Morphological Make-up as the Predictor of English Word Accent

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For years, phoneticians have tried to simplify pronunciation for EFL/ESL learners. Some have identified four degrees of primary, secondary, tertiary, and weak stress, and others only three degrees: primary, secondary, and weak. Still others have concentrated on two stress levels: accented versus unaccented, or stressed versus unstressed (Bowen, 1975; Stageberg, 1964; Chomsky & Halle, 1968). None, however, has followed an orthography-based approach to English accent. Because orthography is the most static way of representing words in English, spelling- or orthography-based rules of accent/stress placement may come as a relief to ESL/EFL learners. In this article I present four spelling-based rules for stress placement to help EFL/ESL learners master pronunciation.

Depuis des années, les phonéticiens tentent de simplifier la prononciation pour les apprenants en ALE/ALS. Certains ont identifié quatre degrés d'accent tonique : primaire, secondaire, tertiaire et faible, alors que d'autres ne tiennent compte que de trois: primaire, secondaire et faible. Encore d'autres portent leur attention sur seulement deux niveaux d'accent tonique: accentué ou pas; ou avec accent tonique et sans accent tonique (Bowen, 1975; Stageberg, 1964; Chomsky & Halle, 1968). Aucun phonéticien, par contre, n'a adopté une approche basée sur l'orthographe pour l'accent tonique en anglais. L'orthographe étant la façon la plus statique de représenter les mots en anglais, des règles sur l'accent tonique qui reposeraient sur l'orthographe pourraient s'avérer utiles pour les apprenants en ALS/ALE. Dans cet article, l'auteur présente quatre règles sur l'accent tonique qui reposent sur l'orthographe et qui visent à aider les apprenants en ALE/ALS à maîtriser la prononciation.

Introduction

Phoneticians have argued that English word stress is unpredictable. "There is no simple way of knowing which syllable or syllables in an English word must be stressed, but every time you learn another word you must be sure to learn how it is stressed" (O'Connor, 1967, p. 115). Gordon (1974) recommended a good dictionary as the simplest way to correct pronunciation as word accent is not that predictable. For years generative analysis of English phonology has afforded handy rules for stress placement (Birjandi & Salmani-Nodoushan, 2005; Chomsky & Halle, 1968; Dickerson, 1978, 1981, 1982,

1985, 1986, 1989; Dickerson & Finney, 1978). This article shows how morphological make-up can help to predict English word accent.

Key Syllable (KS) and Left Syllable (LS)

To begin with, ESL/EFL learners should be able to locate key and left syllables. In any English word there is a canonical syllable called the Key Syllable (KS) defined as the last vowel spelling pattern and all extra letters at the end of a word or before an ending (Yarmohammadi, 1995). Primary word stress is assigned either to the KS or to the syllable immediately to its left, the Left Syllable (LS).

KSs do not necessarily correspond to morphological and/or syllabification units; they all begin with a vowel (V), which may be followed by another vowel, one consonant (C) or more, or the letter *e*. For example,

VCE	VV	VCC	V	VC
de*cline*	de*gree*	en*act*	for*go*	re*gret*

The two patterns VV and VCC may have extra following letters, none of which affects the basic pattern (e.g., *feed*, *geese*, *bounce*, *peach*).

Beginning with a vowel, the LS is the vowel spelling pattern and all extra letters immediately to the left of the KS. It includes all consonant letters up to the first vowel letter of the KS. For example:

f/ *org* / o   d / *egr* / ee   r / *egr* /et   c / *ouns* /el / ing   ref / *in* / ish /es
  LS   LS   LS   LS   LS

ESL/EFL learners should also notice that word endings are either neutral (i.e., begin with a consonant) or accent-governing (i.e., begin with a vowel). Moreover, an *-e* never precedes the neutral ending *-s*; where an *-e* precedes a word-final *-s*, the *-e* must always be included with the *-s*. Only accent-governing endings affect word accent. They fall into various categories and are discussed below.

The presence of a prefix may determine stress placement, and EFL/ESL learners should recognize major Anglo-Saxon (AS) and Latinate (L) prefixes. Moreover, some L prefixes undergo assimilation and take various alternate forms (see Appendixes A-C).

Types of Accent Rules

In this article I present four morphology-based accent rules: (a) Prefix Weak Accent Rule (PWAR), (b) V/VC Weak Accent Rule (V/VCWAR), (c) Key Strong Accent Rule (KSAR), and (d) Left Strong Accent Rule (LSAR).

PWAR

From the Key Syllable, accent the Left Syllable, but not a prefix; if you cannot accent the Left, then accent the Key. For PWAR to apply, EFL/ESL learners need to answer two questions:

1. Does the word belong to the domain of PWAR?

MOHAMMAD ALI SALMANI-NODOUSHAN

2. Does the Left Syllable contain any part of a prefix?

The term *domain* is synonymous with *part of speech* (i.e., verbs, adverbs, adjectives and nouns). There are three possible answers to the second question: *no*, *yes*, or *there is no LS*. Each possibility entails a specific type of accent placement. Where there is no prefix in the LS, the accent falls on the LS; otherwise, it remains on the KS (see Table 1, Tables 1-5 are adapted from Yarmkammadi, 1995, with permission and modifications).

In *consider* and *defines*, for example, the accent is on the Key because the Left Syllables are prefixes, but in *yellowing* the accent is on the Left. In *objectively* the ending *-ly* is neutral and does not count, *-ive* is a weak ending and is within the domain of PWAR. But *ob-* is a prefix and the accent falls on

Table 1
Word Domains for PWAR

Category		Part of Speech	Examples
1*	verbs	V	to consid*er*, to def*ine*, yell*ow*ing
2	-atize	V	to anath*em*atize, to dem*oc*ratize
3	-atist	N	a syst*em*atist, a d*og*matist
4	-al	N	a cann*i*bal, the surv*i*val
5	-ure	N	the dep*ar*ture, the f*ur*niture
6	-ature	N	the lit*e*rature, a s*ig*nature
7	-atism	N	the separatism, the pragmatism
8	-est	Adj	fl*at*test N
9	-age	N, Adj	the d*os*age, av*er*age N
10	-ery	N, Adj	the sl*av*ery, sl*ipp*ery N
11	-or	N, Adj	a bach*el*or, m*in*or N
12	-ed	Adj, Adv	unfin*ish*ed N, rep*eat*edly
13	-y	Adj, Adv	tuss*ock*y N, h*augh*tily
14	-er	N, Adj, Adv	the Jup*it*er, shall*ow*er N, dis*or*derly
15	-ative	N, Adj, Adv	a pres*er*vative, gen*er*ative N, spec*u*latively
16	-able	N, Adj, Adv	a s*yll*able, unimag*in*able N, rem*ark*ably
17	-ary	N, Adj, Adv	a l*ap*idary, so1*it*ary N, nec*ess*arily
18	-ar	N, Adj, Adv	a cal*end*ar, p*ol*ar N, circ*u*larly
19*	-ible (Keys)	N, Adj, Adv	a convert*ible*, invis*ible* N, aud*ib*ly
20	-ory	N, Adj, Adv	a dir*ect*ory, s*ens*ory N, comp*ul*sorily
21	-ive	N, Adj, Adv	a fug*it*ive, perv*as*ive N, obj*ect*ively
22	-ing	N, Adj, Adv	a cav*il*ing, surpr*is*ing N, f*itt*ingly
23	-atory	N, Adj, Adv	a ref*orm*atory, circ*u*latory N, obl*ig*atorily
24	-ish	2-syllable Adj	l*at*ish N, sl*ugg*ish N
25	-ize	2-syllable V	b*ap*tize, c*og*nize
26	-ist	2-syllable N	a l*eft*ist, a fl*ut*ist
27	-ism	2-syllable N	the r*ac*ism, the b*ap*tism
28	-en	all words	the p*oll*en, un*ev*en N, to m*ois*ten, *op*enly

* indicates categories that include exceptions

the Key. Note that in the examples of each domain, the accented vowel is underlined and the Key Syllable is italicized. The letter N, which follows some of the examples, stands for *noun head* and indicates that examples are adjectives; similarly, verbs are indicated by *to* or *-ing* and nouns by *a, an,* or *the*.

Although categories 1 and 19 in Table 1 include exceptions, EFL/ESL learners should notice that verbs of three or more syllables that end in *-ate, -fy, -ize, -ment,* and *-ute* are governed by rules other than PWAR. Domain 19 includes all -ible words where *-ible* is the Key Syllable and may be uninflected or pluralized.

V/VCWAR

From a V or VC Key, accent Left; if you cannot accent Left (i.e., there is no LS, or the KS is not V or VC), then accent the Key (see Table 2).

V/VCWAR applies principally to words with weak endings. To apply V/VCWAR, ESL/EFL learners must (a) identify word domains, and (b) recognize word endings. They should also decide where in the word to place the accent according to V/VCWAR (i.e., they must identify the KS and determine its spelling pattern). For example, in *monumental* the Key is VCC, in *thesaurus* VVC, and in *flamboyancy* VV. The accent will, therefore, remain on KS in these words. In *analytically*, the neutral *-ly* does not count and the KS

Table 2
Word Domains for V/VCWAR

Category		Part of Speech	Examples
1*	-ic Keys	all words	a mech*anic*, class*ic* N, to p*icnic*
2	-ance	N	the tol*erance*, an all*owance*
3	-ancy	N	the irrel*evancy*, the flamb*oyancy*
4	-ence	N	a res*idence*, the conv*ergence*
5	-ency	N	his constit*uency*, an em*ergency*
6	-is	N	the g*enesis*, a syn*opsis*
7	-oid	N	a trap*ezoid*, an ell*ipsoid*
8	-um	N	a contin*uum*, the refer*endum*
9	-us	N	an *exodus*, the thes*aurus*
10	-ous	Adj, Adv	g*enerous* N, trem*endously*
11	-al	V, Adj, Adv	to t*otal*, monum*ental* N, anal*ytically*
12	-an	N, Adj, Adv	a tob*oggan*, Am*erican* N, h*umanly*
13	-ant	N, Adj, Adv	an acc*ountant*, ab*undant* N, mil*itantly*
14	-ent	N, Adj, Adv	the pr*esident*, diff*erent* N, cons*istently*
15	-on	N, Adj, Adv	the phlog*iston*, cr*imson* N, c*ommonly*

*indicates categories that include exceptions.

MOHAMMAD ALI SALMANI-NODOUSHAN

Table 3
Word Domains of KSAR

Strong Sequences	Examples
eVSS	*a*rea, c*orn*eal, *oc*ean, l*i*near, cl*yp*eate, r*od*eo, p*i*geon, petr*ol*eum, cad*uc*eus h*id*eous
iVSS	Virg*i*nia, l*a*riat *al*ien, ob*ed*ience, gr*a*dient, l*en*iency, *id*iom, ch*a*riot, aud*it*ion, s*en*ior, st*u*dio, gr*a*cious, p*od*ium, J*ul*ius fam*il*iar Ar*ab*ian, dem*on*iac, r*ad*iate, m*ed*ia, tr*i*vial, f*ol*iage, W*ill*iam, *a*viary, br*ill*iant, d*ev*iance, *am*iable, m*yr*iad,
Exceptions	words containing 'ies', 'ied', 'ier', and 'iest' strings and ie# words with VV Keys except for 'au', 'eu', and 'ou'

#shows boundary; w# means word-final and #w means word initial (#*ie* means word-final *ie*).

is VC, LS is accented. In *total* there is no LS and the accent falls on the KS. Moreover, in category 1 all words have a word-final *-ic* where *-ic* is the KS.

KSAR

For a Strong Sequence (SS), accent the KS.

English SSs include *i*V Strong Sequences (*i*VSS) (e.g., *iar, ian, iac*) and *e*V Strong Sequences (*e*VSS) (e.g., *eate, eo, eon*). The *i*VSS category does not include the strings *-ies, -ied, -ier, -iest*, or word-final *-ie.* Unlike the term *ending*, the term *sequence* is neutral to position and is, therefore, preferred over the *ending* because patterns of accent occur not only word-finally but also word-medially (e.g. sta*tion*ary, beha*vior*ism). In the word-medial position, *e*V sequences are unrestricted. Furthermore, where a word contains a strong sequence, word domain is irrelevant (see Table 3).

The syllable immediately to the left of the SS is the KS. The KS may be preceded by a Left Syllable (e.g., *etr* in *petroleum*) or may not (e.g., *area*). By excluding *ies, ied, ier*, and *iest* strings, and also *ie*# (i.e., word-final i*e*), the learner can be sure that all other *i*VSs are strong. Where final *y* (i.e., *y*#) changes to *i* before plural, superlative, comparative, or past morphemes (e.g., *happiest*), the resulting sequences are not real *i*VSSs. Moreover, for KSAR to operate, the KS in SSs should contain only one vowel; *au, eu*, and *ou* are permitted (e.g., *nauseous, Aleutian)*, but *ue, ua*, and *uo* cannot be the Key (e.g., *situation, influential*). Other exceptions include *denial, appliance, classifiable, European, museum*, and *idea*.

LSAR

For terminals and short nouns, accent the LS.

Notice that a word should it be submitted to LSAR only after is has failed to comply with any of the previous rules.

The syllable third from the right in heavy (i.e., 3+ syllabic) words is the antepenultimate syllable (see Table 4). In category 1, the penultimate syllable is the KS, and the antepenultimate syllable is the LS; here the LS is accented. In *y*-final heavy nouns (category 2) too the LS is accented. Most bi-syllabic nouns in category 3 receive the accent on their penultimate syllables (i.e. their LSs). Words in category 4 too receive the accent on their antepenultimate syllables (i.e., the LS). The last spelling pattern within words in categories 1, 2, and 4 can point to the KS (i.e., they are neither *sequences* nor *endings*; rather, they are *terminals*). Notice that category 3 contains terminal-free bi-syllabic words consisting of an LS and a KS (i.e., light words, see Table 5). In each example, the KS is italicized and the LS underlined.

As the first refinement in words that end in *terminals*, if an SS occurs immediately to the left of the terminal, the KSAR applies, not the LSAR. For example,

| *ch / or / eogr / aph* | *un / ion / ist* | *b / act / er / ios / tat* |
| ch + KS + SS + T | KS + SS + T | b + LS + KS + SS + T |

Where LS = Left Syllable; KS = Key Syllable; SS = Strong Sequence; T =Terminal.

As the second refinement, heavy verbs must have no prefix immediately to the left of the terminal. This distinguishes between verbs like *reinstate* (PWAR) and *reinstigate* (LSAR):

| *re / inst / ig / ate* | *re / in / st / ate* |
| p + LS + KS + T | P + P + φ + T |

Where P = prefix; φ = letter sequence that fails to count as a syllable.

As the third refinement, the LSAR operates on words that end in -*ize*, -*ist*, -*ism*, and -*ish* only if they include no weak ending or strong sequence (SS) immediately to the left of the terminal (e.g., *westernize, determinism, devilish, psychologist*).

Table 4
Word Categories of LSAR

Category	Description	Example
1	heavy words* that do not end in a weak ending, a strong sequence, or any highly recurrent syllable	maverick, apocalypse, stratagem, tenebrith
2	heavy nouns that end in 'y'	industry, company
3	bi-syllabic nouns that contain no special endings	camel, city, product, convoy
4	other heavy words not accented by PWAR, V/VCWAR, or KSAR	envelope, compensate, democrat, energize

*Words with three or more syllables are often called *heavy words*.

MOHAMMAD ALI SALMANI-NODOUSHAN

Moreover, in words that include internal weak endings, accent will be assigned according to the rule demanded by the weak ending in question (e.g., *feverish, positivism, capitalize*).

Light nouns with a V or VC in the KS often receive accent on the LS. Light nouns that contain VCC, VCe, or VV Key Syllables follow no solid rule for accent assignment; only a few KSs found within this category of light nouns retain accent consistently on themselves (e.g., *-oon, -oo, -ese, -ade*). For example,

baboon   bamboo   Chinese   arcade

Overall, the key to the correct application of LSAR is that EFL/ESL learners must not mistake a weak ending or a word-final SS for a terminal. They should also be able to identify word domains by context clues, judge the number of spelled syllables in them, and locate the KS.

Special Accent Cases

In American English, two sets of morphologically complex words of Greek origin resist the application of LSAR:

1. words (ending in *-archy, -mony, -doxy, -epsy*, or *-choly*) with secondary accent on the KS before the *-y* terminal that receive accent on the syllable immediately to the left of the LS (e.g., *hierarchy, oligarchy, matrimony, testimony, epilepsy, melancholy, orthodoxy*); and

Table 5
Word Domains of LSAR

Category		Part of Speech	Examples
1	-acy (a unit)	heavy N	the accuracy, the candidacy
2	-ate	heavy words	to allocate, some chocolate, intimate N
3	-ish	heavy Adj	devilish N, yellowish N
4	-ism	heavy N	the determinism, the optimism
5	-ist	heavy N	a monopolist, a psycho1ogist
6	-ize/-ise	heavy verb	to westernize, to merchandise
7	-ute	heavy words	to constitute, a parachute, destitute N
8	-y	heavy N	the geography, the university
9	-y	heavy 'fy' words	to magnify, an amplifier, satisfying N
10	Less Frequent Terminals	heavy N	an acrobat, a boomerang, a centipede, a phonograph, a telegram, a unicorn
11	Less Frequent Terminals	heavy V	to autograph, to flabbergast, to pantomime, to ridicule, to sacrifice, to vivisect
12	Less Frequent Terminals	heavy Adj	baritone N, derelict N, genuine N, opposite N, parallel N, taciturn N
13	Light Noun	light N	a buzzard, a faucet, a lantern, a record, a rebel, a pygmy

2. words with tri-syllabic prefixes (i.e., *cinema-*, *encephalo-*, *entero-*, *cephalo-*, *hetero-*, *platino-*, and *sidero-*) with accent on the first of the three syllables in the prefix (e.g. h<u>e</u>ter**od**ox and s<u>i</u>der**osc**ope).

    Often English words contain auto-accented sequences of a foreign origin (e.g., *-ide*, *-alre*, *-ee*, *-eer*, *-esce*, *-esque*, *-eur*, *Vque*, *-ehe*, *-ier*, *-oo*, and *-oon*), where the major accent falls on these word-final auto-accented sequences.

Conclusion

In this article I demonstrate that word stress in English is highly predictable on morphological grounds. I argue that EFL/ESL learners can predict the correct pronunciation of almost any English word provided they understand what is meant by Key Syllable (KS), Left Syllable (LS), Strong Sequence (SS), and terminal. Four morphology-based rules of stress placement are discussed and the few exceptions are explained.

Acknowledgments

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Appendix A: Basic Anglo-Saxon

Prefix	Meanings	Examples
A-	at; in; on; in the act of	alike
BE-	to treat as; upon; against; thoroughly	besiege
DOWN-	down	downplay
FOR-	against	forswear
FORE-	before; in front of	forerunner
MIS-	wrongly	misread
OUT	surpassing; outside	outspell
OVER-	to a greater/excessive degree; to become inverted	overspend
UN-	reverse action of; not	unwise
UNDER-	below standard; deficient; beneath	underline
UP-	up	uphold
WITH-	from	withstand

Appendix B: Most Frequent Latinate Prefixes

Prefix	Meaning	Examples
B-	from; away	abnormal
AD-	to; toward	adverb
CON-	with; together; joint	conveyance; coauthor
CONTRA-	in opposition to	contradict
COUNTER-	in opposition to	counterpart
DE-	down; from; the opposite of	determine; deactivate
DIS-	away from; the opposite of	discuss; dislike
EN-	in; make	enjoy
EX-	out; former	extort; ex-senator
EXTRA-	outside of	extravagant
EXTRO-	outside	extrovert
IN-	in; not	inspire; incomplete
INTER-	between	interleave
INTRA-	inside of; within	intravenous
INTRO-	inside of; within	introduce
MULTI-	many	multiethnic
NON-	not	nonmilitant
OB-	toward; in the way; the reverse of	objective
PER-	through (out); thoroughly	perplexing
POST-	after	postscript
PRE	before; beforehand	prepare; precondition
PRO-	forward; in favor of	provide; pro-Labor
RE-	back; again	reproach; redesign
RETRO-	back(ward)	retroactive

SE-	apart; without	selective
SUB-	under; secondary; smaller/less than	subtract; subatomic
SUPER-	above; surpassing in kind	supertalented
TRANS-	across; from one to another	transatlantic
ULTRA-	beyond	ultramodern

Appendix C: Alternate Forms of Most Frequent Latinate Prefixes

Prefix	Alternate Forms	Examples
I. AD-	AC + C/Q	access; acquit
	AF + F	affect
	AL + L	allot
	AN + N	announce
	AP + P	appear
	AR + R	arrange
	AS + S	assure
	AT + T	attack
	A + ST	astute
	AD + elsewhere*	admit; advise
2. CON-	COL +L	collect
	COR + R	correct
	COM + B/P/M	combine; compress; commit
	CO + vowel	coerce
	CON + elsewhere	conform; convince
	CO + free stem	co-partner
3. DIS-	DIF + F	diffuse
	DI + voiced C**	dimension; divulge
	DIS + elsewhere	dispel; distinct
	DIS + free stem	disvalue
4. EN-	EM + B/P	embark, employ
	EN + elsewhere	enchain, endear
5. EX-	EF + F	effect
	E + SC/SP/ST	escape; espouse; establish
	E + voiced C	erupt; emit
	EX + elsewhere	expel; extend
	EX + free stem	ex-wife
6. IN-	KS + N	ignore
	IL + L	illegal
	IM + B/P/M	imbue; impair; immune
	IR + R	irreverent
	IN + elsewhere	intent; invite

MOHAMMAD ALI SALMANI-NODOUSHAN

7. OB-	OC + C	occupy
	OF + F	offer
	OP + P	oppress
	OB + elsewhere	obscure; obtain

| 8. SE | SE + C/D/L/V | secede; seduce; select; severe |

9. SUB-	SUC + C	succeed
	SUF + F	suffice
	SUP + P	suppress
	SU + SP/ST/SC	suspect; sustain; susceptive
	SUB + elsewhere	submit; subtract

| 10. SUPER- | SUR- | surpass |
| | SUPER- | supervise |

*Elsewhere means *in any other context*.
**Voiced C refers to *stems that begin with the letters b, d, g, l, m, n, j, r, and v, which represent voiced consonant sounds*.