Appendix on Vowels, Consonants, Syllables

This appendix provides the most basic and succinct outlines of general phonetics applied to Latin. It could even serve as a self-directing minicourse or module on a range of language issues. The sections are A. Vowels, B. Consonants in general, C. Places of Articulation, D. Manners of Articulation, E. Syllables, F. "Adjustments." In addition, G. shows the application of some of these notions to poetry scansion. Finally, H. has some relevant comparison to English and a few other languages. It is certainly no substitute for such in-depth works as Allen, Baldi, Matthews, Weiss, but it addresses issues that students frequently raise in Latin classes. The introductory sections of some Latin textbooks cover some of this material but mostly in terms of spelling rather than sound and addressed to beginners. Introductions to general linguistics might include some of it, too, but are not likely to focus on the relevance to Latin.

An important theme in this regard is the crucial difference between *sound* and *letter*. Early classroom education generally focuses on literacy, so that *letter* becomes synonymous with *sound*̊. The explicit distinction often becomes relevant in foreign language classrooms. Every human society speaks in sounds, fleeting and transient. Some societies find ways to represent those ephemeral utterances in a visible, storable, retrievable way, that is, written language on a durable surface. (Counts vary, but the usual tally of human languages numbers around 6,000, only a few hundred of which use a written form.) In the case of Latin, the Romans happen to have adapted from the Etruscans and Greeks a system of symbols, each of which represents a single sound, whether consonant or vowel, in other words, an alphabet.

The Greeks in turn had adapted from the Semitic-speaking Phoenicians a set of 24 symbols, written right to left; the earliest Greek and Latin continued that practice. Those letters represented consonant sounds only, providing a skeleton of words that Semitic speakers knew how to fill in according to consistent patterns. The Greek innovation, conscious or not, was to repurpose some of those letters to represent vowel sounds, hence "alphabet" is just the first two letters of the Greek sequence *alpha, beta*. (One often reads that Phoenician and its Semitic cousin Hebrew "had no vowels," meaning "had no consistent symbols for representing vowel sounds." For classical Latin, one letter always has the same sound, and the sound always finds its representation in the same letter. In other words, both the letter-to-sound and sound-to-letter correspondences are one-to-one. One can read aloud and take dictation reliably, which people often refer to as a "phonetic" language. English is notoriously one-to-many and many-to-one in both these regards [H]. Throughout this piece, dashes separate Latin words into their grammatical parts, while raised dots separate words into pronounceable, audible syllables. The two representations do not have to match.

A. Vowels.

A1. Qualities. Vowels are speech sounds produced by free flow of air through the throat and shaped in the mouth. Classical Latin has five vowel *sounds*, which modern English might spell as "ah, eh, ee" as in such fairly recent loanwords as taco, café, pizza, plus boat, and boot. The description of their qualities, that is, the way the mouth forms them, is in A3, below. Different writing systems represent them differently, and in the Latin alphabet, each one has its own *letter*—a̲-e̲-i̲-o̲-u̲—

so that the letter names *are* those sounds. (Left aside, for now, is the sixth vowel sound, namely, ü, represented by y, called "i-Graeca," a clue not to its sound but its provenance in loanwords from Greek and other languages. The letter was a late addition to the alphabet, shunted to the end along with resurrected Z, a longer story better left to another forum. At any rate, it plays no role in conjugation.) The English names for these letters as in, e.g., "say, see, sigh, sew, Sue" are only *some* of the fourteen modern English vowel sounds that those letters represent [H1]. Pronouncing Latin vowel sounds in Latin (reconstructed classical or Church) and referring to them by their Latin rather than their English letter names directly connect to language. (In classes of languages that use other writing systems, there is no choice but to call those letters by their native names.)

A2. Quantity. Crucial to Latin vocabulary and grammar (as well as poetry in [G], below) is the distinction of *vowel length*, that is, Romans pronounced and heard the *quantitative* difference between, say, a two-millisecond vowel and a four-millisecond vowel (not a scientific measurement). Modern English does not do this, though Middle English did, and anglophone learners may take a while to recognize, let alone produce, the length distinction and record it in writing. (The terms "long" and "short" still occur in English phonetics, but they recall what *was* long and is now a diphthong [H].) Students of many modern languages—Dutch, Czech, Hungarian, Finnish, Arabic—must learn to distinguish long and short vowels, and there is no reason Latin students cannot also do so. Some printings of Latin note the long vowels with a macron—ā-ē-ī-ō-ū—leaving the short ones unadorned in such pairs of unrelated words as *malum-mālum, levis-lēvis, os/ōs, iacere/iacēre,*

esse/ēsse as well as different parts of speech of the same root*, e.g.,*noun-verb *ducēs/dūcēs*, *vōcēs/vocēs* and different grammatical forms of the same verb, e.g., *legī-lēgī, venit-vēnit, fugit-fūgit.* A few textbooks also occasionally note the short one with a breve—ă-ĕ-ĭ-ŏ-ŭ—usually just in an exercise but not in a whole text, e.g., *mălum-mālum*, *dūcēs/dŭcēs*. The Latin world is divided on the use of the macron. Some printers print it; some teachers favor it (probably in proportion to the strength of the oral component in a given classroom); others consider it a crutch, and learners often find it a burden or a mysterious decoration. The writing systems of, e.g., French, German, Spanish, Czech, Turkish include various obligatory diacritic marks in their spelling systems for various purposes, hence there is no choice but to insist on them. An awareness of this phonetic feature in Latin reaps grammatical rewards.

A3. "Phonetic Order." Textbooks typically list vowel letters in alphabetical a-e-i-o-u order, but that is irrelevant to grammar analysis. The following three "phonetic orders" provide a more tangible and applicable orientation to this investigation of Latin conjugation (and grammar awareness in general). The Latin pronunciation of these vowels and the self-referential Latin letter names "ah, eh, ee, oh, oo" rather than the English names ay-ee-igh-oh-yoo, the results of the Great Vowel Shift [H1c], illustrate what the mouth is doing.

- First is i-u, e-o, a, representing the position of the lower jaw relative to the upper jaw and the corresponding height of the tongue in the mouth: i and u have a "close" lower jaw so that the tongue is correspondingly "high" in the mouth; lowering that jaw halfway produces e and o with the tongue in a "mid" position, and a has a

maximally open jaw so that the tongue lies "low" (giving doctors maximal view of the throat).

- The second order involves the lips: i-e-a have spread or open lips while o-u have rounded lips. Combining the two characteristics says that, e.g., the Latin letter i represents a "high, nonrounded" vowel, and that o represents a "mid, rounded" vowel.
- The third order involves the front part vs. the back part of the tongue: the front part of the tongue at the front of the mouth contributes to i-e (together with spread lips) while raising the back part of the tongue at the back of the mouth helps produce o-u (together with rounded lips); for a the tongue simply lies low and central. The standard tripartite nomenclature labels, e.g., i as a "high, front, nonrounded" vowel; e as "mid, front, nonrounded"; u as "high, back, rounded" and o as "mid, back, rounded"; a is "low, central, unrounded." (The ü, spelled y in Greek borrowings, is an outlier, a "high front rounded" vowel, and many languages oppose i to ü with "high, front" in common, differentiated only by "round/nonround.") A basic awareness of these sound relations and the ways Latin spells them explains much of what could appear irregular in Latin grammar.

More explicit charts and descriptions of these sounds are available in most introductions to general linguistics and in some language textbooks. This widely accepted orientation keeps the focus on Latin speech rather than on the English names for the letters that spell it.

A4. Of Rises and Falls. Three applications of these characterizations are useful in appreciating Latin conjugation.

- The initial syllable of a root becomes, obviously enough, an internal syllable when adding a prefix, for example, in the reduplicating perfect tense. In some roots, when the vowel of that initial syllable is a (low vowel) or e (mid vowel), the vowel of the internal syllable "rises" either one "step"—a to the mid vowel e, e.g., fal•lō/fe•fel•lī; e to the high vowel i in te•ne•ō/con•ti•ne•ō—or two steps, namely, a to the high vowel i, e.g., ca•dō/ce•ci•dī, fa•ci•ō/per•fi•ci•ō (This is not a verb-specific issue, as in adjective ar•mis/i•ner•mis, a•mī•cus/i•ni•mī•cus, but not all roots do this, as in tra•hō/ex•tra•hō. More about this in [E1-E2], below.)
- The stem vowel of 3rd conjugation verbs is i in capit ("high" vowel) and e in capere ("mid" vowel). In S-T-E terms (see 3.3.1, above), these are present indicative capi-#-t, "O" infinitive cape-#-re or imperfect subjunctive cape-rē-. Describing these facts by their English letter names as "eye" changes to "ee" (or vice versa) obscures what is happening in a Latin mouth and ear. Different analyses may see one of those sounds as "basic" and the other as a "change": either the high vowel i is basic and "lowers" predictably to the mid vowel e under certain conditions, or the mid vowel e is basic and "rises" to i under other conditions. The conditioning factor is the following consonant r.

- The consonant l seems responsible for a similar shift within a few stems. Such noun variations as volnus/vulnus show a relationship between the rounded mid vowel o and the rounded high vowel u before the consonant l. Potential *ol in the supine of colere, *col-t- always becomes cul-t-, and of adolēscere *adol-t- > a•dul•tum. This shift can also affect root vowel e in two steps: mid front vowel e > mid back vowel *o > high back vowel u, as in the supine of sepelīre, *sepel-t- > (*sepol-t-?) > sepul-t-. Some learners may find this palpable hook beneficial in "hearing" what looks like an arbitrary spelling change, and others may just find it exciting to see rhyme and reason behind what could look like chaos or caprice. The two consonants r and l are also the subject of [D5], below.

A5. Vowel and Glide, Diphthong and Digraph. The high vowels i, u form the core of a syllable as in *vi•de•ō, iu•vō*. Before or after a vowel, they are semivowels, also called semiconsonants or *glides* as in *vi•de•, iu•vō* (sounds that English spells as y, w, respectively). A glide after a vowel can begin the next syllable as in *a•mā•yī,* but a glide after vowel *in the same syllable* forms a *diphthong*. Latin forms three diphthongs, spelled *cae•dō, clau•dō, poe•na*. (The letters eu, ui are usually in separate syllables, e.g., ro•se•us, a•cu•it but a diphthong in such Greek names as The•seus. On ui as a diphthong, see further in this section.) Textbooks frequently define a diphthong as "two vowels together," by which they mean two vowel *letters*, and for Latin, that is true since each part is represented by its own vowel letter. Nonetheless, a diphthong is an issue of *sound*. English spells

some of its diphthongs with a single letter, as in *bi̲te* (or more accurately "i̲+single consonant+final silent-e̲"). Latin would spell this *baet*. When two vowel *letters* act as a group—whether they represent a single sound as in English *bre̲a̲d*, *bro̲a̲d,* or a diphthong as in *bre̲e̲d, bra̲i̲d*—they are a *digraph*. The difference may seem pedantic, but it avoids confusion later and stresses *sound* over a particular graphic artifact. See [H] for English's plethora of diphthongs and digraphs.

Like the high, rounded vowel u̲, the glide v̲ (spelled as such only before a vowel in some modern publications) is also high and rounded; like the front vowel i̲, the glide i̲ (spelled j̲ in some publications before a vowel) also has the tongue forward in the mouth approaching the hard palate, the roof of the mouth, more on which in [C-D], below. In Latin diphthongs, the vowel and the following glide are in different parts of the mouth, either the low vowel a̲ plus the high glides in a̲e̲, a̲u̲ or the mid back vowel o̲ plus the front glide in o̲e̲. The tongue movement is palpable in pronunciation. The supines of *la•vō, ca•ve•ō* are theoretical *lav-t-um, *cav-t-um with a low vowel and a high glide and form regular diphthongs spelled *lau•tum, cau•tum*. The supines of *iu•vō, mo•ve•ō*, however, have the back rounded vowel and the rounded glide in the same part of the mouth. The theoretical diphthongs *iuv-t-um, *mov-t-um merge into long rounded vowels in *iū•tum, mō•tum*. The two high vowels u̲i̲ in the specific group of u̲-final verb stems (acuere, tribuere, etc.)—and specifically before their supine system markers—also merge into a long vowel: theoretical *acui-t-um > actual *a•cū•tum* (4.4, above). A propos the vowel alternations in [A4], when the diphthongs a̲e̲, a̲u̲ in an initial syllable move to an internal syllable, the high glides become their corresponding long vowels, as in

cae•dō-ce•cī•dī, clau•dō-in•clū•dō. The u-glide also contributes to three consonant clusters before a vowel as in *co•quō, ex•stin•guō, suā•de•ō* (and not **co•cu•ō, *ex•stin•gu•ō, *su•ā•de•ō*).

A6. A Little Literacy. A minor Latin alphabet issue becomes a larger issue in later adaptations of that alphabet and modern printing. The original Latin alphabet had only the letters "straight-I" and "pointed-V" for the front and back high vowel sounds and their related glides since it was clear by position in the word which was which—and there was only majuscule, what for modern printing now goes by "upper case" or "capital letter." Such ancient spellings as IVLIVS, AVRELIVS, VNVS, QVI look strange to modern learners. During the Middle Ages, straight" i and "pointed" v developed manuscript variants "tailed" j and "rounded" u. Besides that, the court of Charlemange instituted a mixture of the two fonts called *majuscule* and *minuscule*: the first letter of a sentence or of a proper name is majuscule, while all the rest is in minuscule, what we now call upper and lower case. For centuries i-j were considered mere variants of the same letter, as were u-v; they acquired the status of four distinct letters only around the 17th century—and doubled uu-vv eventually fused into modern w, mostly in northern European languages. All modern printings of Latin use i-u for the two vowels in question, lower case, but vary in spelling the glides. Before a vowel, lower case might be *iu•vō*, *iu•uō*, *ju•vō or ju•uō*, *vi•dẻ•ō* or *ui•de•ō, a•mā•vī* or *a•mā•uī*. The glide after a vowel is consistently spelled as in *cae•dō, au•di•ō.*

B. Consonants.

An appreciation of the phonetic properties of consonants and the pronunciation groups they form also aids in smoothing the path through the inflectional labyrinth. While vowels merely shape the air flowing through the mouth, consonants interfere with the passage of that air in various ways. Every language has a limited number of *sounds,* and consonant *sounds* always outnumber vowel *sounds*. Latin has, for example, five (or six) vowel sounds compared to fifteen consonant sounds. Some consonant sounds, e.g., b, c are hard to produce in isolation, and their letter names add a vowel to assist, e.g, the perfect and supine markers referred to throughout this article are the pure consonant sounds s, t. Their letter names "ess" and Latin/English tē (tay)/tee (the reason for which difference is in H, below) add an unnecessary complication [D8]. Latin consonant letters have a mostly one-to-one relationship to their sound, and the consonant sounds have a one-to-one relationship to their letter. Section D. covers their descriptions.

Consonants next to each other (in sound and spelling) in the same syllable, as in *scrī•bō, stō, pa•trēs* or with a syllable boundary between them, as in *cap•tus, cer•nō, carp•sī* are called consonant "blends" or "clusters."[3] This includes double consonants as in *pu•el•la, mit•te•re, fos•sa*, pronounced as a single "long" consonant as modern Italian still does, termed *geminate*. Languages can be quite fussy about consonant clusters that they permit and exclude at different points in a word. A Latin word can, for example, begin with sp as in *spatium* but cannot end with it: no Latin word like **ras<u>p</u>* can exist while, e.g., *stirps* is no problem at the end of a word—with a grammatical boundary between them, namely, a stem *stirp-* and the

ending -s—and words like *psyche* became possible through Greek loanwords in the Late Republic; English admits initial and final sp easily but only final ps; initial *ps in borrowed words stopped pronouncing the p a few hundred years ago but remains in spelling for historical reasons. Latin teachers need not make an issue of this because the repertoire of Latin consonant clusters is a subset of English's repertoire (with the possible exception of the name Gnaeus). English speakers learning Latin can pronounce all Latin consonant clusters, while Romans learning English would have to train their mouths to make many combinations they had never made. Romans pronounced the cluster *ks frequently and easily but always spelled it with the single letter x (D7). On the other hand, they did not pronounce the cluster *ts but always replaced it whenever it might occur in spelling *and* sound by ss (often reduced to a single). This and other potential consonant clusters undergo one of a few "adjustments" at the S-T and T-E boundaries [F].

C. Places in the Mouth or "Points of Articulation."

Latin speakers articulate(d) their consonants at five major places in the mouth from front to back: the lips, the back of the upper teeth, the roof of the mouth or hard palate, the slope down from there or soft palate, technically called the *vēlum*, and the throat and larynx. (English also uses these points [H2]). The technical terms are of possible classroom interest since they are Latin-derived and are worth having as a reference point.

C1. *Lips* and friends. Four consonants are produced using the lips, represented by the Latin letters p-b-m-f. They are the *labial* consonants. The pure sounds p, b, m

(and not the letter names pee, bee, em with an accompanying vowel) close both lips for a millisecond, hence *bilabials*, while f (not ef) brings the upper teeth down to the lower lip, hence, *labiodental*. The semivowel-semiconsonant-glide spelled v (English w) is the alter ego of the lip-rounded vowel u [A3], using both lips but not completely closing them while also raising the back of the tongue, hence, *labiovelar*. Later Latin speakers will unconsciously shift this sound from a semiconsonant to a whole consonant by bringing the upper teeth down to the lower lip, making v as in modern Italian *vino, Venezia.*

C2. *Teeth*. Six *dental* consonants touch the tip of the tongue to the back of the upper teeth: t-d-s-r-l-n (and not tee, dee, es, ar, el, en).

C3. *Hard Palate*. The glide i-j in *ianua*, etc., is articulated with the tongue approaching the roof of the mouth. It is a *palatal glide*. (English exploits the palate much more in [H2].)

C4. *Vēlum or Soft Palate.* Two *vēlar* consonants raise the back of the tongue to the back of the palate, spelled c-g, always as in "coat, goat" and the special letter q also spells the c-sound in combination with the glide v. (Modern Italian and Portuguese still pronounce qu as kw, while modern French and Spanish pronounce just k as in *quiche, taquito*. For the English letter names cee, jee and the notion of so-called "hard/soft c, g" see [D13, H2].) The combination of g and the same glide has no special spelling. These consonants are often called *guttural* from *guttur* 'throat', but the back of the mouth is still quite far from the throat, hence the more accurate, if less familiar, *velar* consonants. (The Latin alphabet does take the letter k over

from Greek *kappa* but uses it in remarkably few words, and it plays no role in the conjugation under discussion, see [D12].) The glide v also occurs here but also involves the lips, hence, the *labiovelar glide*. The clusters qu, gu can occur only before a vowel, as in unguō, coquō. (Would it be clearer if Latin had chosen the spelling *cvō or *cᵛō?).

C5. *Larynx, Glottis*. Only the glide h uses this passageway, the real *guttur*, though the term usually implies a harsh sound, which h is not. The glottal glide can occur only at the beginning of a syllable followed by a vowel. Poetry scansion even ignores it as an initial consonant [G], and it falls completely out of the inventory of later Romance languages, even if they continue to spell "mute" h. The Indo-European parent language of Latin used this breath to form *aspirated* consonants pronounced with a puff of air, usually represented in phonetic transcription as *pʰ, *tʰ, *kʰ. Latin's cousins, Ancient Greek and Sanskrit, had these, and Sanskrit also had *bʰ, *dʰ, *gʰ.

C6. The Glides: Middle Squeeze. The three velar+glide clusters just mentioned—*cᵛ, spelled qu, and *gᵛ, spelled gu, and the remnants of aspirated *gʰ—occur only before a vowel. Before a consonant the glide element in the middle is pushed out, as in the supine *cocv-t- > *coc•tum*, *ungv-t- > *ung-t- [F1, E4] > *ūnc•tum*, *strugv-t- strug-t- [D9, F1] > *struc•tum,* *tragh- > *tag-t- [F1] > *trac•tum*. Before a vowel qu always occurs "whole" as in *co•quō*; gu stays whole with a preceding n, e.g., *un•guō*. *Struc•tum* and a few others roots without n split up the two elements: only *g before a consonant, as in *structum* and only u before a vowel as in *strugvō > *stru-vō > *stru•ō*. Similarly, aspirated *gʰ never appears as such: only two verbs, trahō, vehō, separate the two elements with the h before a vowel and *g > c before

a consonant.

D. Manners of Articulation.

Different "manners of articulation," ways of operating on the air as it flows through the mouth, produce different kinds of consonants at the five major places of articulation in [C].

D1. *Stops*. Six of the above-cited Latin consonants are produced by stopping-then-releasing the air at points 1, 2, 4. These are the *stop* or *plosive* consonants: bilabials p-b**,** dentals t-d, velars c-g, including qu (essentially *c^{v}) and g^{v}. Classical Latin has no palatal stops, but see [D3].

D2. *Fricatives*. Labiodental f and dental s narrow the opening that air can get through, creating friction, hence, the *fricatives*. The *dental fricative* s makes more noise than the *labiodental fricative* f and is often called a *sibilant* or *spirant*, important for the frequent phenomenon of *sibilation* discussed in connection with Profiles-3, 4. Latin has a palatal glide i/j [C3] but no palatal fricatives sh, zh (as in English pressure-mission, pleasure-vision), neither does Ancient Greek. This is why many Hebrew and Aramaic names in the Bible that do have a palatal sh come into both the Greek and Latin (and from there into most European languages) as the next closest sound, dental s: Jerusalem (Yerushaláyim); Jesse (Yishai), Sem, the son of Noah on whose name Semitic was coined in the 18th century (though King James does call him Shem),[9] not to mention Jesus (Yeshua), Messiah (mashíakh, 'anointed one') among others.

D3. *Affricates.* These are compound sounds that start as a stop but immediately

open a slight passage so that air squeezes through. Though composed of two parts, they function in languages that have them as single consonants. Dental stops t, d give way to dental fricatives s, z to produce *dental affricates* ts, dz considered as a single consonant in some languages (neither Latin nor English) and with palatal fricatives sh, zh to produce *palatal affricates* tsh, dzh, which English spells as ch, j [H2c.] and does consider single sounds. Classical Latin has no affricates—and even eschews accidental *ts whenever it might arise [F2]—but that lack is worth mentioning because in the early centuries CE, Latin velar c-g before the front vowels i, e "creep forward" in the mouth "one step" to the palate, namely, to tsh, dzh, so-called "soft c-g." That pronunciation was already the norm when Rome became the center of the Catholic Church, hence the notion of Church Latin (though for the contemporary speakers, it was just Latin). More on this in [D13].

D4. *Nasals*. The consonants m-n block air coming through the mouth and redirect it through the nose, hence, *nasals.* M is the nasal partner to *bilabial* b, and n is the nasal partner to dental d. In Church Latin (and still in modern Italian and French), the combination gn spells a *palatal nasal* as in Spanish ñ, Portuguese nh. English has a *velar nasal* spelled ng at the end of a syllable [H2]. The treatment of final m in poetry scansion [G3] and the evidence of modern Romance languages suggests to some scholars that classical Latin pronounced a final syllable ending in m as a nasal vowel, so that "Habeō casam" was *casã*, as in modern French or Portuguese. Spanish words can also end in the dental resonants as well as a few obstruents -s (whether spelled s or z) and d but not -t, and neither language permits a final labial, which accounts for a typical Spanish accent in English.

D5. *Liquids*. The dental duo r, l are called *liquids* and have some acoustic properties of vowels [H2]. The clusters "stop+liquid"—br, cr, pl, gr, etc.— are treated specially in poetry [G1], and the clusters "liquid+velar" figure in such roots as mulcēre, mergere (4.3, 4.4).

D6. Groupings. Liquids, nasals, glides, and vowels shape the air in various ways as *resonants*. Fricatives, liquids, nasals, glides, and vowels are grouped as *continuants*, letting air through in different ways from stops. The stops and fricatives obstruct the air in different ways and are grouped together as *obstruents*. The Latin letter names, interestingly, seem to recognize this division: the stop names are consonant-vowel (bē, kē, dē, gē, hā, kā, pē, kū, tē), while the continuant names are vowel-consonant (fricatives ef, es; nasals em, en; liquids el, er). The Greek names all start with the consonant they name, namely, *sigma, mü, nü, lamda, rho*.

D7. Bringing up the rear. Different languages impose restrictions on which sounds can occur at different points in a word. The resonant-obstruent distinction throws an interesting and generally unspoken light on the end of a Latin word—or at least an "independent" word like a noun or verb. Latin noun stems can end in a vowel and also in a dental continuant: the resonants r, l, n, and just one obstruent s, e.g., nom. sg. 3rd declension *amor-#, animal-#, nōmen-#*, *tempus-#* (and not **temp-us*, that is, the letters us are part of the stem and not the ending of 2nd or 4th declension). Barely half a dozen stems can end in other consonant: one labial nasal *hiem-s*, two stops in neuter *lac-#*, *caput-#*, the neuter pronouns *id, quid, quod, illud, istud*, the connector words *ac, sed*. Grammatical endings of verbs and nouns can end in the continuants m and s, namely, -m, -s, -mus, -tis, -istis, "R" set -r, -tur, -mur, and several verb

endings in t: "O" set -(n)t, (see 3.1.1). Learners can sail through the AP exam perfectly well without this awareness. Still, it is interesting in its own right. Also, it sets the stage for later Romance languages that restrict final consonants even more, e.g., Italian words can end in a vowel or a resonant n-l-r, but no obstruents; Spanish words can also end in the dental resonants as well as a few obstruents -s, -z and d but not -t, and neither language permits a final labial. Latin noun stems can end in -n after a short vowel, but the nom. sg. of 3rd declension noun stems ending in -iōn-#, including the supine marker -tiōn-#, drop n at the end of the word, hence, -(t)iō. Ancient Greek also allowed words to end only in a vowel and r, l, n, s.

D8.The X-Factor. The note in B., above, on the spelling of the consonant cluster *cs as x carries some grammatical consequences. In the middle of a word, the two consonants belong to different syllables, c capping off the previous syllable and s beginning the next syllable. In terms of sound, this is no issue, but in terms of letters, the syllable boundary falls, as it were, right through the middle of that x letter. Within a stem there is no grammatical consequence*: vexāre, texere* divide into vec•sā•re, tec•se•re and not *vecs•ā•re or *te•cse•re. At the T-E boundary in the nom. sg. of the 3rd declension actor noun -trīc-s > -trīx or any number of other nouns, e.g., *vōc-s, *arc-s > vōx, arx, the two consonants are in the same final syllable, but then x looks like some special nominative ending. vs. the rest of the paradigm, which it is not. When that syllable boundary is also an S-T boundary, the letter obscures that grammatical boundary, e.g., perfect tense *dīc-s-ī > dīxī. The textbook rule that the perfect stem is the third principal part minus the ending -ī makes dīx- might look to learners like some mutation of the stem dīc-, which it

is not. Dividing such a written word into syllables becomes awkward. The rules for poetic scansion, usually formulated in terms of letters, have to include x as an exception to the rule that a single consonant goes with the next syllable, that is, the vowel before it is always long by position [G3]. Textbooks often let the letters do the talking without seeing them as representatives of sound or combining into structures. (If a Roman were learning English, she or he might want to spell the plural of *picnic* as **picnix* or to conjugate the verb *I pick, he-she pix*, just as modern English sometimes writes "thanx" informally, but *tacks* and *tax* are different.)

D9. Voicing. The above D sections map the human mouth. Now the human throat comes into play. It contains an organ called the larynx or voice box, housing vocal folds (perhaps better known as the vocal cords). As air passes over these folds, humans are amazingly adept at letting that air either vibrate them—producing *voiced* sounds—or just pass through peacefully—producing *voiceless* sounds. In Latin and most languages, the nasals, liquids, glides, and vowels are always *voiced*. The three pairs of stop consonants in D1, above, are *paired for voicing*: b-d-g (including gu) are *voiced stops*, paralleled by *voiceless stops* p-t-c (including qu). (The usual classroom test is putting a hand on top of the head and feeling the "buzz" while pronouncing the sound. This is why pronouncing consonant sounds in isolation and not naming their letters is important: that accompanying vowel is voiced and distorts the hand-on-head impression and feeling the point of articulation.) The *aspirated* voiceless stops, spelled ph, th, ch in a few Latin words and many loanwords from Greek, have no voiced counterparts in Greek or Latin, but they do in the Indian cousin to these languages called Sanskrit. Latin f

and s represent *voiceless fricatives*, and they have no voiced counterparts. Later generations of Latin speakers will start pronouncing the glide v by lowering their upper teeth onto their lower lip, producing the voiced counterpart to f, as in Church Latin *in vinō veritās*, modern French Versaille, and such English pairs as *very-ferry, vary-fairy.* Also, in the Middle Ages, voiceless s between vowels—which are voiced—usually does not stop the vocal cords from vibrating just for the s between them, producing z in a process called *assimilation*, as in English solve/resolve, sign/design. After all, the *president* is the *pre-sitter* at the head of the table. The usefulness of this awareness for conjugation comes out in F, below. Later Latin and Italian, as noted in [D3], acquired the voiced and voiceless dental affricates dz, ts, and palatal affricates dzh, tsh.

D10. Rhotacism. Several Latin verb and noun roots have a final consonant s (voiceless dental fricative) or r (voiced dental liquid). The later Latin phenomenon of s > z just noted had already occurred in pre-classical Latin: single s between vowels or between r and a vowel keeps the vocal cords vibrating, resulting in *z (voiced dental fricative). That sound assimilates one step further to those surrounding vowels by "smoothing out," losing its noise, resulting in r. This process, not uncommon in languages of the world, is known as *rhotacism* (from the Greek letter *rho*). (A survival of the process in English is *was-were*). Noticing this s ~ r alternation is useful for its grammatical consequences in classical Latin conjugation and declension. The present systems of *gerere* and *serere* look the same. The perfect and supine systems ges-s-, ges-t- show that this is a rhotic root; ser-u- with r still between vowels may or may not be rhotic, but supine ser-t- determines that the

r is "genuine" and not the product of rhotacism. Learners are likely to encounter the present systems of such rhotic verbs before their supines and might, therefore, see *gerere* as the norm and *ges-t-um* as a change or aberration, as if r becomes s. (Taking present system *gerere* as base leads some learners to think of *ges-t-* as "r moves forward one letter," a convenient alphabetic coincidence but with no relation to actual language. Clearly, s is the base, and it shifts to r (but does not "shift one letter back"). Profile-1 and 2 verbs, e.g., *narrāre*[1], *terrēre*[2], always have root-final r between r and a vowel, affording no opportunity to see if this results from the alternation. Profiles-3, 4 have no stem vowel in the supine or perfect, thus root-s stays s before the consonantal markers -t- or -s- of the supine system and the perfect system marker -s- for verbs that choose that marker. Several third declension nouns also exhibit this phenomenon. All those case endings begin in a vowel, e.g., gen. sg. *tempor-is, gener-is, ciner-is*, except nom. sg. -#, which allows s to stay s in *tempus-#, genus-#, cinis-#.*

This change had a much bigger impact on early Latin than just a few nouns and verbs: the thousands of "regular" present infinitives with stem vowels *-āre, -ēre, -ere, -īre* are also the result of rhotacism from *-*āse*, etc. compared to the perfect infinitive with its extra element *-is-se*, which does not trigger rhotacism. (As for the present infinitives *esse, ferre, velle* with no stem vowel, rhotacism does not occur in theoretical *es-#-se but does occur in theoretical *fer-#-se. The other liquid l triggers parallel but much less frequent development in *vel-#-se, that is, *lamdacism*.)

D11. Metathesis. Two sounds switch places as in standard English *pretty, ask* and what in some varieties might be spelled *perdy, aks*. Two such Latin instances are relevant. The supine of miscēre, theoretical *misc-t-, transposes the members of that root-final consonant cluster to *mics-t-, spelled mix-t- [D8]. The other involves the trio cern-, spern-, stern-. The n occurs only in the present system (4.4.3), while in the other two systems er transposes and also lengthens: crē-, sprē- and an unexplained vowel shift in strā-. Their enriched infinitives indicate this with the "tilde-ñ," reminiscent of the larger proofreading squiggle mark for "transpose" in cerñere, sperñere, sterñere (4.4, above).

D12. The Latin Alphabet and the Etruscan Irony. The history of the alphabet from Phoenician to Greek and Etruscan to Latin and beyond is a fascinating story for another forum, but one chapter deserves mention. First of all, the Greek alphabet developed in different versions on the Greek mainland and the many Mediterranean colonies. The western variety used by the Greek settlers on the Italian peninsula included familiar k (kappa) for the voiceless velar stop. Also, it retained the Phoenician letter ϙ (qoppa, clearly the source of Latin Q) for another k sound farther back in the mouth. Some Greek varieties distributed these as qoppa before back vowels [A3] and kappa otherwise. The Etruscans learned this version of the alphabet from those Greeks. In writing the alphabet, the Etruscans included the letters B, Δ (beta, delta) for voiced stops [D9], but those letters do not occur in actual texts. Many languages in the world have pairs of voiced and voiceless consonants, while some languages, e.g., Hawaiian, Tamil, have only voiceless stops with no voiced pairs. (No languages have only voiced stops with no voiceless partners.)

Etruscan seems to have been such a language. Nonetheless, they recognized that k sounded and felt slightly different before front and back vowels and wrote Q before U, K before A and, kept Γ (gamma, rounded out to C) for k before front vowels. The Romans learned the alphabet from the Etrucans in the 6th century BCE, keeping the QU (with U in its glide persona) before another vowel, drastically reducing the use of K and extending C everywhere else for both k and g. This is why the *praenomina* Gaius and Gnaeus are (anachronistically) abbreviated C., Cn. Apparently, the Romans tolerated this ambiguity—the way English speakers tolerate one spelling th for both a voiced and voiceless fricative and s for both s and z [H2]—until the end of the 3rd century BCE when the Senate created a new letter by adding a bar to C, namely, G and thereby a consistent representation of the pair of velar stops. (The already literate people of that generation had to both learn a new habit and unlearn an old one, whether happily or unhappily, is hard to say.) The Latin alphabet started as essentially the Greek alphabet. Still, the C/K issue and a few other little "ironies" established the Latin alphabet as an entity quite different from the Greek.

D13. Of "Hards" and "Softs." The classical Latin velar stops c-g did not always stay stops. Through the early centuries CE, these "back" consonants did stay at the velum before back vowels: *casa-garum*, *corpus-fungor, currere-eguī.* Before the front vowels i, e, they started "moving forward" in the mouth to meet them, resulting in palatal affricates [D3]. The popular term for the velar stops is "hard-c, g,", while the fricative component of the affricates earns them the popular moniker "soft-c, g." The affricates became simply automatic variants of the stops. No change in spelling was necessary, just a revaluation of the letter sequences ci-ce, gi-ge to

"chee-cheh, jee-jeh." Verb conjugation then sounded like dīcō-agō, dīcunt-agunt with velar stops but the rest of the present system dīcis-agis, dīcēbat-agēbat, etc. with palatal affricates "ch-j." This new stage of Latin was the norm as the Roman Empire was morphing into the Catholic Church, thus the alternation of "hard/soft" is one of the hallmarks of Church Latin. In other words, Church Latin speakers had much busier palates than classical Latin speakers. A few other consonant changes include v moving from labiovelar glide to voiced labiodental fricative [D2], and the combinations "ti/di+vowel," e.g., *grātia, Lātium,* become the *voiceless dental affricate* ts in grá-tsee-a, lá-tsee-um [F2], modern Italian, spelled *grazie, Lazio*, *mezzo* (with z, ironically, recreating the same kind of voiced-voiceless ambiguity as ancient c). Some 21st century Latin classes use reconstructed classical pronunciation, while others use Church pronunciation. Both are correct and legitimate, and students of one should be somewhat acquainted with the other, not unlike learning European vs. American Spanish, British vs. American English, the Dutch of the Netherlands vs. the Belgian variety called Flemish. (Caesar and Vergil might have been confused to hear their works read aloud in Church pronunciation, and singing Christmas carols in classical pronunciation would be a similar anachronism but no more so than reading Shakespeare in contemporary American or BBC pronunciation, both quite different from Elizabethan English.) See H2 for the consequences of this "hard/soft" development for English.

E. Syllables.

Words are composed of sequences of consonants (hampered airflow) and vowels (free, shaped airflow), symbolized as V, CV, VC, CVC, etc. A vowel is

the "core" of a syllable, and syllables have boundaries. The sequences CVCV and CVCCV are two syllables each, that is, CV•CV, CVC•CV. A single consonant or certain clusters, e.g., sp-, pr-, begin a syllable, and of two consonants, in most instances, the first ends the previous syllable and the second kicks off the next syllable. Intuitively enough, the abstract S-T-E structure ambul-#-ō forms the actual pronounceable syllables am•bu•lō and not *a•mbul•ō or *amb•ul•ō. In this article, a raised dot separates actual audible syllables, while dashes separate the abstract S-T-E components of a verb form—and the two do not have to coincide.

E1. Open. Syllables of which the last sound is a vowel are *open*, and a following single consonant begins the next syllable. The abstract S-T-E structures *amā-bā-re, *rīd-s-ī, *cade-#-re, *cecid-#-ēre come out audibly as strings of open syllables: a•mā•bā-re, rī•sī, ca•de•re, ce•ci•dē•re.

E2. Closed. Syllables of which the last sound is a consonant are *closed*, and the next consonant begins the next syllable. The S-T-E structures ambulā-#-s, cap-tūr-ī, audī-v-istī, faci-ent-is strike the eardrum as a mix of closed (here underlined) and open syllables: am•bu•lās, cap•tū•rī, au•dī•vis•tī, fa•ci•en•tis. Poetry scansion [G] is based on this understanding.

E3. The relevance for conjugation is that long vowels stay long in open syllables, e.g., the stem vowels in present tense a•mā•mus, ha•bē•tis, au•dī•tur, but shorten under two well-known conditions:

(1) in a closed syllable, e.g., the familiar 3rd person sg./pl., -t vs. -tur: theoretical *amā-#-t, *amā-#-tur > actual a•mat, a•mā•tur, compared to both plurals *amā-#-

nt(ur) > actual a•mant, a•man•tur with a middle closed syllable. 1st sg. -m, -r show the same: *amā-bā-m, *mīrā-bā-r > actual a•mā•bam, mī•rā•bar; future passive and the present active participles, gen. sg. *amā-nd-ī, *habē-nt-is > a•man•dī, ha•ben•tis. Long stays long, however, before final s: *amā-#-s >, a•mās; Conversely, vowels before the consonant clusters ns, nf, nct automatically lengthen if they are not already long, hence, active participle nom. sg. **habē-nt-s > ha•bēns (though in poetry they both scan as long [G]);

(2) before another vowel, specifically across an S-T boundary, ē and ī shorten, e.g., present system *audī-ēbā- > actual au•di•ē•bā-, and both (1) and (2) apply in *habē-ā-m *audī-ā-t > actual syllables ha•be•am, au•di•at. That said, the stem vowel ā takes condition (2) to the next level, going beyond shortening to dropping altogether, specifically in present subjunctive, e.g., *amā-ē-s > a•mēs as well as 1st sg. present indicative *amā-#-ō/-or > syllables a•mō, a•mor. All verb stems observe these rules every time the conditions apply (except the highly unusual fierī, fīō, fīunt).

The root vowel "risings"[A4] now also turn out to go hand in hand with open and closed syllables: in some roots an initial open syllable low and mid vowels a, e rise to internal open syllable high vowel i in ca•dō/in•ci•dō, te•ne•ō/con•ti•ne•ō. In a closed syllable, a rises to mid vowel e in car•pō/dē•cer•pō, fal•lō/fe•fel•lī. The diphthongs ae and au do not so much rise as reinstate the high vowel quality of their glides along with length, that is, cae•dō/ce•cī•dī, clau•dō/in•clū•dō. Only certain stems do this, since, e.g., trahō/extrahō, amō/adamō do not. (Janson 1979, Chapter 3 provides lists.)

E4. Short vowels can also lengthen. Vowels are generally considered long before the consonant clusters ns, nf, nct. The short root vowels of some verb stems of Profiles-3, 4 lengthen under some particular grammatical conditions in the perfect and the supine. With the perfect marker -#-, a short root vowel in an open syllable generally lengthens, as in mov-#-ī, leg-#-ī > mō•vī, lē•gī. The supine system of only some stems with both a short root vowel in an open syllable and a voiced root-final consonant d, g not only devoice that consonant [F1] but also lengthen the vowel known as Lachmann's Law (more an observation than a law), as in *leg-t- [F1] > *lec-t- [L] > actual lēc-tum.

F. Other Stem Adjustments at the S-T and T-E Boundaries.

In addition to the regular vowel adjustments just reviewed are a number of regular consonant adjustments across grammatical boundaries. Neighboring sounds can affect each other, and the spelling systems of some languages represent the results [H]. The processes of concern here are *voicing assimilation*, *sibilation*, and reducing a double consonant to a single. These regular processes occur separately or in a chain of theoretical steps from an abstract, idealized form to the actual pronounced and spelled form. Latin spelling is partly responsible for making these regular processes appear irregular to learners because the rules are formulated in terms of letters rather than sounds, which is the point of this entire article.

F1. Voicing Assimilation/Accommodation/Anticipation. The awareness of voicing [D9] is relevant for consonant clusters, particularly "stop+stop" and "stop+fricative" [D1, 2]. In the theoretical clusters *bt, *gt, *bs, *gs that are voiced+voiceless, the

vocal cords "know" that they will fall still for t, s and do so "anticipatorily," as it were, for b, g. The stop remains a stop, and Latin spells this in, e.g., supine *scrīb-t-um, *aug-t-um > actual scrīp•tum, auc•tum and perfect *scrīb-s-ī, *aug-s-ī > actual scrīp•sī, and theoretical *auc-s-ī further submits to the "X" rule [D8] to appear as actual auxī, blurring the S-T boundary visually but not audibly. (The clusters *dt, *ds will in similar fashion devoice to theoretical *tt,*ts, but see [F2].) Some learners might find these wild-looking spelling variants more manageable if they could see the process at work.

The root-final consonant m (voiced labial nasal) has no voiceless counterpart. Nonetheless, in the supine of *emere*, the vocal cords switch off before -t- (voiceless dental stop) and in so doing create the impression of a voiceless labial stop, which Latin spelling is only too happy to represent by inserting the letter for that sound, namely, p in *em-t- > *emp-t-. (This indirect devoicing then triggers Lachmann's lengthening in actual ēmp•tum.) The derivatives of this root cōmere, dēmere, prōmere, sūmere also insert p in the supine and perfect sūmp•tum, sūmp•sī.

F2. Sibilation. The potential consonant cluster *ts abounds in Latin, but Romans seem to have avoided pronouncing it. Both consonants are already voiceless, but the stop t assimilates to the following sibilant fricative s, resulting in ss, e.g., percutiō, perfect *percut-s-ī > actual per•cus•sī. As for double *tt, interestingly, Latin has no trouble pronouncing them across a syllable boundary within a stem, e.g., the verb mitti-#-re and mit•te•re, the noun *sagitt-a > actual sa•git•ta. Across an S-T boundary, however, theoretical *t-t emerges as *s-s as in patī, fatērī, pefect participles *pat-t-, *fat-t- > pas•sus, fas•sus. The cluster *dt first devoices to *tt and then sibilates to ss, as in *fodi-#-ō, *fod-t- > actual fo•di•ō, fos•sum.

F3. Reduction. A Latin double consonant "reduces" to or at least is written as a single under three conditions: after a long vowel or diphthong, after another consonant, or at the end of a word. The end of the word is the most straightforward, as in 3rd declension nouns since all case endings begin in a vowel except nom. sg. -s and its variant -# "zero": gen. sg. oss-is, mell-is, nom. sg. *oss-#, *mell-# > actual os, mel. (Textbooks, taking the nom. sg. as the base, might give the impression that final s and l magically double in the other cases. It is the other way around.) The supine *ver$i-#-re with the "genuine-s" marker reduces *vers-s- to actual ver•sum. *Verti-#-re goes through a two-step chain [F2-F3] *vert-t- > *vers-s- to arrive at the identical ver•sum. *Ordī-#-rī goes through a three-step chain [F1-F2-F3] in *ord-t- > *ort-t- > *ors-s- > actual or•sum.

G. The Poetry Connection

G1. Syllables. Poetry scansion is far from the immediate grammar topic of this article, but it is nonetheless the one other area where the open/closed syllable notion of [E1-E2] is crucial. An open syllable can be long or short "by nature," as a•mā•bō (short-long-long), a•mā•te (short-long-short), mī•rā•mi•nī (long-long-short-long) shows. (The macron is particularly useful here.) When textbooks say, e.g., a long or short vowel "followed by two consonants is long by position," they mean two consonant *letters*, usually with an intervening syllable boundary. Hence the first of the syllables is closed. In other words, all closed syllables are "long by position," whether the vowel in them is long or short. A•mā-tis, a•man•tis, a•man-dīs all scan as short-long-long. The trick of scansion is to scan the whole line of poetry as a single word and group the syllables into the appropriate sequences of long and short for the meter in question.

G2. Consonants. The "two consonant (letters)" rule seems to make exceptions of the single letter x [D8] since in sound it represents a consonant cluster, and the voiceless aspirated stops ph, th, ch [D8], which count as one consonant since they are single sounds. In other words, vetat scans ve•tat short-long, while vexat and vertit scan *vec-sat, ver•tit long-long. Vetat mē scans ve•tat•mē short-long-long, while vetat eum scans ve•ta•te•um short-short-short-long. Interestingly, consonant clusters composed of "stop+liquid" (pl, tr, etc., [D4]) have the option of counting as two separate consonants or, recognizing the vocalic qualities of the liquids, as a single consonant. In other words, *patrēs* can scan as *pat•rēs* (long-long) or *pa•trēs* (short-long). The consonants final m and initial h are part of the discussion of vowels below.

G3. Vowels and Dropping. Two notes.

G3a. Vowels can follow each other within a word, as in Ae•nē•ās, ro•se•us but not across a word boundary. The first one is written but skipped over in pronunciation. A sentence like *Agrippa eme equōs* scans as *a•grip•pe•me•quōs.* Word-final m (always following a vowel) acts as a normal consonant before a word beginning in a consonant. Still, a following word beginning in a vowel ignores m, that is, it drops along with its preceding vowel: *Videō Agrippam equum emere* scans *vi•de•a•grip•pe•que•mere*. The other side of that coin is that h does not count as a consonant at the beginning of a word. A preceding consonant skips right onto the following vowel, and a preceding vowel drops. *Agrippa habet equum* scans *a•grip•pa•be•te•quum.* The two "drops" intersect in scanning *Agrippa equum habet* as *a•grip•pe•qua•bet.*

G3b. Syncopation. Poetry scansion can skip over the two short high vowels i, u [A3] in an internal open syllable, that is, the second of a three-syllable word or longer drops, as the example of *gavidē- > gaudē- but *gavid-t- > gavīs- suggested in 4.2, above. Typical examples in poetry scansion are re•po•si•tum (Aeneid I.26 "manet altā mente re•pos•tum"), vin•cu•līs (Aeneid I.54 "imperiō premit ac vin•clīs et carcere frēnat"). In Catullus 43 a syncopation and the loss of m and its syllable in "*O saeculum insapiēns,*" u syncopates and um is lost, scanning as the well-known *sae•clin•sa•pi•ēns*.

H. The English Connection (and some other languages)

This article began by recalling the old adage "you learn your own language better by learning another language," The material in this section is useful for any anglophone, especially one learning another language. Such questions often arise in Latin class, and a systematic comparison of Latin and English, at least in terms of sound and spelling, may prove beneficial.

H1. Vowels.

H1a. Inventory and Spelling. Modern English—at least some of its many varieties worldwide—has fourteen distinctive vowel sounds, including all five vowel sounds of classical Latin (with y as an outlier). An English speaker has an easier time learning to pronounce Latin since there are no "foreign" sounds. In contrast, a Latin speaker learning English would have to learn to make many new vowel sounds, including diphthongs, let alone to line them up with English spelling. As for spelling, English had to press the inherited five vowel *letters* of the Latin alphabet

into double and triple duty, singly and in combinations, since most of these sounds have several different spellings. Which of these are diphthongs, and which are digraphs? Readers from different areas of the English-speaking world may have different pronunciations for some of these words.

From high vowel to low, feeling the jaw opening:

front	beat Pete sweet machine	bit English women symphony	bay bait fate weight café	bet any	bat	
back	boot lose shoe through cruise few feud butte* beauty* muse* cute*	foot put could woman	bought caught war four for floor	but** ton what blood couple rough	boat mote rose though low toe	bottle father watt

*Interestingly, the high back rounded vowel u after a labial or velar consonant behaves differently whether it is spelled u or oo. The u spelling usually implies a y-glide slipping in between consonant and vowel in such pairs as *boot*/*butte; moot*/*mute*, *pool*/*pupil*, *cool*/*cute, goon/regular,* and even at the beginning of the word in *oodles/unit.*

** This vowel sound is "central" in terms of height and front/back. Many European languages do not have this vowel, and learners of English often have trouble distinguishing such pairs as, e.g., *dock/duck, watt/what.*

Four of these are diphthongs but not very noticeable since the glide element is in the same part of the mouth as the vowel it follows. Nonetheless, the continued movement of the tongue or the lips is palpable, and a mark of a foreign accent is pronouncing them as pure vowels, giving the impression of "clipped" speech.

- front vowel+front glide y: *bee^{y}t, bai^{y}t (the tongue rises toward the palate)*
- back vowel+back glide w: *boo^{w}t, boa^{w}t (the lips continue to pucker)*

Three additional diphthongs are more noticeable: they have the vowel and the glide in different parts of the mouth, making them clearly audible and palpable.

- low vowel with front and back glide a^{y} = *bite, byte, buy, mice-find, my, tie, sigh, height,* a^{w} = *bout*, *how*, *mouse-found*
- back vowel plus front glide *boy*, *boil*. Latin would spell all three as *baet, baut, boe(l).*

(See [H1c] for the Great Vowel Shift and its consequences.) Then, essentially made, among other things, Middle English long vowels into Early Modern English diphthongs. Finally, English has a distinctive vowel colored by a following r, spelled variously as *fur, fir, Bert, work, courtesy.* Some of the same letter combinations occur in Latin but are pronounced as merely the sum of their parts: fūr (foor), vir (weer), ferrum (FEH-rum), currō (koor-ro, but English does not double consonants).

H1b. Stréss and Friénds. The stress in a Latin word is predíctably on the next-to-last (termed penultimate < *paene ultim–*) or third from the last (antepenultimate). If the penultimate is long, whether open or closed, it gets the stress, hence, *ha•bē•bā•tis, ha•bē•ren-tur, ha•ben•tis, ha•bēns, ha•bu•ē•runt*. If the penultimate is open and short, the stress moves back to the antepenultimate: *ha•bē•bi•tis, ha•bu•e•rant, ha•ben•ti•bus*. This is the classic difference between second and third conjugation infinitives, e.g., *ia•cē•re/ia•ce•re*, distinguished visually by the macron in publications that use it. The stress in any single English word, by contrast, can in principle fall on almost any syllable, but related word groups form many different patterns, and modern English spelling includes no diacritic marks for this. Dictionaries often mark stress at the beginning of that syllable as in *biˊology*, *ʼradical*, and some textbooks might put an áccent márk (like an upturned macron) on the vowel as in *biólogy, rádical*. For example, academic subjects are often an *–ólogy* or *–ónomy* and someone who works in that field is an *–ólogist* or *–ónomist* (stressing the same syllable), while the adjective is *–ológical* or *–onómical*. (Both stresses are antepenultimate.) Most of the hundreds of nouns that end in *–átion*—from Latin supine system verbal noun *–ātiō* but keeping the n!—continue to stress that penultimate syllable, e.g., *véntilate/ventilátion*, even if the word adds a suffix like *confrontátion/confrontátional.* Several hundred pairs of English words are spelled the same but differ only in stress (and may or may not be of the same word family), hence context is crucial in, for example, reading aloud:

- noun-verb *rébel-rebél, óbject-objéct, récord-recórd*;
- noun-adjective *cóntent-contént*;

- three syllables with a primary stress on the first and weaker stress on the last as in the verb *sé•pa•ràte* vs. the two-syllable adjective with no secondary stress *sé•parate* (sé•prit), etc.

Stress in phrases is also important for English speakers. Not every *white hóuse* or *blue bírd* is the *Whíte house* or a *blúebird*; not every *Russian téacher* (teacher of whatever subject who is Russian) is a *Rússian teacher* (someone who teaches Russian regardless of nationality). Of course, if contrast or correction is in order, then it is not a *blúe house* but a *whíte house*. Spanish has rules for which syllable in a word is stressed, but if the stress falls unúsually on anóther sýllable, then it requíres thís márk, as in, e.g., *esta-está* (demonstrative vs. copula); *hablo-habló* (1st sg. present vs. 3rd sg. preterite) as well as the visible but inaudible difference between *tu-tú* (possessive adjective vs. subject pronoun). Modern Czech uses this mark like a Latin macron to indicate long vowels *bily-bílý* ("they hit" vs. "white"). French uses this mark to signal a particular quality of the vowel e in *espérer* (where it is called an *acúte* áccent). In 4.0 above, enriched infinitives of Profiles-3, 4 appropriate the acute accent together with the perfect system marker -#- to indicate that the short root vowel lengthens in the perfect, e.g., lávāre$^{3\#}$, móvēre$^{3\#}$, légere$^{4\#\text{-}L}$, fódere$^{4°\#}$, while the same mark on the stem vowel signals the small group with short-i in the present system and long-ī in the perfect and supine, namely, petére^{4v}, cupére$^{4°v}$. French also has a hat-like cîrcûmflêx accent (bent macron) often to indicate that the Latin stem of a word had an s that fell silent, e.g., *fenêtre, vous êtes* from Lat. *fenestra, vōs estis.* The six verbs with root a that not only lengthen but also raise it to ē in the perfect show it with this circumflex accent, e.g., âgere$^{4\#\text{-}L}$, frâ(n)gere$^{4\#L}$, pâ(n)gere$^{4\#}$, câpere$^{4°\#,}$ fâcere$^{4°\#}$, iâcere$^{4\#}$.

H1c. English and the Great Vowel Shift (in the briefest of nutshells). Modern English is basically a Germanic language in structure that has, through the interactions of history, religion, and politics over its 1500-year existence and development, incorporated a large vocabulary component from French and Latin. Latin is not the "basis of English," as one often hears people outside the field say, but it has played a large role in its history. Besides that, "modern" English was not always modern. The usual historical periods of the language called English are (in very approximate centuries) Anglo-Saxon or Old English (550-1100), Middle English (1100-1500), Early Modern English (1500-1700), and Modern English from then to now. (Shakespeare's 16th-century language is, indeed, "old English" as far as 21st-century anglophones are concerned, but it is more or less understandable to modern speakers as opposed to Old English, which is as foreign a language now as, say, German or Swedish.) These terms of 19th century scholars are retrospective, while the speakers of those stages did not think of their languages prospectively as old or intermediary on the way to some other stage, any more than 21st century speakers wonder what speakers of the next stage—and there will be one—will call it. In any case, questions about "old," "new," and "related" languages often arise in Latin class.

Here is the briefest orientation. Three distantly related branches of the huge Indo-European family of languages cross paths here: Italic (Latin, which morphed into Romance including French, Spanish, Italian, Portuguese, Romanian, Occitan, Catalan), Celtic (of which the modern members are Welsh, Breton and Gaelic, both Irish and Scottish), Germanic (including Dutch and Frisian, German and Yiddish,

and the Scandinavian languages Danish, Norwegian, Swedish, Icelandic, Faroese but not Finnish).

The Romans occupied the island of Britain in the 1st century CE, bringing their Italic language and encountering the Celtic-speaking natives (whose linguistic cousins the Gauls were the object of Caesar's conquests a century earlier). The occupiers left in the early 5th century CE. A few decades later, the Germanic peoples called Angles, Saxons, and Jutes, speaking closely related West Germanic languages, started moving in from the continent, pushing the native Celtic speakers to the peripheries. Over the next few centuries, their Germanic languages mixed into several regional varieties of Anglo-Saxon. These polytheistic Germanic peoples accepted Christianity and began writing their language in the Latin alphabet learned from Roman and Irish missionaries. The most famous literary product in this language is the (probably) 10th century epic poem, *Beowulf*. During the 9th century, some of their North Germanic cousins—the Norsemen or Normans, some groups of which were known as Vikings—had been trading and raiding all over Europe. Early in the 10th century, a group of them in France agreed to become subjects of the king of France, to settle in current-day Normandy (named for them), and to accept Christianity. They mixed with the local population, and within a few generations, they no longer spoke Old Norse but adopted the local variety of French (called, naturally enough, Norman French).

In January 1066, the Anglo-Saxon king of England, Edward the Confessor, died, leaving no heir or designated successor. Several of his Norse and Norman cousins claimed that throne, including the French-speaking William, Duke of

Normandy. In October 1066, he sailed across the Channel, battled and defeated the English at Hastings on October 14 (only a few hours long), and was crowned king of England. The next three hundred years saw a (Norman) French-speaking aristocracy ruling an Anglo-Saxon-speaking citizenry. Old English absorbed thousands of French words through their interactions, producing Anglo-Norman and ultimately what modern scholars call Middle English. The most notable writings of those subsequent centuries include Chaucer's *Canterbury Tales* (1390s), the anonymous *Sir Gawain and the Green Knight,* and many others. The five vowel letters of the Latin alphabet represented many of the same long and short vowels as in Latin, not because the two are distant cousins but because hundreds of the world's languages have similar sound systems, whether they represent them in writing or not.

Now it gets interesting. During the 15th century, Middle English speakers in some island regions started pronouncing the long vowels differently, shifting them around in the mouth, a phenomenon known as the Great Vowel Shift, well worth looking up for more depth than these meager paragraphs can accommodate. Basically, Middle English long vowels started becoming diphthongs. High vowels ī and ū ("ee" and "oo," not "eye" and "you") both shifted to the low vowel ā (not the letter "ay" [A1]) but preserved the high-vowel element as the glides y and w, respectively, that is, singular *mūs* and past tense *fūnd* became *ma^{w}s*, *fa^{w}nd* (mouse, found) and plural *mīs*, present tense *fīnd* became *ma^{y}s, fa^{y}nd* (mice, find). This is why, for example, the name of the Greek letter π/*pi* ("pee") now sounds like the word for a round, baked confection "pie." (Since one can use *pi*—3.14—to measure aspects of a *pie* and since Americans write the date March 14 as 3.14, coincidentally,

the birthday of Albert Einstein, a California physicist in 1988 started marking that day as International Pi(e) Day. Never mind that the world outside the US writes that date 14.3 and has other words for those baked goods, so "international" is a stretch.) As if to fill an unconscious "gap" in the system, the Middle English mid vowel ē moved "up" to a high vowel, which is why the Latin letter names *bē*, *dē, pē* are modern English *bee, dee, pee*, etc. In a few words, the rounded mid vowel ō also moved up to u, e.g., *move, prove*. The low vowel ā moved up to a mid vowel so that Middle English *fate* (fah-ta) became fe^{y}-ta, and eventually, that final short e stopped being pronounced, hence modern "silent-e." Such pairs as *ride/rid* abound, and the single vs. double consonant in the present participles *riding/ridding* continue to signal "long" vs. "short" vowel. The spelling ck and not *kk follows a short vowel, so the participles of *bake/back* are *baking/backing* and not **bakking.* The voiced fricatives v and z are spelled with a single v and s after a short vowel in *driving/driven, rising/risen* and not **drivven, *rissen* or even **rizzen.* Discussion of the rest of the results of the Great Vowel Shift belong in a more detailed forum, but suffice it to say, the five vowel letters now represent many different sounds and different letter-to-sound patterns from most other European languages. English has a few techniques for indicating some of these sounds. In the Latin or other language classroom, the question frequently arises, "How many vowels does English have?" The proper response is now, "If you mean *letters*, then five and a half since the pair i/y can represent the same vowel sounds as well as semiconsonant. If *sounds*, then fourteen with lots of variability from region to region in the English-speaking world." Latin students can now be in a position to enlighten the outside world on "what's so great about the Great Vowel Shift."

H1d. Homo-nym/phone/graph. A minor point of terminology for the language classroom: words that sound the same but are spelled differently, e.g., *son-sun, heard-herd, bread-bred, brake-break* are *homophones.* Words in which the same letters represent different sounds—e.g., *tear* the paper (rhymes with *care*)/shed a *tear* (rhymes with *fear*); polish the Polish silverware; *bow* down (rhymes with *cow*)/*bow* and arrow (rhymes with *low*); *wind* in the willows/*wind* your watch—are *homographs*. The English stress pairs just discussed in H1b. are *homographs* but not *homophones.* The usual cover term for both is *homonyms*, but this term can also apply to what looks and sounds like a single word, but that has such different meanings that it can be considered two words, e.g., river *bank/*savings *bank; file* your nails/*file* these contracts, gold *mine*/exploded *mine*. These are different parts of speech: I don't *mind*/out of your *mind*; walk in the *park/park* the car.

H2 Consonants

H2a. Inventory.

English has the same consonant sounds as classical Latin plus several more, making more use of the same places of articulation [C1-6] and of the voiced/voiceless distinction [D9]. Most of the same letter-to-sound correspondences are still valid: he letters p-b-f-m still represent labials; the letters t-d-n still represent dentals, and the letters c-g still represent velars (*coat/goat, music/blog*) unless a front vowel follows (*city/gentle*), even a silent one (*face*); k is only velar and almost exclusively before a front vowel (*kitchen, kettle* and the digraph ck after a short vowel), and h is only glottal—and this h participates in digraphs for sounds Latin

did not have: dental s+h is the palatal fricative sh; velar c+h becomes the palatal affricate ch; dental stop t becomes interdental fricative th. On the other hand, English has s and z for the voiceless and voiced dental fricatives but uses s to represent both (voiceless in *solve, sign* and voiced between vowels in *desolve, resign* as well as *museum, president*) as well as a palatal in particular configurations (voiceless in *mission, pressure* and voiced in *vision, pleasure*); j is a palatal affricate. Here is an attempt at a comparative chart of the two languages' sounds and where they differ.

<table>
<tr><td></td><td>Labial</td><td>L.dental</td><td colspan="2">Dental</td><td>Palatal</td><td>Velar</td><td>Glottal</td></tr>
<tr><td>Latin</td><td rowspan="2">b/p, w-v, m</td><td>f</td><td rowspan="2">d/t</td><td>s, r-l-n</td><td>y</td><td>g/c</td><td rowspan="2">h</td></tr>
<tr><td>English</td><td>f/v</td><td>z/s, th*, r-l-n</td><td>y, j/ch, zh/sh^</td><td>g/c(k), -ng</td></tr>
</table>

* th is *interdental* with one spelling for both the voiced one (*this, though, northern, weather,* the verbs *teethe, breathe*) and the voiceless one (*thistle, thigh, north, teeth, breath)*

^ English has a large repertoire of "hissing/hushing" fricatives and affricates s-z-sh-zh-ch-j compared to Latin s, forcing many spelling accommodations: the affricates are *jin/chin, badge/batch;* the fricatives are *pleasure/pressure, vision/mission*, also *spatial, special, machine, desert.* A Roman learning English would have to learn to make the palatal sounds. In trying to conjugate, e.g., "I sit and write"/"she sits and writes, s/he would have to resist the inclination to enact F2-F3 *sit-s, *raet-s > *sis-s, *raes-s > "actual" sis, raes. The same for "I find birds"/"he finds birds" with F1-F2-F3 *faend-s, bird-s > *faent-s, *birt-s > *faens-s *birs-s > "actual faens, birs (with voiceless s, of course, see H2b.). The likelihood of testing this hypothesis on a native Latin speaker learning English is, alas, rather remote.

The Latin letter x represents a voiceless consonant cluster ks (not the letter names kay-ess). That continues in English before a voiceless consonant (*excite, expect, extend*), the corresponding voiced consonant cluster gz between vowels (exit, exam, the same way s voices between vowels in *solve/desolve, museum, president*, etc.), and just z at the beginning of a word, usually from Greek, e.g., *xylophone*.

In addition to the labial and dental nasals m-n, English also has a *velar nasal* spelled ng. There is no actual g, but that letter suggests the velar placement of the tongue. It can occur only at the end of a syllable, and now stress plays a role. In one-syllable words like *sing*, that syllable automatically gets the stress, and all English speakers pronounce ng. The participle ending *-ing* is unstressed in *singing*, *cooking* as it also is in a few words like *nothing, morning*. In those unstressed syllables, some varieties of English replace the velar nasal by the dental nasal. Some publications spell this with an apostrophe—especially in dialogue in the mouths of people thought to be "folksy," "rural" or just plain "wrong"—in *singin', nothin', mornin'*, as if the g (that was never really there anyway) is missing or dropped. Nothing is dropped, just relocated to a different part of the mouth under quite specific conditions. The same people who would *go walkin'* or who *are talkin'* would never *sin' a son,',' brin' home the bacon* or *have a cold and can't taste a thin.'* Even still, "standard English" (whoever decides what that is) judges this as nonstandard, even though such speakers are following a rule and not breaking one.

H2b. As for voicing assimilation [F1], Latin consonant clusters e.g., *bs, bt, let the voicing of the second consonant determine the voicing of the preceding paired consonant. Voiced b devoices *regressively* before voiceless s. English consonant cluster voicing is the opposite concerning two particular grammatical endings spelled -s (plural of nouns, possessive, 3rd pers. sg, present tense) and past tense spelled -ed. The voicing of the stem-final consonant determines the voicing of these two endings, so there is no need to change the spelling.

- After a voiceless consonant, they are single voiceless consonants s, t.
  caps, laughs, pots, sacks; even with "silent-e": *capes, wife's, totes, rakes*
  capped, stuffed, missed, wished, looked sound like *capt, stuft, mist, wisht, lookt*.

- After a voiced consonant or vowel, they are single voiced consonants z, d.
  clubs, buds, hugs, gives, cans, calls, cars, sofas sound like *clubz, budz, hugz, givz, canz, calz, carz, sofaz*, sometimes spelled this way to portray a young child writing or someone semiliterate.
  jabbed, loved, climbed, buzzed, pulled, whirred, begged
- Both endings are a syllable: èz after a husher, èd after t, d
  tosses, buzzes, wishes, garages, watches, and "silent-e," as it were, springs to life in *faces, dozes, quiches, badges; waited, waded*.

H2c. Of "Hards" and "Softs." As with the Latin "hard c-g" (velar) and "soft c-g" (palatal) [D3, 13], the rest of the Latin-speaking Middle Ages went through similar changes with different results in different territories. Italian continues the Latin pattern: the letter sequences ci, ce, gi, ge are "chee, cheh, jee, jeh." To keep c

and g "hard" before i, e, Italian inserts h: chi, che, ghi, ghe. (Managers of Italian restaurants would do well to bring this hint to their employees' attention.) In Old French, voiced gi, ge also became the palatal affricate jee, jeh (dzhee, dzheh), while the voiceless ci, ce moved one more step forward to the dental affricate tsee, tseh. Later in the Middle Ages, the stop element stopped being pronounced, yielding the current zhee, zheh, see, seh. To keep c, g hard, French inserts u in gui, gue and replaces c by qu in qui, que. (Spanish does the same in, e.g., *taco/taquito*.) To keep c soft before back vowels, French puts a little hook under the c for ç, called *cedilla* in, e.g., *façade*, *garçon, français*. English "soft-g" is a palatal affricate like Italian and Old French in *gem, ginger; legal, regal* vs. *legitimate, regicide*. "Soft-c" is just a dental fricative like French in *city, center, electric/electricity*. To keep c "hard" before i, e, English replaces c with k, as in *cite/kite, cat/kitty, cattle/kettle, cinder/kindle*; there is no special way to special way to spell "hard-g" before these vowels, as in *get, give*. This "softening" obviously happened before the Great Vowel Shift made the Middle English front vowel i into the Modern English back vowel a^{y}. In this article, *sound* has been the guiding principle with *letter* as a secondary issue. In this final paragraph, the rule for English is, ironically, based on letter: the English *letters* c, g are soft before the *letters* i/y, e.