**centi-**	c	L	centum	
thousandth	10^{-3}	**milli-**	m	L	mille	
millionth	10^{-6}	**micro-**	μ	G	μικρος	small
billionth	10^{-9}	**nano-**	n	G	νανος	dwarf
trillionth	10^{-12}	**pico-**	p	It.	*piccolo* (?)	small
quadrillionth	10^{-15}	**femto-**	f		Dan./Norw.	*femten* (15)
quintillionth	10^{-18}	**atto-**	a		Dan./Norw.	*atten* (18)

§129. English Number Names Beyond One Million

Wherever English is spoken, the figure 1,000,000 (10^6) has the English name of *million* (< MF *milion* < OIt. *milione*, an augmentative derived from L **mille** (1,000). Etymologically, then, a million is a "big thousand."

Number words beyond a million are formed from Latin numeral prefixes plus the spurious base **-(i)llion** (by analogy from *million*). The nomenclature is confusing, for two reasons:

1. The numerical values differ in American and British usage.

2. The words themselves combine two sets of standard Latin prefixes. (If the usual Latin sequence had been followed, *quintillion* and *sextillion* would be *quinquillion* and *sexillion*.)

Except for the British *milliard*, which was adopted from French in 1823, most of these words date from the late 17th century.

	AMERICAN USAGE		BRITISH USAGE	
		Number of groups of three 0's after 1,000		Powers of a million
10^9	*billion*	2	*milliard*	—
10^{12}	*trillion*	3	*billion*	2
10^{14}	*quadrillion*	4		
10^{18}	*quintillion*	5	*trillion* (1690)	3
10^{21}	*sextillion*	6		
10^{24}	*septillion*	7	*quadrillion* (1674)	4

§130. Exercises, Chapter 20

A. Give schematic analyses and definitions for the following words, all of which contain numerical roots. Indicate whether the source is Greek or Latin.

e.g.,	centipede	< L cent(i)- (hundred) + -pede (foot); “having 100 feet.”
1.	hexameter	_____
2.	tripod	_____
3.	quadrangle	_____
4.	octahedron	_____
5.	duplicate	_____
6.	hemisphere	_____
7.	millennium	_____
8.	quinquefoliate	_____
9.	dyarchy	_____
10.	sexagenarian	_____

B. Using the format given in §117, write out analyses for the following English words:

1. *polychrome* _____
2. *leukemia* _____
3. *trigonometry* _____
4. *geomorphology* _____
5. *photophobia* _____

For **Key to Exercises (Greek)**, see **Appendix III**.

Chapter 21: Greek Prefixes

§131. An Approach to Greek Prefixes

In the last two chapters you have met Greek-derived forms that we might consider prefixes in English—*neo-*, *poly-*, *mono-*, *penta-*, and *kilo-*, for example. There is nothing wrong with calling them prefixes, in the general sense of that term. Strictly speaking, however, they are better described as combining forms or adaptations of Greek adjectives and numerals. Now, in Chapter 21, you will meet a full repertory[1] of Greek prefixes.

As usual, the best preparation for a new Greek topic will be to review its parallel in Latin—in this case, Part I, Chapter 8 (especially the summary in §59). As each new Greek prefix is introduced in the coming pages, ask yourself whether it has a Latin counterpart that may play a similar semantic role in English word formation. You will see, in fact, that a column of suggested Latin "equivalents" is provided. Be forewarned, however, that these are not always exact counterparts. Because Latin and Greek are closely cognate, some verbal elements match almost perfectly; but the two languages did, after all, belong to different branches of the Indo-European family.

Let us approach the problem gently by examining five Greek prefixes that are fairly straightforward: **a(n)-**, **anti-**, **eu-**, **dys-**, and **syn-**.

1. **a-** (ἀ-), sometimes known as ALPHA PRIVATIVE, is the prefix that corresponds to English *un-* or Latin **in-**, meaning "not" or "without." Before a base beginning with a vowel it changes to **an-** (ἀν-). Examples in English include *atheist, atheism, atom, amorphous, achromatic, amnesia*[2]*, amnesty, aphasia, apathy, asbestos;* and (with **an-**) *anarchy, analgesic, anaesthetic, anonymous, anomaly, anaemia,* and *anorexia* .

2. **ant(i)-** (ἀντι-) is a prefix that we can easily recognize as meaning "against" or "opposite." However we must be careful not to confuse it in English with the very different Latin prefix **ante-** ("before"). Examples: *antonym, antagonist, antarctic, antidote, antipathy, antiphony, antipodes, antiseptic*.

3. **eu-** (ἐυ-), an adverb meaning "well," was also used as a prefix; cf. Latin *bene-*. Examples: *euphony, eugenic, euthanasia, eurhythmic, euphoria, euphemism.*

4. **dys-** (δυσ-), provides the opposite to **eu-**, since it means "badly" or "hard"; it is something like Latin *male-*. Examples: (*dyslexia, dysphasia, dysentery, dysgenesis, dysphoria) (euphoria, dysphemism) (euphemism, dystopia) (utopia* (<οὐτοπια, "no place").

5. **syn-** (συν-) is very much like Latin **con-**, meaning "with," "together." Like **con-**, it may also show

1. A repertory is a collection or storehouse (L **repertorium**, "a place where things are found"). The doublet *repertoire* is usually preferred to identify the body of works that a creative artist is able to perform.
2. The root in *amnesia* (**a-mnēsia**, "no memory") is μνη- ("memory") that we met in *Mnemosyne* (§104). An *amnesty* (**a-mnēstia**) is another form of not remembering.

ASSIMILATION. Examples: *synonym, synagogue, synchronism, syndrome, syncopate, symbiosis, symmetry, symphony, symposium, symptom, syllable.*

§132. A Summary of Greek Prefixes

GREEK PREFIX	ENGLISH MEANING	= LATIN?	ENG. EXAMPLES
a-, **an-** (ἀ-, ἀν-)	not, without, *un–*	**in-**	*atheist, anarchy*
amphi- (ἀμφι-)	about, on both sides	**ambi-**	*amphitheatre*
ana- (ἀνα-)	up, back, again	**(re-)**	*anagram, analysis*
anti- (ἀντι-)	against, opposite	**ob-, contra-**	*antipodes, antonym*
apo- (ἀπο-)	away from	**ab-**	*apostolic, apogee*
cata- (κατα-)	down (etc.)	**de-**	*catastrophe*
dia- (δια-)	through, across	**per-, trans-**	*diameter, diagonal*
dys- (δυο-)	badly, hard	**mal(e)-**	*dyslexia, dysentery*
ec-, **ex-** (ἐκ-, ἐξ-)	out of	**e(x)-**	*eccentric, exodus*
en- (ἐν-)	in	**in-**	*endemic, energy*
epi- (ἐπι-)	upon, on (etc.)	**in-**	*epitaph, epidermis*
eu- (εὐ-)	well, (true)	**bene-**	*eugenic, euphemism*
hyper- (ὑπερ -)	over	**super-**	*hyperbole*
hypo- (ὑπο-)	under	**sub-**	*hypothermia*
meta- (μετα-)	over, beyond; change	**(trans-)**	*metamorphosis*
para- (παρα-)	beside, alongside	**(ad-)**	*paragraph*
peri- (περι-)	around	**circum-**	*periscope, perimeter*
pro- (προ-)	before; forward	**prae-, pro-**	*prophet, program*
pros- (προσ-)	towards; in addition	**ad-**	*prosody, prosthesis*
syn- (συν-)	with, together	**con-**	*synonym, symmetry*

§133. Exploring Greek Prefixes

Summaries of the type just presented are always a little overwhelming. Let us look for some short-cuts and strategies for learning the list.

Tackle first those prefixes that are obvious. In addition to the five we encountered in §131, you can deal easily with **amphi-** (“on both sides”) and **peri-** (“around”), which are quite uncomplicated. For the one, think of *amphitheatre* and *amphibious*; for the other, *perimeter, periscope, periphery, peripatetic,* and *periphrasis.* The prefix **dia**– is also fairly straightforward: *diameter* (“measure across”), *diagonal* (“through the angle”), *diatonic* (“through the tones”), *diaphragm* (“fence across”), and *diaphanous* (“showing through”). Like its Latin cognate, Greek **pro-** can mean “before” or “forward”: *prophet* (“before speaker”), *prophecy, prophesy, proscenium, prostate, prophylactic, program, problem* (see §137). Though they look much alike, **hyper-** (“over”) and **hypo-** (“under”) are easy opposites. English has the hybrids *hyperactive* (“That kid is *hyper!”*) and *hypertension*, plus *hyperbole, hyperbola,* and *hyperthermia* (a hot-tub ailment). In contrast, **hypo-** yields *hypodermic, hypothesis, hypochondria,* and *hypothermia.*

In some usages, **ana-** and **cata-** are also opposites, meaning “up” and “down.” An *anabasis* (“going up”) is the opposite of a *catabasis* (“going down”), but those words are rare and exotic. More common are *analysis* and *catalysis*, where *-lysis* is a “loosening.” *Anatomy* makes sense as “cutting up.” The force of **cata-** is apparent in *catastrophe* (“turning down”), *cataclysm* (“flooding down”), *cataract* (“breaking down”), and *catalepsy* (“seizing down”), but it is less clear in *catalogue*. Don’t be surprised or discouraged if you have trouble making the semantic connection between certain Greek prefixes and some of their English derivatives.

The Greek prefixes **apo-** and **ec-** (**ex-**) correspond quite closely to their Latin cognates **ab-** and **ex-**. The meaning “away from” is clear in *apostle* or *apostolic* (verb base “send”), *apogee* (ἀπο-γη), and *apostrophe* (originally a rhetorical “turning away”). What is an *apotheosis*? Something *eccentric* (ἐκ + κεντρον + -ικος) is “out of centre.” Can you work out the etymological meanings of *eclectic*, *exodus*, and *ecdysis?* The last is the action of the snake slipping out of its skin, or the larva shedding its cocoon. It was H.L. Mencken who used that notion to coin the impeccable Greek form *ecdysiast*, to describe a strip-tease dancer.

The difference between **en-** and **epi-** is basically the difference between *in* and *on* (or *upon*). A condition that is *endemic* (< δημος) is more ingrained than one that is *epidemic*—though the latter may be more alarming. Relatively few English words are derived from **en-**: *energy*, *enema*, *enthusiasm*—originally, a feeling that one had a god (θεος) inside one’s body. There are many more from **epi-**: *epigram, epitaph, epidermis, epiglottis, eponym, eponymous, ephemeral* (< ήμερα, “day”). An *eponym* is a famous or notorious proper name that has been placed

"upon" some object, process, condition, concept, etc.: *Braille, boycott, pasteurize, cardigan, quisling, valentine, roentgen, Alzheimer's* Disease. A mysterious 18th century English physician, the apocryphal Dr. Condom, may be the eponymous hero of the prophylactic rubber sheath—though that etymology was questioned in the *Oxford English Dictionary.*

There are only three prefixes on the list that have not yet been mentioned. **Pros-** (usually "in addition") is quite rare, occurring in the words *prosthesis* and *prosthetic*—referring to an artificial limb or other device that is "placed in addition." **Meta-** suggests a carrying over or beyond, like Latin **trans-**, and will sometimes connote change: *metaphor, metamorphosis, metathesis, metastasis, metaphysics.* Finally there is **para-**, which most often means "beside" or "alongside." The *paragraph* originally got its name from the symbol (now ¶) that was "written beside" it in the margin. A *paradox* is an opinion that stands beside or contrary to the norm. A *paraplegic* is one who has been struck at the side (*paralyzed*), as opposed to a *quadriplegic*, who has lost the use of all four limbs. Note also *paraphrase*, *parallel* (par-allel, "beside one another"), and *paraphernalia*, a word related to a bride's dowry. In 20th century English, *para-* has been further extended in uses like *parapsychology* and *paramedic.*

There are some deceptive *para-* forms in English that have nothing to do with the Greek prefix. From Latin **parare** ("prepare"), Italian derived a combining form that meant a "shield" or "protection." A *parachute* will protect us from falling, just as a *parasol* will shield us from the sun. A *parapet* (It. *parapetto*) was originally meant to protect the chest (L **pectus**). Because you have long since learned to take nothing for granted in word study, you won't be surprised that English has two different forms spelled *para-*. It is certainly risky to leap to etymological conclusions merely on the basis of superficial appearances.

In lieu of exercises for Chapter 21, look up some of the italicized English words that have appeared in this section. But don't worry too much about Greek vocabulary that is completely unfamiliar. There is a strong likelihood that many of those strange-looking words contain Greek verb bases that we'll meet in the next chapter. You may recall that it was hard to get full control of Latin prefixes until we had studied some verb roots. That problem applies also to our work in Greek.

Here's another short and snappy assignment. Now that we've surveyed the whole field of Greek prefixes, how many English derivatives can you list from the noun ὀνυμα (ὀνοματ-)?

Chapter 22: Greek Verbs and their Derivatives

§134. The Greek Verb in English Vocabulary

As a general principle, we have observed that Greek words tend to show up in English with less systematic predictability than do Latin forms. In Part I of the course, we could learn half a dozen Latin adjectival suffixes (for example) and then predict the exact spelling that many complicated Latin words were likely to assume in English. We could study the Latin present participle and produce immediately a page or more of English words that perfectly reflect that form. Etymological history hasn't been that neat on the Greek side. In our work with Greek vocabulary, therefore, we are emphasizing basic roots and stems, more to recognize the meaning of English derivatives than to explain their form.

For this and other reasons, there is little point in making a systematic assault upon Greek verb morphology. The present infinitive will be mentioned out of academic interest, but you won't have to study the perfect and present participles—though both those grammatical forms do exist. We are going to concentrate almost entirely on gaining familiarity with the Greek **VERB ROOTS** that have had the greatest influence on English. For the first time in the course, you will be asked to study word roots in isolation, without worrying about their historical use within whole words. You will be shown how some of these roots act as bases in the formation of other parts of speech, and you will be given guidance in understanding their English derivatives; but no attempt will be made to familiarize you with the actual Greek verb system.

§135. A Sampling of Greek Verb Roots

To illustrate our approach, let us take five different Greek verbs and show how a knowledge of their roots alone will help us understand a lot of English vocabulary. The present infinitive forms will also be listed, if only to prove that they are really irrelevant to English. Much more importantly, you'll be given a few simple rules for creating Greek nouns and adjectives from verb roots. Though you will not gain any grammatical insight into the Greek verb, you will emerge from this short experiment with the basic equipment that you need to cope with Greek verb derivatives in English.

Table 22.1: **TRIAL SAMPLE OF GREEK VERBS**

VERB ROOT		ENGLISH MEANING	PRESENT INFINITIVE	
θε-	**the**–	"place"	τιθεναι	("to place")
δο-	**do**–	"give"	διδοναι	("to give")
στα-	**sta**–	"stand"	ἱσταναι	("to stand")
κρι-	**kri**–	"divide," "judge"	κρινειν	("to judge")
λυ-	**ly**–	"loosen," "set free"	λυειν	("to loosen")

As always, the root is the minimal element of meaning. Though θε- and δο- could not stand alone in Greek speech, they were the sounds that made the Greek ear register the idea of "placing" and "giving," respectively. The infinitives τιθεναι and διδοναι are examples of actual words formed from verb roots—you can see the two roots at their heart. One may well ask, however, whether there is any point in learning these complicated Greek forms (unless it is to recognize them when they occur in major English dictionaries). From our examples above, it would appear that the Greek present infinitive may end either in -ναι or in -ειν. Greek τιθεναι is the equivalent, in form and meaning, of Latin **ponere**, whereas Greek διδοναι corresponds with Latin **dare**. (The roots δο- and **da-** are cognate.)

We'll completely ignore the question, "How did the Greeks use these roots to express verbal concepts?" Instead, let's ask, "How did the Greeks form other parts of speech in which these verb roots have affected English?" Here is one answer. It was common practice in Greek to add the suffix -σις (**-sis**) to a verb root in order to create an abstract noun. Therefore Greek had a noun θεσις (**the-sis**) that meant "a placing." We may compare it with its Latin parallel from **ponere**, the abstract noun **positio** (**posit-io**). Although they are not really synonyms, *thesis* and *position*—English words with the same etymological meaning—do have some semantic relationship. The Greek form may be adapted in English: δοσις (**do-sis**), "a giving," is the etymon of English *dose*.

If θεσις means “a placing,” then συνθεσις (**syn-thesis**) is “a placing together,” ἀντιθεσις (**anti-thesis**) is “a placing against,” and ὑποθεσις (**hypo-thesis**) is “a placing beneath.” Would you agree that the Greek derivatives *synthesis* and *hypothesis* have semantic links with the parallel Latin derivatives *composition* and *supposition*? A *metathesis* is a “change” (μετα-) in placement—for instance, a *transposition* of two letters of the aplhabet—oops, I meant alphabet. A *prosthesis* (cf. §133) is something “placed in addition” (προσ-), like an artificial limb. We see two Greek prefixes at work in the noun παρενθεσις (**par-en-thesis**), a device for placing something in and beside.

Moving down our experimental list of verb roots, we can assume that the same noun suffix will be added to στα- to produce στασις, “a standing”; and we may be familiar with the English word *stasis* (used, for instance, of a fluid stoppage in human physiology). More interesting, perhaps, is ἐκστασις (**ek-stasis**), source of the English word *ecstasy*. In Greek mystery religions, you achieved the state of *ecstasy* when you had the feeling that you were “standing outside” your body, thus allowing the god to come inside (ἐνθυσιασμος, E *enthusiasm*). The medical term μεταστασις (**meta-stasis**) describes the “change of standing” when a cancer moves from one part of the body to another.

From the verb root κρι- (**kri-**, “divide,” “judge”) there is only one noun of this type—κρισις; a *crisis* is a moment of division or judgement. (Note also *criterion* < κριτηριον). However, from the verb root λυ- (**ly-**, “loosen”) we have a bonanza of English noun derivatives (all pure Greek): *analysis*, *catalysis*, *paralysis*, *dialysis*, and *psychoanalysis.* Several of these were discussed in the last chapter, but now you will be better equipped to understand their form. If the Latin translation of λυειν (“to loosen”) is **solvere**, then an *analysis* is perhaps equivalent to a *resolution* (**resolutio**).

Before we leave our trial group of verb roots, let us become acquainted with two other Greek suffixes used in verb derivatives.

Whereas the suffix **-sis** was added to verbs to form abstract nouns, the suffix **-ma** (**-ma**) was similarly used to create concrete nouns. The only example apparent in our trial group is θεμα (**the-ma**), source of English *theme*. There are some other verbal derivatives of this type that have entered English without change: *drama* (< δρα-, “do”), *dogma* (< δοκ-, “think”), and *cinema* (κινη-, “move”). Others have been adapted in spelling, like *poem* (< ποιν-, “make”; cf. ποιν-της > L **poeta**, “maker”).

Finally, you should meet the suffix -τικος (**-tikos**), which will turn a Greek verb root (or base) into an adjective. Don’t confuse it with the suffix -ικος (**-ikos**), which converts a Greek noun base into an adjective. From our list of sample verbs, we can at once spot English words like *synthetic* (συνθετικος, **syn-the-tikos**), *hypothetical* (ὑποθετικος, **hyp-o-the-tikos** + L **-alis**), *critic* (κριτικος, **cri-tikos**), *static* (στατικος, **sta-tikos**), *ecstatic* (ἐκστατικος, **ek-sta-tikos**), *analytic* (ἀναλυτικος, **ana-ly-tikos**), *catalytic* (καταλυτικος, **kata-ly-tikos**), and *paralytic* (παραλυτικος, **para-ly-tikos**).

With this theoretical and practical[1] knowledge at our disposal, we can now survey a number of common Greek roots, trying out each of these suffixes in turn.

1. E *theoretical* < θεωρη-, "observe," "speculate"; *practical* < πραγ-, "do," the source also of *pragmatic*.

§136. Greek Verb Roots and English Derivatives

This section will consist of a series of Greek verb roots, presented in tabular form. Try to relate each verb's original meaning to the semantic force of its English derivatives—the connection may not always be apparent. Don't be surprised if a Greek verb has more than one root form; often these are different ABLAUT grades, as in English *swim, swam, swum*.

Table 22.2: **OTHER GREEK VERBS AND THEIR DERIVATIVES**

VERB ROOT (English meaning)	ENGLISH DERIVATIVES
gen-,[1] **genē-**, **gon-** (be born)	*genesis, dysgenesis, genetic, gene, eugenics, gonad, gonorrhoea, cosmogony, theogony, oxygen, hydrogen, pathogen(ic), carcinogen(ic), parthenogenesis* (< παρθενος, "virgin")
path-, **pathē-** (suffer, feel)	*pathos, pathetic, sympathy, empathy, apathy, apathetic, antipathy, antipathetic(al), pathology, psychopath*, etc.
pher-, **phor-**, (bear, carry)	*periphery, euphoria, dysphoria, semaphore, phosphorus, phosphorescence* (form?)
leg-, **log-**, (speak; gather)	*-logy* (-λογια, §110), *dialect, dialectic, eclectic, dialogue* (διαλογος > L **dialogus**), *monologue, prologue, epilogue, apology, eulogy, anthology*
graph-, **gram-** (write)	*-graph* and *-graphia* (-γραφος, -γραφια, §110); *gram, anagram, diagram, epigram, program(me), programmatic, telegram, grammatical, grammar*
skop-, **skep-** (watch, examine)	*-scope* and *-scopia* (-σκοπος, -σκοπια, §110); *sceptic (skeptic), scepticism, episcopal, bishop* < ἐπισκοπος ("overseer")
trop- (turn)	*trope, tropic(al), tropism, heliotrope*
stroph-, **streph-** (turn, twist)	*strophe, antistrophe, apostrophe, catastrophe, streptococcus*
stol- (send)	*apostle, apostolic, epistle, diastole*
kryp-, **kryph-** (hide)	*crypt* (κρυπ-τος), *cryptic* (κρυπ-τικος), *apocryphal cryptogram*
phy- (grow)	*neophyte*; G φυσις = L **natura**; *physics, physical, metaphysical, physio-*
aisthē- (feel, perceive)	*aesthete, (a)esthetic, anaesthetic, anaesthesia*
agōg- (lead)	*synagogue, demagogue* (δημ-αγωγος), *pedagogue*
ball-, **bol-**, **blē-** (throw)	*ballistics* (via Latin), *symbol, problem, emblem, hyperbole, hyperbola, parabola, parable, diabolic(al), anabolism, embolism, metabolism*
pha-, **phē-** (speak)	*aphasia, dysphasia, euphemism, dysphemism, prophet* (προφητης > L **prophēta**), *prophetic, prophecy* (προφητεια), *prophesy, blaspheme*
pha(i)n, **pha-** (show, appear)	*phase, emphasis, emphatic, phenomenon* (pl. *-a*), *epiphany, theophany, diaphanous, phantasy (fantasy* and *fantastic* show Latinized spelling)
hora-, **op(t)**– (see)	*optic* (ὀπ-τικος), *synopsis, synoptic, autopsy, biopsy, optometrist, optician* (hybrid), *panorama, cyclorama, diorama*
rheu-, **rho-**, **rheo-** (flow)	*rheum, rheumatic, rheumatoid, rheostat, catarrh, diarrhoea (diarrhea), gonorrhoea*
tak- (arrange)	*syntax* (συνταξις < *sun-tak-sis), *tactic(al), tactician, taxidermy*

1. cf. Latin **gen-**, as in **genus**, **generis**; *progeny* and *progenitor* are Latin derivatives.

§137. Interesting Words

The word *euphemism* appeared in Chapter 1 (§5) of this course. Its form is excellent Greek: εὐ-φημ-ισμος, "an act of speaking well." (There was an ancient Greek adjective εὐφημος, which meant using only words of good omen.) Our society invents euphemisms in order to soften unpleasant or distasteful facts—or even to hide them completely. If it is too painful to say that a beloved parent has "died," then he or she has "passed away." Bodily functions are obvious candidates for euphemistic treatment; even in a forest wilderness, many people will still speak of "going to the bathroom." Bureaucrats couldn't survive without these tools of camouflage. When the B.C. Government announced a new policy of park management several years ago, citizens were astounded to discover that "recreation area" meant a park zone where mining would be encouraged. There are vigilant word-lovers who devote all their energies to collecting and documenting new gems of this kind. An all-time classic emerged from the Gulf War of 1991—"collateral damage" for "civilian deaths." As writers from Thucydides to Orwell have observed, plain truth is the first casualty of war.

Far less familiar is the opposite term, *dysphemism*. Just as it may be genteel to say that someone has "passed away," so too can we brutalize the event by saying that the person "croaked" or "kicked the bucket." The sex act is given dignity by the euphemism "make love," but it is hardly ennobled by the dysphemism "screw." Street language has many dysphemisms; in Cockney rhyming slang, a man's wife is her husband's "trouble and strife."

You have probably noticed that the Greek root **pha**– (φα-) is common to two different verbs, meaning "speak" and "show." In English, *aphasia* (ἀ-φασ-ια) is inability to speak, whereas a *phase* (φασ-ις) of the moon is one of its appearances. One might suppose that *emphasis* (ἐμ-φασ-ις) was related to speaking, but it was originally a rhetorical means of showing or indicating. Fortunately, the other roots of these two verbs can't be confused; for instance, that wonderful word *diaphanous* has (dare we say it?) a "transparent" etymology. In the annals of British Columbia politics, the saga of *Fantasy* Gardens was a *fantastic phenomenon*.[1] Check out the words *phantasmagoria* and *sycophant*; the last has the weird and obscure etymological meaning of "fig-shower."

A complex of fascinating words has evolved from Greek βαλλειν, "to throw," which has the roots **ball-**, **bol-,** and **blē-**. A *problem* (προ-βλη-μα) is something "thrown forward" (a Latin *project*, perhaps?). *Hyperbole* and *hyperbola* are rhetorical and mathematical doublets that suggest "a throwing above." Two other doublets are *parabola* and *parable*—both derived from παραβολη, "a throwing beside," "a comparison." By a strange semantic development, the Late Latin adaptation **parabola** acquired the meaning "word," and its denominative

1. Our word *phenomenon* is derived from φαινομενον ("something appearing"), a present participle of φαινειν. Although the αι diphthong became Latinized and then reduced to *e*, the Greek neuter ending survived. Thus the correct plural form is, of course, *phenomena*.

verb **parabolare**, the meaning “talk.” Here is the source of French *parole* and *parler*, and of English *parlor, parley,* and *parliament*. The verb διαβαλλειν (literally, “throw across”) suggested hurling slander or abuse; and the noun “Slanderer”—διαβολος (L **diabolus**)—became eventually the *Devil* (cf. *diabolical*). Those who are cynical about the parliamentary process may be pleased to learn that Old Nick is a linguistic cousin of every M.P in Ottawa.

Chapter 23: Some Medical Terminology

§138. General Vocabulary (Greek and Latin)

ENGLISH	GREEK AND/OR LATIN EQUIVALENTS
healer	G ἰατρος (adj. ἰατρικος) = L **medicus** (adj. **medicinus**, LL **medicalis**) **medicare**, **medicatus**; [**ars**] **medicina**
treat	G θεραπευ-ειν (adj. θεραπευ-τικος); θεραπεια (“treatment”)
doctor	< L **doctor** (**docēre**, **doctus**, teach)
surgeon	< G χειρουργος (χειρ, “hand” + ἐργον, “work”) > L **chirurgus**
physician	< G φυσικη τεχνη (physikē technē); cf. E *physic*
poison	< L **potio** = G τοξον (orig. “bow”; adj. τοξικος) = L **virus** (adj. **viralis**)
drug	< OF *drogue* = G φαρμακον = L **medicamentum**

§139. Standard Medical Suffixes (all Greek)

The following will often be attached by the combining vowel -o-, as in *rhin-o-plasty*.

-ist	-istēs (-ἰστης)	(creates agent noun; L **-ista**)
–itis		inflamed condition
–ōsis		abnormal condition
–ōma		morbid affection (a growth, L **tumor**)
-iasis		disease, abnormal condition
-tomy	-tomia	cutting; cf. L **incision**– (**caedere**, **caesus**)
-ectomy	-ektomia	cutting out; cf. L **excision-**
-stomy	stom(at)-	mouth, opening; cf. L. **or-i-ficium** > E *orifice*
-plasty	plass-/plast-	shaping, moulding
-rrh(o)ea	rhe- (-rhoia)	flow, discharge (e.g., διαῤῥοια)
-rrhagia	rhag-/rheg-	rapid discharge
-rrhexis	rhag-/rheg-	bursting; cf. L **ruptura** (*rupture*)
-rrhaphy	rhapt-/rhaph-[1]	stitching; cf. L **sutura** (*suture*)

1. This is the root that appears in *rhapsode* (an ancient Greek “song-stitcher”) and *rhapsody*.

§140. A Polyglot Guide to Human Anatomy

The following lexicon should not be taken too seriously. It is a rough-and-ready attempt to match up names of human body parts and organs in English, Greek,[1] and Latin. Any serious effort to learn anatomical and medical terminology should be a task of many weeks, even months; a two-page summary can only provide a glimpse of what is required. Nevertheless, it is remarkable how few specialized roots one needs to learn, after a course of this kind, in order to manage quite well in recognizing—if not fully understanding—highly technical medical terms.

You will see at once that some of the words below are seldom if ever used in scientific discourse; those forms are provided merely for the sake of comparison.

A. The Head and Mouth				NOUN	ADJECTIVE
E	*skull*	G	cranion	L > **cranium**	
	head		cephalē	**caput**, **capit-**	**capitalis**
	brain		encephalos	**cerebrum**	**cerebralis**
	eye		ophthalmos	**oculus**	**ocularis**
	ear		ōt-	**aur-is**	**auralis**
	nose		rhin-	**nasus**	**nasalis**[2]
	mouth		stom(at)-	**os**, **or-is**	**oralis**
	lip		cheil-	**labium**	**labialis**
	tooth		odont-	**dens**, **dent-is**	**dentalis**
	gum			**gingiva**	**gingivalis**
	tongue		glōssa	**lingua**	**lingualis**

1. The Greek transliterations use κ > c and χ > ch, so that the words may be more easily recognized.
2. From the Latin verb **olfacere** ("smell") is derived the English adjective *olfactory.*

B. The Digestive System (the alimentary canal < L **alere**, "nourish")

E	throat, gullet	G	(o)eso-phag-**us**	L	**gula** (non-medical)
	belly, maw		gastēr, gastr- stomachos		**ventr-** (dim. **ventriculum**) > **stomachus**
	small intestine ("innards")		enteron (< entos)		**intestinum** (< **intus**) **duodenum** ("12" [fingers]) **jejunum** ("hungry") **ileum**
	liver		hēpat-		**jecur** (non-medical)
	pancreas		pancreat- ("all flesh")		
	large intestine		cōlon (orig. "limb") prōctos		**c(a)ecum** ("blind") +[**colon**] **rectum** ("straight") + **anus**

At the risk of appearing *scatological*, we can deal briefly with the end product (or by-product) of the alimentary canal. The old English word *shit* has an etymology that links it with the Greek root σχιζ- ("split"), source of E *schism*, *schist*, and *schizophrenia*. Greek σκωρ, σκατ-ος (whence *scatological*) may be matched with Latin **excrementum**; the words for animal dung were κοπρος and **stercus**. (Some mushrooms may be described as *coprophilic*, and disgusting speech is known as *coprolalia* —"dung talk.") E *feces*, now a standard technical term for excrement, is derived from a Latin word that had nothing to do with excretion: L **faeces** ("wine-dregs") still meant "dregs" or "sediment" in English until 1639. Etymologically speaking, therefore, *defecate* means "to get the dregs out."

C. The Respiratory System

E	breath breathe	G	pneum(at)- pne-	L	**spiritus** **respirare, respiratus**
	throat		pharynx, pharyng-		
	voice-box		larynx, laryng-		
	windpipe		trachea		
	2 tubes		bronchi		**bronchi-ole** (mod. dim.)
	lung		pneumōn-		**pulmo, pulmon-is**

D. The Circulatory System (cardiovascular)

E	heart	G	cardia	L	**cor**, **cord-is**
	blood		h(a)em(at)-		**sanguis**, **sanguin-is**
	vessel		angeion (> angi-)		**vas** (dim. **vasculum**)
	artery		artēria		
	vein		phlebs, phleb-os		**vena**
	clot		thrombos		

E. The Urinary-Reproductive System (urogenital)

E	G	L
kidney	nephros	**renes** (plural)
bladder	cyst-	**vesica** (dim. *vesicle* = *cyst*)
urine	ouron (> ur-)	**urina**
male:		
testicle	orchid-	**testis** (pl. **testes**; dim. **testiculus**)
penis	phallos	**penis** (vulg. **mentula**, F.)
sperm	sperm(at)- gonos	**semen**
		vas deferens
female:		
breast	mastos (M.)	**mamma**
egg	oon	**ovum**
ovary	oophoron	**ovarium**
womb	hystera	**uterus** (M.); also **matrix**
vagina	colpos	**vagina** (“sheath,” “scabbard”) [vulg. **cunnus**, M.]
month	mēn-	**mensis**, plural **menses**
monthly		**menstruum** (> **menstru-are**)

§141. Exercises, Chapter 23

The terminology in §140 is a tiny sampling of the hundreds of anatomical terms derived from Greek and Latin; similar lists could be devised for the nervous system, bone structure, musculature, skin and cells, etc.

Here are some sample words to explore and analyse. No key is provided.

psychiatrist	stomatodysodia	h(a)emorrhoid
pharmacist	= halitosis	thrombosis
pharmacology	gingivectomy	nephritis
toxicology	cheilocarcinoma	nephrosis
hydrotherapy	gastroenteritis	nephrolithiasis
hydrocephaly	gastrorrhaphy	menopause
encephalitis	hepatopath	menorrhagia
encephalogram	phlebitis	dysmenorrhea
elephantiasis	ophthalmophlebotomy	hysterectomy
ophthalmoscope	ileitis and colitis	hysterooophorectomy
rhinometer	colostomy	monorchidism
rhinorrhagia	dyspnea	cryptorchidism
otoplasty	orthopnea	orchidectomy
otoscopy	tracheotomy	spermatogenesis
otopyorrhea	tracheostomy	gonorrhea
G πυον = L **pus**	cardiography	proctologist
myxorrhea	angiorrhexis	proctoscope
G μυξα = L **mucus**	angioplasty	perihysteric
otorhinolaryngologist	h(a)emorrhage	pneumogastric

§102. Exercises, Chapter 15

A.	1.	ἀγων	agōn	13.	λαβυρινθος	laburinthos
	2.	χορος	khoros	14.	χρυσανθεμον	khrusanthemon
	3.	σκηνη	skēnē	15.	ζωδιακος	zōdiakos
	4.	γενεσις	genesis	16.	παθητικος	pathētikos
	5.	ἐξοδος	exodos	17.	ὀλιγαρχια	oligarkhia
	6.	ψυχη	psukhē (= psychē)	18.	ὁριζων	horizōn
	7.	κλιμαξ	klimax	19.	δυσπεψια	duspepsia
	8.	κωλον	kōlon	20.	Σισυφος	Sisuphos
	9.	θωραξ	thōrax	21.	’Αφροδιτη	Aphroditē
	10.	μαθηματικα	mathēmatika	22.	’Ωκεανος	Ōkeanos
	11.	μητροπολις	mētropolis	23.	Εὐριπιδης	Euripidēs
	12.	φαινομενον	phainomenon	24.	‘Ομηρος	Homēros

B.	1.	barbaros	βαρβαρος	13.	arakhnophobia	ἀραχνοφοβια
	2.	katharsis	καθαρσις	14.	kharaktēr	χαρακτηρ
	3.	aretē	ἀρετη	15.	exēgēsis	ἐξηγησις
	4.	mimēsis	μιμησις	16.	orkhēstra	ὀρχηστρα
	5.	turannos	τυραννος	17.	prōton	πρωτον
	6.	moira	μοιρα	18.	phusikon	φυσικον
	7.	aristeia	ἀριστεια	19.	hubris	ὑβρις
	8.	parenthesis	παρενθεσις	20.	Sophoklēs	Σοφοκλης
	9.	antithesis	ἀντιθεσις	21.	Gorgias	Γοργιας
	10.	katastrophē	καταστροφη	22.	Dēmosthenēs	Δημοσθενης
	11.	rhododendron	ῥοδοδενδρον	23.	Alexandros	’Αλεξανδρος
	12.	xenophobia	ξενοφοβια	24.	Hellēspontos	‘Ελλησποντος

§108. Exercises, Chapter 16

A.	1.	‘ΕΛΛΑΣ	Hellas (= Greece)
	2.	ΖΕΥΣ	Zeus
	3.	ΔΗΜΗΤΗΡ	Dēmētēr
	4.	‘ΗΡΟΔΟΤΟΣ	Hērodotos (L Herodotus)
	5.	ΣΑΠΦΩ	Sapphō
	6.	ΚΥΚΛΩΨ	Kuklōps (L Cyclops)
	7.	ΠΑΝΔΩΡΑ	Pandōra
	8.	’ΗΧΩ	Ēkhō (L Echo)
	9.	ΝΑΡΚΙΣΣΟΣ	Narkissos (L Narcissus)
	10.	’ΙΗΣΟΥΣ ΧΡΙΣΤΟΣ	Iēsous Khristos (L Iesus Christus)
	11.	ΜΑΘΘΑΙΟΣ	Maththaios (L Matthaeus)
	12.	ΜΑΡΚΟΣ	Markos (L. Marcus)
	13.	ΛΟΥΚΑΣ	Loukas (L Lucas)
	14.	’ΙΩΑΝΝΗΣ	Iōannēs (L Iohannes)

B.	1.	σταδιον	stadium
	2.	ἀμοιβη	amoeba
	3.	Βακχος	Bacchus
	4.	γαγγραινα	gangraena
	5.	Οἰδιπους	Oedipus
	6.	κρανιον	cranium
	7.	Δαιδαλος	Daedalus
	8.	Λιβυη	Libya

§112. Exercises, Chapter 17

A.	1.	anthropology	ἀνθρωπος	human being
	2.	geometry	γη	earth
	3.	demography	δημος	people
	4.	theosophy	θεος	god
	5.	ecology	οἰκος	house
	6.	ophthalmology	ὀφθαλμος	eye
	7.	organology	ὀργανον	instrument
	8.	cardiography	καρδια	heart
	9.	technocracy	τεχνη	skill
	10.	zoology	ζωον	animal
	11.	psychometric	ψοχη	breath, spirit, soul
	12.	osteopathy	ὀστεον	bone

B.	1.	etymology	true study
	2.	chronometry	time measurement
	3.	bibliomania	book madness
	4.	economy	house(hold) law
	5.	telescopy	far viewing
	6.	oligarchy	rule by the few
	7.	necromancy	corpse divination
	8.	philosophy	love of wisdom

§122. Exercises, Chapter 19

A.	1.	palaeolithic	neolithic
	2.	polygamous	monogamous
	3.	orthodox	heterodox
	4.	cacophony	euphony

B.	1.	autodidact	self-taught
	2.	orthodontist	tooth-straightener
	3.	isochromatic	equal in colour
	4.	heterophyllous	other-leafed
	5.	macropterous	having long wings
	6.	polydactylism	(too) many fingers
	7.	neophyte	new grown, newly planted
	8.	panacea	all-healing, cure-all

C.	1.	*stereophonic*	< G stere-o-phon-ic: stere– (στερεος, “solid”) + –o– (connecting vowel) + –phon– (φωνη, “voice”) + –ic (adj. suffix -ικος)
	2.	*megalomania*	< G megal-o-mania: megal– (μεγας, “big”) + –o– (connecting vowel) + –mania (μανια, madness)
	3.	*heterogamy*	< G heter-o-gamy: heter– (ἑτερος, “other”) + –o– (connecting vowel) + –gamy (γαμος, marriage)

§130. Exercises, Chapter 20

A.	1.	hexameter	< G hexa– (six) + –meter (measure); “having six measures”
	2.	tripod	< G tri– (three) + –pod (foot); “having three feet”
	3.	quadrangle	< L quadr– (four) + –angle (corner); “having four corners”
	4.	octahedron	< G octa– (eight) + –hedron (base); “having eight bases”
	5.	duplicate	< L du-(two) + –plic- (fold) + –ate (*perf. part.*); “folded in two”
	6.	hemisphere	< G hemi– (half) + –sphere (ball); “a half ball”
	7.	millennium	< L mill– (thousand) + –ennium (year period); “1000 years”
	8.	quinquefoliate	< L quinque– (five) + –foliate (having leaves); “five leafed”
	9.	dyarchy	< G dy– (two) + –archy (rule); “rule by two”
	10.	sexagenarian	< L sexagen– (sixty) + –arian ; “someone in their sixties”
	Nb.	These are schematic analyses only, providing a minimum of information.	

B.	1.	*polychrome*	< G poly-chrome: poly- (πολυ-, “many”) + -chrome (χρωμα, “colour”)
	2.	*leukemia*	< G leuk-em-ia: leuk- (λευκ-, “white”) + -em- (αἱμα, “blood”) + -ia (noun suffix)
	3.	*trigonometry*	< G tri-gon-o-metry: tri- (τρι-, “three”) + -gon- (γων-, “angle”) + -o- (connecting vowel) + -metry (-μετρια, “measurement”)
	4.	*geomorphology*	< G ge-o-morph-o-logy: ge- (γη, “earth”) + -o- (connecting vowel) + -morph- (μορφη, “form”) + -o- (connecting vowel) + -logy (-λογια, “study”)
	5.	*photophobia*	< G phot-o-phobia: phot- (φως, φωτ-, “light”) + -o- (connecting vowel) + -phobia (-φοβια, “fear”)

Appendix IV: Summary of Vocabulary Tables (Greek)

Table 16.1: **GREEK FIRST DECLENSION NOUNS**

GK. NOUN	TRANSLITERATION	ENG. MEANING	ENG. DERIVATIVE
γη	**gē** (base **gē-**)	earth	geography
κεφαλε	**kephalē**	head	cephalic
μορφη	**morphē**	form	morphology
τεχνη	**technē**	art, skill	technical
φωνη	**phōnē**	voice, sound	phonograph
ψυχη	**psychē**	breath, spirit, soul	psychology
γλωσσα	**glōssa**	tongue	gloss, glossary
(γλωττα)	**(glōtta)**		(polyglot)
καρδια	**kardia**	heart	cardiac
μουσα	**mousa**	muse	music, musical
σφαιρα	**sphaira**	ball, globe	spherical

Table 16.2: **GREEK SECOND DECLENSION NOUNS IN -ος**

GK. NOUN	TRANSLITERATION	ENG. MEANING	ENG. DERIVATIVE
ἀνθρωπος	**anthrōpos**	man (= human)	*anthropology*
βιος	**bios**	life	*biology*
γαμος	**gamos**	marriage	*bigamy*
δακτυλος	**daktylos**	finger	*dactyl*
δημος	**dēmos**	people	*demography*
θεος	**theos**	god	*monotheism*
κυκλος	**kyklos**	wheel, circle	*cycle*
λιθος	**lithos**	stone	*lithograph*
νεκρος	**nekros**	corpse	*necropolis*
ξενος	**xenos**	stranger	*xenophobia*
οἰκος	**oikos**	house	*ecology*
ὀφθαλμος	**ophthalmos**	eye	*ophthalmologist*
τοπος	**topos**	place	*topic*
χρονος	**chronos**	time	*chronicle*

Table 16.3: **GREEK SECOND DECLENSION NOUNS IN –ον**

GK. NOUN	TRANSLITERATION	ENG. MEANING	ENG. DERIVATIVE
ζωον	**zōon**	animal	*zoology*
θεατρον	**theatron**	viewing-place	*theatre*
κεντρον	**kentron**	sharp point, goad	*centre*
μετρον	**metron**	measure	*metre*, *metric*
νευρον	**neuron**	sinew, [nerve]	*neurology*
ὀργανον	**organon**	tool, instrument	*organ*
ὀστεον	**osteon**	bone	*osteopath*
πτερον	**pteron**	feather, wing	*pterodactyl*

Table 18.1: **GREEK THIRD DECLENSION NOUNS**

GREEK NOUN	TRANSLITERATION (BASE)	ENG. MEANING	DERIVATIVE
ἀηρ	**aēr**	air	*aerodynamic*
πυρ	**pyr**	fire	*pyromania*
ὑδωρ	**hydōr (hydr-)**	water	*hydraulic*
δαιμων	**daimōn**	god, spirit	*demonic*
χειρ	**cheir**	hand	*chiropractor*
πους, ποδος	**pous, pod-**	foot	*podiatrist*
γαστηρ, γαστρος	**gastēr, gastr-**	stomach	*gastronomy*
ὀδους, ὀδοντος	**odous, odont-**	tooth	*orthodontic*
ῥις, ῥινος	**rhis, rhin-**	nose	*rhinoceros*
φως, φωτος	**phōs, phōt-**	light	*photograph*
ἀνηρ, ἀνδρος	**anēr, andr-**	man	*polyandry*
γυνη, γυναικος	**gynē, gynaik-**	woman	*gynecology*
παις, παιδος	**pais, paid-**	child	*p(a)ediatric*
γερων, γεροντος	**gerōn, geront-**	old man	*gerontology*
πολις	**polis**	city	*acropolis*
ἀλγος	**algos (alg-)**	pain	*neuralgia*
βαρος	**baros (bar-)**	weight	*barometer*
ἐθνος	**ethnos (ethn-)**	nation	*ethnic*
ἠθος	**ēthos (ēth-)**	custom, character	*ethos*
αἱμα, αἱματος	**haima, haimat-**	blood	*haemophilia*
δερμα, δερματος	**derma, dermat-**	skin	*hypodermic*
ὀνυμα, ὀνυματος	**onyma, onymat-**	name	*synonym*
(ὀνομα, ὀνοματος)	**(onoma, onomat-)**		*onomatopoeia*
σωμα, σωματος	**sōma, sōmat-**	body	*psychosomatic*
χρωμα, χρωματος	**chrōma, chrōmat-**	colour	*chromosome*

Table 19.1: **GREEK 1ST AND 2ND DECLENSION ADJECTIVES**

ADJECTIVE	TRANSLITERATION	ENG. MEANING	ENG. DERIVATIVE
ἀκρος	**akros**	top(most)	*acropolis*
αὐτος	**autos**	self	*autograph*
ἑτερος	**heteros**	other	*heterodox*
ὁμος	**homos**	same	*homomorphic*
ἰσος	**isos**	equal	*isometric*
ὀρθος	**orthos**	straight, right	*orthodontic*
νεος	**neos**	new	*neologism*
παλαιος	**palaios**	old	*palaeography*

Table 19.2: **GREEK 3RD DECLENSION (AND OTHER) ADJECTIVES**

ADJECTIVE	TRANSLITERATION	ENG. MEANING	ENG. DERIVATIVE
μεγας	**megas** (**mega-**)	great, large	*megaphone*
	(**megal-**)		*megalomania*
μακρος	**makros**	long, (large)	*macrocephaly*
μικρος	**mikros**	small	*microscope*
πας	**pas** (**pan-**, **pant-**)	all	*pantheon*, *pantomime*
πολυς	**polys (poly-)**	(much), many	*polygamy*
ψευδης	**pseudēs (pseud-)**	false	*pseudonym*

Table 22.1: **TRIAL SAMPLE OF GREEK VERBS**

VERB ROOT		ENGLISH MEANING	PRESENT INFINITIVE	
θε-	**the**–	“place”	τιθεναι	(“to place”)
δο-	**do**–	“give”	διδοναι	(“to give”)
στα-	**sta**–	“stand”	ἱσταναι	(“to stand”)
κρι-	**kri**–	“divide,” “judge”	κρινειν	(“to judge”)
λυ-	**ly**–	“loosen,” “set free”	λυειν	(“to loosen”)

Table 22.2: **OTHER GREEK VERBS AND THEIR DERIVATIVES**

VERB ROOT (English meaning)	ENGLISH DERIVATIVES
gen-,[1] **genē-**, **gon-** (be born)	*genesis, dysgenesis, genetic, gene, eugenics, gonad, gonorrhoea, cosmogony, theogony, oxygen, hydrogen, pathogen(ic), carcinogen(ic), parthenogenesis* (< παρθενος, "virgin")
path-, **pathē-** (suffer, feel)	*pathos, pathetic, sympathy, empathy, apathy, apathetic, antipathy, antipathetic(al), pathology, psychopath,* etc.
pher-, **phor-**, (bear, carry)	*periphery, euphoria, dysphoria, semaphore, phosphorus, phosphorescence* (form?)
leg-, **log-**, (speak; gather)	*-logy* (-λογια, §110), *dialect, dialectic, eclectic, dialogue* (διαλογος > L **dialogus**), *monologue, prologue, epilogue, apology, eulogy, anthology*
graph-, **gram-** (write)	*-graph* and *-graphia* (-γραφος, -γραφια, §110); *gram, anagram, diagram, epigram, program(me), programmatic, telegram, grammatical, grammar*
skop-, **skep-** (watch, examine)	*-scope* and *-scopia* (-σκοπος, -σκοπια, §110); *sceptic (skeptic), scepticism, episcopal, bishop* < ἐπισκοπος ("overseer")
trop- (turn)	*trope, tropic(al), tropism, heliotrope*
stroph-, **streph-** (turn, twist)	*strophe, antistrophe, apostrophe, catastrophe, streptococcus*
stol- (send)	*apostle, apostolic, epistle, diastole*
kryp-, **kryph-** (hide)	*crypt* (κρυπ-τος), *cryptic* (κρυπ-τικος), *apocryphal cryptogram*
phy- (grow)	*neophyte*; G φυσις = L **natura**; *physics, physical, metaphysical, physio-*
aisthē- (feel, perceive)	*aesthete, (a)esthetic, anaesthetic, anaesthesia*
agōg- (lead)	*synagogue, demagogue* (δημ-αγωγος), *pedagogue*
ball-, **bol-**, **blē-** (throw)	*ballistics* (via Latin), *symbol, problem, emblem, hyperbole, hyperbola, parabola, parable, diabolic(al), anabolism, embolism, metabolism*
pha-, **phē-** (speak)	*aphasia, dysphasia, euphemism, dysphemism, prophet* (προφητης > L **prophēta**), *prophetic, prophecy* (προφητεια), *prophesy, blaspheme*
pha(i)n, **pha-** (show, appear)	*phase, emphasis, emphatic, phenomenon* (pl. *-a*), *epiphany, theophany, diaphanous, phantasy (fantasy* and *fantastic* show Latinized spelling)
hora-, **op(t)**– (see)	*optic* (ὀπ-τικος), *synopsis, synoptic, autopsy, biopsy, optometrist, optician* (hybrid), *panorama, cyclorama, diorama*
rheu-, **rho-**, **rheo-** (flow)	*rheum, rheumatic, rheumatoid, rheostat, catarrh, diarrhoea (diarrhea), gonorrhoea*
tak- (arrange)	*syntax* (συνταξις < *sun-tak-sis), *tactic(al), tactician, taxidermy*

1. cf. Latin **gen-**, as in **genus**, **generis**; *progeny* and *progenitor* are Latin derivatives.