



From a Latin syllable-driven stress system to a Romance versus Germanic morphology-driven dynamics: in honour of Lionel Guierre

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Abstract

Within the framework elaborated by the late Professor Lionel Guierre (1921–2001), who pioneered a new school of thought in the study of English phonology, this paper sets out to disprove one of the founding principles of Chomsky and Halle's theories (also pre-eminent in Halle and Keyser's later works), namely the premise that the English stress system is, to a great degree, modelled on Classical Latin metrical rules (dichotomy between prefinal heavy syllables entailing penultimate stressing and prefinal light syllables entailing antepenultimate stressing).

The first part proposes an overview of L. Guierre's theoretical framework, essentially based on morphology and syntactic categories, backed up with our own contributions, notably on the role of affixes in stress assignment. A one-page, three-tier (syntactic, morphological and segmental) algorithmic table, capable of accounting for *all* primary stress distribution rules in contemporary English, endeavors to encapsulate the gist of the phonological system we advocate.

In conformity with the methodology of the Guierrian school, all the governing principles and findings presented here are backed up by ample statistical work in the form of samples and inventories extracted from computerised British English phonetic corpora, and more particularly from Daniel Jones's *English Pronouncing Dictionary* (12th Ed.).

At the end of this recapitulation of the Guierrian stress theory, we come to the conclusion that syllable-weight (except in the case of prefinal consonant clusters) is not a determining factor of contemporary English phonology.

In the second part, we propose a diachronic study of the Romance/Germanic conflict which, following the Norman Conquest, led to the formation of the English phonological system as we know it today.

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In the course of our historical observations, we show that Latin could not have been the underlying force in this process. Further examination of affixes, more particularly in relation to neutral derivation (stress preservation) and secondary stress positioning, also puts paid to the idea that Romance stressing principles eventually supplanted the Germanic stressing dynamics of the English language.

In the conclusion to our paper, we express our conviction that English has inherited not *one* but *several* phonologies, whose workings are determined by morphology and word-length, but also by learned or foreign word characteristics, being thus the product of a merging process between Romance mechanisms applying to borrowings and learned vocabulary and the prevailing Germanic dynamics for more ordinary vocabulary, as borne out by the fact that most suffixes of the English language actually entail stress preservation.

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0. Introduction: heavy syllables and the history of English

Starting with Chomsky and Halle's *The Sound Pattern of English*, syllable weight has played a major role in most studies on English stress:

“A major empirical result of *SPE* was the discovery of the central role played in stress assignment by the contrast between “strong” and “weak” clusters (...)” Halle and Vergnaud (1987, p. 227).

More recently, and within a different theoretical framework, L. Burzio, while he refutes part of *SPE*'s assumptions:

“Other assumptions we will challenge appear to have been introduced quite arbitrarily and to have simply consolidated by tradition. One of these is the assumption that long vowels in final syllables in English are always stressed, which was introduced in *SPE*. That assumption implies for instance that words like *alúmn[ay]*, *sát[ay]re* must have a secondary stress on the bracketed long vowels (phonetic diphthongs). There is clearly no direct empirical evidence for that conclusion, since if the latter vowels were simply long but *unstressed*, they would be pronounced just as they are.”

Burzio (1994, p. 3).

still founds his analysis on the distinction between light and heavy syllables:

non-weak feet:	(Hσ)	~	(σ L σ)
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SPE's standpoint on final long vowels, however, is *not* arbitrary as Burzio qualifies in the same passage; it is actually a necessary feature of their system, and the keystone of their diachronic analysis developed in Halle and Keyser (1971), namely that the stress system of English is a reconstruction of the stress system of classical Latin, from two sources:

→ medieval Latin:	stress on the antepenultimate if penultimate syllable ‘weak’, i.e. VC ¹ otherwise, i.e. ‘heavy’ penult.: VC ₀ or VC ₂ , stress on the penultimate
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→ Old French: words with final stress whose stressed vowels were long (end-stressed words with short vowels being deemed “lexical exceptions”...) + the only cases of non-final stress, words in VCe with a tonic e stressed on the penult, all having a ‘heavy’ stressed syllable, as in medieval Latin

Medieval Latin lost the stress of the final long vowels of Classical Latin when these vowels became short. Old French would thus have given them back to it, and created in the process a new rule for English, the *Romance Stress Rule*, due to the influx of Romance words from both sources, and gradually expanding to eventually ‘rule’ the phonology of contemporary English:

“The present account of the stress system of contemporary English derives both in theoretical conception and general approach from *The Sound Pattern of English* (Chomsky and Halle (1968)). Central to this account is the discovery made in *Sound Pattern* that in the overwhelming majority of instances stress in contemporary English is governed by reasonably simple general rules, the most crucial of which, the Main Stress Rule, resembles rather strikingly the rule governing stress in Latin words.” Halle and Keyser (1971, p. xiii).

According to the authors’ account, Early Modern English only retained a retraction rule from its Germanic origin, expanded from prefixed verb/noun pairs in Old English to Romance words of three syllables and more, and then to disyllabic prefixed words (but not to other disyllabic words) of Romance origin.

While we disagree with their answers, Halle and Keyser *do* have a point: whatever the framework we retain, we not only need to put our hypotheses to the test in as complete a corpus as possible, but, synchrony being inherited from diachrony, we *also* have to give a realistic account of how the system we propose came to be. The aim of this paper is to outline quite a different view on the history of English phonology, consistent with an analysis of contemporary English phonology also quite different from what seems usually accepted nowadays.

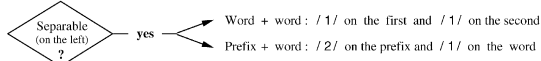
1. The stress-system of English – Pr Lionel Guierre

The approach most French specialists of English phonology have adopted was originally developed by Professor Lionel Guierre.¹ His founding work on British English phonology was compiled during the seventies. It was based on a thorough analysis of Jones’ *English Pronouncing Dictionary* (1968, 12th ed.), which he had computerised with the help of John Gingrich. A summary of this work, adapted for teaching aims, can be found in *Drills in English Stress-Patterns*, particularly its 4th ed. (Guierre, 1984). A few facts about his approach are important to keep in mind:

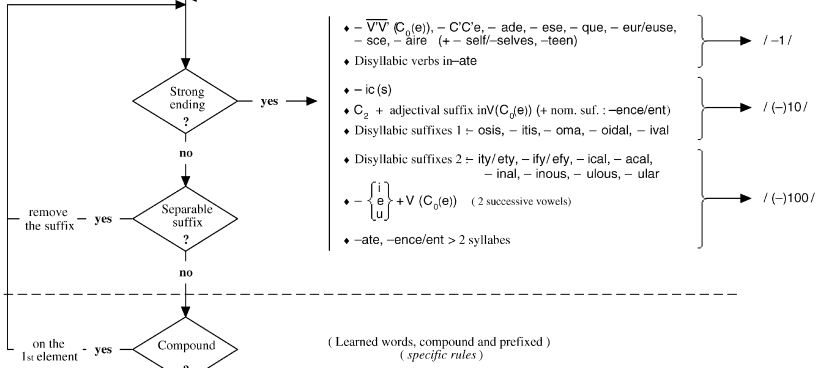
¹ Pr. Lionel Guierre died in the autumn before this conference: it is difficult to express how much we have missed him since, especially on this occasion. This paper, as stated in the title, is dedicated to his memory.

Where does primary stress fall?

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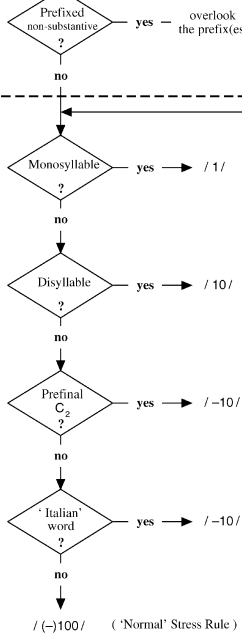


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- it is concerned with British English, i.e. a ‘reference’ dialect, long called R.P. English;
- the original corpus amounts to about 35,000 words and other dictionary entries. We now work with J.C. Wells’ *Pronunciation Dictionary*, namely with about 60,000 entries; however, figures given here are those of the original corpus;
- spelling information is taken into account.

The stress assignment system we developed after him is summarised in the following diagram, and the accompanying list of examples. This diagram is my own linearised version of the system, in a simplified form; as the word ‘linearised’ suggests, this is only a way of presenting the system, not what I hold it to be: while some crucial choices appear to be ordered, the stress assignment system is better seen as a dynamic confrontation of forces.²

1.1. Stress assignment system – examples

Stress principles

- (1) Every word has one and only one primary stress (annotated [ˈ] or /1/).
- (2) There can be no sequence of two stresses within a word.³
- (3) No word can begin with two unstressed syllables.
⇒ When primary stress is placed on a syllable other than the first two, there appears a secondary stress on one of these syllables (annotated [ˌ] or /2/).
- (4) Syllables which receive neither stress /1/ nor stress /2/ are unstressed.

SYNTAX

Separable (on the left):

word + word → /1/ + /1/

prefix + word → /2/ + /1/

(a) 'black 'bird, (a) 'dark 'room. . .

,re 'write, ,un 'fair. . .

MORPHOLOGY

Strong ending⁴

Strong endings 1: stress /1/ final

– V̄V̄(C₀e) → /-1/

– C'C'e → /-1/

–ade → /-1/

–ese → /-1/

–que → /-1/

–eur/euse → /-1/

–sce → /-1/

bam'boo, ba'zaar, trus'tee, kanga'roo, pio'neer. . .

ga'zelle, ga'zette, aqua'relle, gi'raffe, cre'vasse,

bi'zarre. . .

br'i'gade, balus'trade, pali'sade, pa'rade,

se're'nade, lemo'nade. . .

Japa'nese, journa'lese, Chi'nese. . .

u'nique, o'paque. . .

dan'seur, mitrai'lleuse. . .

aqui'esce, remi'nisce. . .

² As developed in Fournier (1998). It may be worth observing that our conception is consistent with the Optimality Theory notion of conflicting constraints.

³ The very few cases violating this second principle are explored below in Section 3.3.2.

⁴ For simplification reasons, actual suffixes are associated here with non-affixal ‘endings’ of similar structure. In this first group, ‘Morphology’ obviously applies to suffixes only. See below: *Stress Assignment System – Overview* and Section 3.3.2.

de'sirous, cre'ative, 'humourous, ac'comodative, 'regional, 'celluloid...

Compound*

Compound → /1/ on the 1st element
'darkroom, 'blackbird, 'breakfast, 'mole-hill, 'flowerbed, 'grammar school... 'program, 'ideogram, 'epilogue, 'electrotype, ga'vanoscope, 'cephalopod... (Learned Compounds)

Prefixed words other than nouns*

Prefixed non-substantive → overlook the prefix(es) (Germanic law)
a'muse, be'gin, de'cide, an'nounce, con'cise, dis'tinct, re'mote, sin'cere, a'gain, a'las, be'fore, be'low – de'velop, i'magine, re'member, de'liver, ex'hibit, dis'cover, ex'plicit, in'sipid – appre'hend, corres'pond, disap'point, recom'mend, inter'cede, under'stand...

SEGMENTAL STRUCTURE

Monosyllable → /1/ *'black, 'bird, 'dark, 'room... (a)'muse, (be)'gin, (appre)'hend, (corres)'pond...*

Disyllable → /10/ *'vigour, 'torture, 'ogre, 'title, 'noble, 'silly, 'yellow, 'torrid, 'gather, 'tickle, 'after, 'either, 'utter, 'follow, 'taxi, 'carry, 'any, 'sorrow, 'govern, 'only, 'absence, 'infant, 'product, 'college, 'suburb, 'insect... (de)'velop, (re)'member, (in)'herit, (ex)'plicit...*

Prefinal C₂ → /-10/ *va'nilla, spa'ghetti, to'bacco, memo'randum, u'tensil, No'vember, as'sassin, ma'linger, pros'pectus, d'malgam, e'lixir, di'saster, im'portance, ad'vantage, re'pugnance, im'postor...*

'Italian' word → /-10/ *ar'mada, despe'rado, bi'kini, mar'tini, pe'seta, to'mato, mos'quito, ba'nana, tor'pedo, tor'nado, vol'cano, mi'mosa, pro'viso, virtu'oso, po'tato, i'ota...*

'Normal' Stress Rule → /(-)100/ *'vinegar, 'alcohol, 'apricot, 'molecule, 'medicine, 'origin, 'vertical, 'elephant, 'taciturn, 'juvenile, 'paradise, 'envelope, 'institute, 'deficit, 'appetite, 'attitude, 'preterite, 'privilege, am'bassador...*

Secondary Stress

Derivational law* *dis'criminate → dis,crim'nation ~ 'modify → 'modifi'cation*
*de'clare → *de,cla'ration ⇒ Stress /2/ rule*

Stress /2/ rule: /00-/ → /20-/
,adres'see, ,volum'teer, ,kanga'roo, ,ciga'rette, ,silhou'ette, ,prom'e'nade, ,Japa'nese, ,connois'seur, ,remi'nisce, ,soli'taire, ,paren'thetic, ,mathe'matic, ,transcen'dental, ,crea'tivity, ,ambi'guity, ,eco'nomical, ,decla'ration, ,indi'vidual, ,mauso'leum, ,reca'pitulate, ,appre'hend, ,repr'e'sent, ,intro'duce, ,dile'tante, ,refe'rendum, ,nosfe'ratu...

* These 'laws' do not determine stress placement, only the relevant part of the word under study. It is actually the same with most (suffixal)'strong endings'.

1.2. Stress assignment system – overview

- Concerning the four ‘stress principles’: following Jones, Gimson, Roach and others, we recognise only three degrees of stress (the absence of stress being one of them), at least for contemporary British English. Wells himself abandoned the idea of a tertiary stress between the first and second editions of his dictionary. As Wells does in both editions, we also “*regard as unstressed the strong-vowelled syllables at the end of words such as hesitate, acorn*”.⁸ and, with the possible exception of compounds, all syllables following primary stress: no added intensity corroborates the idea of their being stressed, here again at least in British English.
- Concerning ‘Syntax’: this first layer of the system is concerned with the determination of lexical units, semantically separable prefixes, as in *rewrite* or *unfair*, being treated as such by the pronunciation system of English. A lexical unit is phonologically characterized by independent stress pattern and pronunciation. While the main stress of a word is a primary stress, the main stress of a separable prefix is a secondary stress.
- Concerning ‘Morphology’: this layer of the system determines the relevant part of words as regards the position of their primary stress and the pronunciation of the vowel stressed /ɪ/.
 - ‘Strong endings’: suffixes associated with a given position of primary stress, divided according to the resulting stress-pattern – for simplification, extended here to a few non-affixal ‘endings’ of similar structure. These ‘strong’ endings are often called ‘stress-imposing’, but it does not seem to us an accurate description of what they actually imply.
 - ‘Separable suffixes’: all other suffixes are ‘neutral’, i.e. if the deriving form is an independent unit (‘separable’), its pronunciation (stress-pattern, vowels, most consonants) is kept unchanged in the derivative. Actually, some of these suffixes become ‘strong’ in specific environments, notably ‘learned compounds’ (not elaborated upon in this paper). Conversely, some suffixes which are strong in a given environment are neutral in other structures: for instance, adjectival suffixes when following a single consonant: *de'sirous*, *cre'ative*, *'humourous*, *ac'comodative*, *'regional*, *'celluloid*... (again not elaborated upon within the framework of this paper).
 - ‘Compounds’: in most cases, their behaviour is quite identical to that of derivatives, i.e. pronunciation of components identical to their pronunciation as independent units, but primary stress of the compound falls on the first element (only two-parts compounds are taken into account here).

‘(Learned compounds)’: these compounds are characterized by bound roots, usually of classical origin, by the presence of a connective vowel, usually ⟨o⟩ (e.g. *morphology*), and by a meaning which is always of a learned (often scientific) nature; their behaviour is the same as in ordinary compounds, but for the facts that the pronunciation of their first element is determined *as if* it were an independent unit, and that some suffixes otherwise neutral become strong.

⁸ Wells (1990, p. 741).

- ‘Prefixed words other than nouns’: the prefix(es) is/are not taken into account for stress-assignment and stressed vowel pronunciation. If the prefixed part is an independent unit, its pronunciation is not changed. We contend that these historical prefixes are still part of the synchronic system of English.⁹
 - Concerning ‘Segmental structure’: this layer of the system contains the rules of stress-assignment proper; they apply to the relevant parts determined by the morphological layer.
 - No particular comment on the first three rules, except for the fact that ‘Prefinal C₂’ includes graphic geminates.
 - ‘Italian word’: words ending with a prefinal alveolar ≠ [r,l] (⟨r,l⟩), followed by a simple vowel ≠ ⟨y⟩ – called ‘Italian’ by L. Guierre because many of them are indeed of Italian origin.
 - ‘Normal Stress Rule’: called thus by L. Guierre because it applies to all remaining words of 3 or more syllables, and because they are, by far, the most numerous amongst long words.
- Concerning ‘Secondary stress’¹⁰: when the deriving form is an independent unit, secondary stress in the derivative falls on the syllable stressed in the deriving form; the pronunciation of the stressed vowel is also maintained. The only exception is when the process would place secondary stress adjacently to primary stress in the derivative: in such cases and in cases where the deriving form is not an independent unit or where the word is not a derivative, secondary stress falls on the first syllable, and the pronunciation of the stressed vowel is directly determined by the structure of the whole word.

As can be seen, the pronunciation of the vowels is viewed as *following* stress assignment, and even as being partly determined by the stress-pattern, *not* as a determining factor. In other words, this system does not call upon syllable weight but in the case of prefinal consonantal clusters.¹¹ Obviously enough, there *is* a relationship between stress and long vowels: but, as L. Guierre (1983) demonstrated, if *stressed* vowels are regularly long in certain environments, the reverse does not hold: long vowels are more often than not *unstressed*:

Case of disyllabic words:

$\bar{V}\#$:	/-1/: ± 75:	~	/-0/: > 200:
	<i>July...</i>		<i>rabbi...</i>
$\bar{V}Ce\#$: pref. nouns:	/-1/: 13:	~	/-0/: ±190:
	<i>advice...</i>		<i>profile...</i>
(other prefixed words: massively /01/ whatever the stem structure)			
non-pref.:	/-1/: 160:	~	/-0/: ± 245:
	<i>police...</i>		<i>ogive...</i>

⁹ On this controversial assertion, which cannot be elaborated upon within the framework of this paper, see, among others Fournier (1996).

¹⁰ Not displayed in the diagram.

¹¹ See Section 3.3.4 below.

2. The source(s) of English stress system

2.1. Latin?

From a historical point of view, what first seems very odd (and quite doubtful) in Halle and Keyser's analysis, is the assertion that Latin had such a crucial influence on English phonology. From the Norman Conquest to the second half of the fourteenth century, when Latin was replaced by English in official documents, who was Latin used by and for what purposes? Actually Latin was used by the clergy, the nobility, members of the administration, most of them of Norman origin at first, i.e. 'French' speakers for whom Latin was never native. In its spoken form, it was used for scholarly and religious matters, and on formal occasions; in its written form, it was used for the same purposes as well as official documents of all natures:

“The nonnative vocabulary of Chaucer consisted of two types of words, namely, **learned** words largely of Latin origin and everyday words borrowed from Old French or Anglo-Norman.” Halle and Keyser (1971, p. 99).

How could such a language, essentially written, spoken by a limited number of people, and (whether written or spoken) never used in everyday life, with so limited a scope, and presenting all the characteristics of a dead, or at least dying language, have become *the* phonological reference for the slowly emerging new 'ordinary' language of England?

What is more, Halle and Keyser themselves give proof of the already weakened character of Latin phonology:

“Ten Brink remarked that in “proper names under the influence of French accentuation, the final syllable of a Latin paroxytone acquires the primary, or at least the secondary stress. . .” (Section 94). It seems to us that this is the appropriate explanation for the numerous instances [. . .] where the Latin ending *-us* receives final stress [in Chaucer]. . .” Halle and Keyser (1971, p. 104).

As could be predicted from the previous observations, Latin phonology was already questioned by French: how could such a language nevertheless be a determining factor in the shaping of English phonology? Halle and Keyser's analysis is all the more questionable when one realises that they found their hypothesis on the very same category of Latin proper nouns used by Chaucer, most of which end in *-us*:

'Tydeus, Cap'paneus, 'Zepherus, Sa'turnes, Ca'ribdis, Nep'tunus. Halle and Keyser (1971, p. 99, reference examples of (30)).

Historically unrealistic, founded on proper nouns whose pronunciation was already under the influence of Old French phonology, the analysis is on the whole highly unconvincing.

2.2. Romance origin or a merging process?

The second questionable element in Halle and Keyser's analysis is the idea that Romance phonology all but replaced Germanic phonology: it does not seem consistent with the historical characteristics and context of the process which led from bilingualism

to modern English. What took place in the 14th century is not a situation where the language of the victors was forced upon the vanquished, as Latin was upon Gaul after the Roman invasion. Contrary to this, we know that the ruling Normans gradually adopted English instead of French, mainly as a consequence of their quarrel with France, which led to war and the loss of their continental domains. However, because of the long-standing division between a French-speaking ruling class and an English-speaking people, we also know that whole areas of vocabulary existed in French and in French only: despite their adoption of English, the Normans had to retain these words. During the same period, English-speaking local leaders, taking advantage of a relative weakening of the royalty, gained access to new positions of power: they in turn had to acquire the same French words as necessary tools for their new responsibilities, but probably also as symbols of their new social status.

Would not a corresponding merging of both phonologies be a more logical outcome of such a situation? And, in this particular case, should the merging not be expected to have organised along the lines defined by both a social and stylistic division? A dynamic making use of the structural differences between these two languages, such as word length or different sets of suffixes? In the following part, we shall see that contemporary English phonology seems to confirm this historical analysis rather than Halle and Keyser's.

From the phonologist's point of view, we feel the hypothesis of a merging process is more stimulating in itself, all the more because of the opposite natures of the stress systems involved. As in other Germanic languages, Old English stress may be analysed as a demarcative stress, identifying the beginning of lexical units. Generally speaking, it corresponds to the beginning of words, except in the case of prefixed verbs, adverbs and adjectives (even though some of the latter exhibit initial stress), where it corresponds to the beginning of the root.

The stress systems of Romance languages share a feature which is the exact opposite of the stress systems of Germanic languages: stress is determined from the end of words (or tone units) rather than from their beginning. In the case of Latin, Italian, Spanish and Portuguese, the position of stress is determined on the basis of syllable weight, in various ways. Syllable weight is thus a distinctive feature of Southern Romance phonology. In the case of Old French, it was well on its way to its modern demarcative status: the atonic post-consonantal [ə], the only remaining case of penultimate stress, was soon to disappear in English as well as in French.

Such opposition between two systems which were fated to merge did indeed give life to a unique dynamic system.

3. Contemporary behaviour and history

3.1. Suffixation

3.1.1. Neutral derivation

In a vast majority of cases, the pronunciation of the derivative is preserved in the deriving form: according to L. Guierre, no more than about 30 suffixes out of a total of 200 can be considered as 'strong', and for some of them in certain contexts only. Such a behaviour is typical of Germanic logic: what is attached to the end of a word has no influence on a system working from the beginning of words; in such a system, the relationship between deriving form and derivative is given pre-eminence over the analogy of similarly suffixed

units. The very persistence (and range) of neutral suffixation challenges the idea that a Romance stress system supplanted a Germanic stress system.

Strong suffixes/endings

∅ → volunteer	≡ ¹²	profit → profiteer	(stress shift)
∅ → vicinity	≡	divine → divinity	(vowel shift)
		saline → salinity	(stress shift + vowel shift)
∅ → meticulous	≡	fable → fabulous	(stress shift + vowel shift)
∅ → delicious	≡	vice → vicious	(vowel shift)
		malice → malicious	(stress shift)
∅ → visual	≡	rite → ritual	(vowel shift)
∅ → accident	≡	reside → residence/t	(stress shift (+vowel shift))
∅ → elevate	≡	saliva → salivate	(stress shift (+vowel shift)) ¹³

Actual derivatives and suffixed bound units have the same phonological behaviour, as regards both the position of primary stress and the pronunciation of the stressed vowel. This identity holds true even when it entails the primary stress and stressed vowel of the deriving form being respectively shifted and transformed.

But as concerns the rules for stress-assignment and pronunciation of the stressed vowel, only some of these suffixes constitute specific determiners:

stress- assignment:	$\overline{-V'V'(C_0(e))}$ and $-C'C'e$ (or <i>-ee</i> , <i>-eer</i> , <i>-esse</i> and <i>-ette</i> if one does not wish to take spelling into account), <i>-ade</i> , <i>-ese</i> , <i>-eurleuse</i> , <i>-aire</i> , <i>-selfselves</i> , <i>-teen</i> , <i>-ate</i> with dissyllabic verbs.. disyllabic suffixes 1 and <i>-ic</i> $C_2ate_{[N,V]}$
stressed vowel:	<i>-ic</i> , when the stressed vowel is a single vowel (other than <u>), followed by a single consonant

In all other cases, the behaviour of suffixed words is strictly identical to that of morphologically simple words with the same segmental structure: which leads to infer they obey the same rules. Therefore, the common feature which defines them as a distinct class of suffixes is not the ability to assign primary stress, as implied by the term ‘stress-imposing’, but the fact that, contrary to neutral suffixes, they prevent reference to a deriving form, or, in other words, that they prevent lexical analysis.¹⁴ Such a behaviour is in perfect accordance with Romance logic: modifying the end of a word must affect its pronunciation in a system working from the end; contrary to neutral derivation, the analogy of similarly suffixed units is here given pre-eminence over the relationship between deriving form and derivative.

Now, the fact that a contemporary speaker must distinguish between neutral and strong suffixes to determine what type of logic applies – a simple reference to the deriving form or

¹² = ‘equivalent to’.

¹³ From a reduced vowel in the last two cases.

¹⁴ They also prevent taking a prefix into account: ‘*demonstrate*’.

direct computation based on segmental structure – means suffixes have become a significant factor of English, a status that they have neither in Romance nor in Germanic languages, and which makes of English a unique system within both families it inherited from.

The dialectics of suffixes also makes of English a dynamic system. First as a consequence of the merging process, when the balance between conflicting forces was established, as evidenced by the fact that while some suffixes are always either neutral or strong, others, as we have seen, are neutral in some contexts and strong in others. But also in contemporary English where the conflict, whilst contained, is still active, as evidenced by the well-known pronunciation rule associated with – *ic*:

V*Cic*# (where V ≠ ⟨u⟩) ⇒ short V : cone[ˈkəʊn] → conic[ˈkɒnɪk] (Romance logic)

Close examination¹⁵ of exceptions in $\bar{V}Cic\#$ (*basic, chromic, phonemic, phobic* (variant)...) demonstrates that they all have a deriving form with the same long vowel; in other words, no ‘irregular’ long vowel is possible when no deriving form with a long vowel exists, which implies derivation *is* the significant parameter (Germanic logic). A behaviour confirmed at the level of the individual speaker:

rhizic (Math.: concerning the ‘root’ of an equation, < bound root *rhiz(o)-* [ˈraɪz(əʊ)]):

- by a mathematician, i.e. when semantically motivated → [ˈraɪzɪk]
- but if unknown → [ˈrɪzɪk]

3.2. Disyllabic words¹⁶

This is a quite straightforward case. We first observe that prefixed words other than nouns are chiefly stressed on the root: there are only 22 exceptions in /10/ out of ±1200 words (2%):

conjure, injure, perjure, differ, proffer, suffer, conquer, destine, edit, enter, prosper, sever, decent, recent, connate, prolate, prostrate, common, constant, perfect, prolix, proper.

One might think that, in this class, French words have retained their original final stress. However, the behaviour of the other disyllables implies that this hypothesis is not satisfactory. Disyllables are primarily stressed on their first syllable, leaving ±550 exceptions in /01/ (10%) out of ±5500 words:

affair(e), chastise, galore, mamma, possess, assize, cigar, galosh, manure, prestige, augment (V), cocaine, grimace, maraud, rapport, august, contempt, guffaw, marine, recluse, austere, coquet, guitar, mature, regime, baptize, cravat, hello, meringue, remorse, behalf, degree, harangue, minute (Adj.), renown, blaspheme, demy, molest, resource, bombard, dessert, morale, robust, cadet, disease, hotel, morose, romance, cajole, divine, humane, moustache, routine, campaign, domain, ignite, naive, sardine, canal, duet, impasse, Noel, savoy, canoe, esquire, Japan, panache, segment (V), caprice, estate, July, papa, shallot, caress, event, lament, parole, torment (V), carouse, fatigue, lapel, patrol, trapeze, casern, ferment (V), machine, petite, trombone, foment, maintain, police, unite, cement, frequent (V), Malay, polite, verbose...

¹⁵ Fournier (1990).

¹⁶ Multicategorical prefixed disyllables are not taken into account nor commented upon.

If these exceptions are mostly of French origin, many more French words are found amongst the nearly 5000 disyllables in /10/. The figures might nonetheless be distorted by the large number of suffixed forms for which the deriving form is not attested in contemporary English – a possibility explored by Chomsky and Halle (1968) and Halle and Keyser (1971) – or for which the suffix is a strong ending. However, even when taking only stems into account, the resulting figures do not confirm this possibility: stems: ± 450 exceptions in /01/ out of ± 4800 words (9,5%).

In any case, a stress-pattern in /10/ due to suffixation would point towards Germanic phonology.

About 230 of the exceptions in /01/ can be accounted for on the basis of their ending ('strong endings 1' above). Except for them, 'regular' words, i.e. 95 % of the $\neq 6500$ other disyllables, are stressed according to the Germanic stress-system: this leaves little ground for a Romance hypothesis in the case of disyllabic words. A view confirmed by the fact that syllable weight (coda included) is no more a determining factor than vowel length¹⁷: all types of syllables, in initial or final position, are attested in both classes.

3.3. Words of three syllables and more

An overwhelming majority of these (thousands of words, mainly nouns) are stressed on the antepenultimate: /(-)100/. We shall first look at the other stress-patterns.

3.3.1. Prefixed words other than nouns

Again, they are primarily stressed on the first syllable of the root, according to Germanic logic: only ± 30 exceptions can be found amongst ± 350 cases.

3.3.2. Words stressed on the final: /-1/

'Strong endings 1':

*bazaar, trainee, trustee, bamboo, taboo, balloon, buffoon, cartoon, saloon, papoose...
 addressee, consignee, guarantee, refugee, engineer, pioneer, volunteer, kangaroo...
 giraffe, aquarelle, bagatelle, chenille, gazelle, bizarre, crevasse, finesse, noblesse, brunette,
 cigarette, gazette, kitchenette, majorette, novelette, roulette, serviette, silhouette...
 arcade, ballade, balustrade, barricade, brigade, cascade, crusade, lemonade, masquerade,
 palisade, parade, promenade, serenade...
 Chinese, Japanese, journalese...
 antique, opaque, unique, humoresque, grotesque...
 danseur/danseuse, douloureux, hauteur, liqueur, masseur/-euse, mitrailleuse,
 restaurateur...
 acquiesce, convalesce, reminisce...
 doctrinaire, questionnaire, solitaire...
 myself, yourself/selves, themselves ... thirteen, fifteen, seventeen...
 + verbs in -ate (see above)*

¹⁷ As we have seen above in Section 1, Stress assignment system – Overview.

This class, including affixes and non-affixal endings with the same graphic structure, represents ± 500 words of all lengths, and practically all cases of words of three syllables and more stressed on the final, i.e. ± 300 . We can observe that:

- except words in *–self* and *–teen*, they are mostly borrowings from French, and often perceived as such or ‘stylish’;
- in accordance with the analysis presented above, strong suffixes regulate stress behaviour: they admit few exceptions, but cases of retraction process can be observed when final stress contradicts Germanic logic, as in *em,ploy¹ee*, *,Chin¹ese*... (sole category with adjacent stresses);
- when the ending is not a suffix, there is a large number of ‘exceptions’, i.e. displaying ‘ordinary’ antepenultimate stress (*/(-)100/*), and again cases of retraction for those in */-1/*,¹⁸ similar to the well documented example of *garage*.

These convergent features (among which number) clearly point towards a peripheral status of final stress in contemporary English phonology, allowed for by the mixed phonology it has inherited. In other words, French stress is *not* a central component of English stress, an analysis confirmed by history: most words of all lengths stressed on the final are relatively late borrowings, from the 17th century onwards.

3.3.3. Words stressed on the penultimate: */-10/*; *prefinal C¹*

‘Strong endings 2: disyllabic suffixes 1’ (scientific vocabulary):

–itis, *–osis*, *–oma* (Medicine) *–oidal* (Geometry) *–ival* (Grammar)

‘Italian words’ (± 130 words):

armada, *banana*, *bikini*, *choryza*, *cicerone*, *desperado*, *iota*, *martini*, *mimosa*, *mosquito*, *nosferatu*, *peseta*, *piano*, *potato*, *proviso*, *tomato*, *tornado*, *torpedo*, *virtuoso*, *volcano*...

Other words in */-10/*:

allegro, *alpaca*, *angora*, *bazooka*, *bravura*, *canary*, *espressivo*, *finale*, *Geneva*, *gorgonzola*, *mascara*, *pianola*, *pyjama*, *rococo*, *safari*, *salami*, *sombrero*, *tapioca*, *tiara*... (± 70 words)
coliseum, *idea* (*ideal*), *mausoleum*, *messiah*, *museum*, *pariah*, *peritoneum*, *rodeo* – *Korean*, *Aramean*, *Pythagorean*, *Sophoclean*, *European*... (± 50 words)
eleven, *exchequer*, *lieutenant*, *solicit*.

affidavit, *amoeba*, *apparatus*, *asylum*, *cadaver*, *candelabrum*, *carotid*, *caryatid*, *choragus*, *decorum*, *duodenum*, *detritus*, *epsilon*, *erratum*, *factotum*, *hiatus*, *imperator*, *imprimatur*, *papyrus*, *prim(a)eval*, *quietus*, *saliva*, *simulacrum*, *ultimatum*, *verbatim*... ((modern) Latin; not counted)

¹⁸ cf. Trevian (2002).

Not counting – *ic*, a special case from all points of view that we will not take into account here.¹⁹

In accordance with *SPE* and Halle and Keyser (1971), all these cases display a long stressed vowel, except:

alpaca, carotid, caryatid, exchequer, eleven, lieutenant, solicit.

Nonetheless, we observe that:

- all the items above are clearly foreign (or foreign ‘style’) or learned (even scientific), except: *cathedral, eleven, exchequer, horizon, idea (ideal), lieutenant, October, pyjama, solicit, tribunal*;
- these items often display specific phoneme/grapheme sequences, especially the endings, identifying them as such;
- generally speaking, the original pronunciation is ‘preserved’: position of primary stress, and ‘foreign’ pronunciation of the stressed vowel in a number of cases (*banana, bikini, peseta*);
- some of these items have undergone a retraction process, sometimes with re-spelling: *bal'cone* → ‘*balcony*’.

which leads to similar conclusions: these convergent features (among which number) clearly point towards a peripheral status in contemporary English. In other words, heavy penultimate with \bar{V} is *not* a central component of English stress, an analysis historically confirmed again: most of these words are relatively late borrowings, some from the 16th century, most from the 17th and 18th centuries.

3.3.4. Words stressed on the penultimate: /-10/; prefinal C_2

‘Strong endings 2: C_2 + adjectival suffix in $-V(C_0(e))$ (+ nominal – ent/ence):²⁰ ±430 words with less than 3,5% (±15 words) of exceptions:

cavernous, hazardous, infantile, mercantile, excellentence...

‘Prefinal C_2 ’:¹⁷ ± 300 words with nearly 15% (±45 words) of exceptions:

alabaster, banister, barrister, carpenter, character, cucumber, cylinder, lavender, messenger, minister, passenger, register, sinister/lallergy, amnesty, burgundy, calumny, dynasty, embassy, energy, faculty, industry, jeopardy, liberty, majesty, organdy, tapes-try/adjective, ancestor, aperture, Argentine, armistice, aubergine, calendar, camou-flage, circumstance, clementine, discipline, exercise, interval, interview, orchestra, quarantine, satellite, sepulture, talisman.

The stress effect of prefinal C_2 is however limited to these two classes. With the only exception of *apostate*, it is never observed with nominal and verbal –*ate*; even with

¹⁹ Words in –*ic* number in thousands, some of which with a prefinal C_2 . They are massively stressed on the penultimate but for eleven cases. As concerns the rule for the pronunciation of the stressed vowel, a number of exceptions can be found, all due to a corresponding long vowel in a deriving form: as such, they play no role in the question under consideration here.

²⁰ See examples in Section 1, Stress Assignment System – Examples.

Romance suffixes, neutral derivation often implies antepenultimate (or earlier) stress in spite of a prefinal cluster:

novelty, backwardness, stylishly, banishment, modernist, governor...

An explanation based on Romance stress systems may account for some words in the ‘Prefinal C₂’ class, unintegrated (modern) Latin words and late borrowings from Southern Romance languages:²¹

*aorta, bacillus, hibiscus, alumnus, addendum, momentum, colossus, antenna...
tobacco, dilettante, spaghetti, vanilla, diminuendo...*

i.e. with the same limitation as before: a clearly peripheral status in contemporary English, which implies it would not be a satisfactory explanation for the other cases of penultimate stress. As concerns these, we observe that:

- a sizeable number of words in the ‘Prefinal C₂’ class are opaque prefixed derivatives: *advantage, adventure, apprentice, incentive, importance, imposture, reluctance, repugnance...*
the deriving form of which, now obsolete, was in most cases once attested in English: *repugn, reluct...*
- a fair number of words in the ‘adjectival suffixes’ class can also be accounted for in terms of Germanic logic, i.e. neutral derivation from prefixed words other than nouns: *intensive, indulgent, correspondent, distinctive, divergent, persistent, comprehensive, external...*
- to which add other neutral derivatives from prefixed words other than nouns: *assistant, alarmist, progressist, conductor, revolting, instructor...*

All the cases above seem to imply that stressing was set by these prefixed words, and systematized through adjectival suffixes, which would help explain the greater number of exceptions in non-prefixed words of other categories. In other words, heavy penultimate with C₂ has indeed a status in contemporary English, in limited categories as seen above, but more convincingly inherited from Old English than from Latin...

3.3.5. 1(–)1001 and secondary stress: a hypothesis

As we have seen, the analysis of penultimate stress does not confirm heavy penultimate as a central component of stress in contemporary English but in the case of prefinal C₂; as concerns the latter, the same analysis casts serious doubts on the possibility that Latin was its source, which appears consistent with the historical observations we began with. Now,

²¹ As pointed out in the ‘Overview’, C₂ includes graphic geminates. Prefinal graphic geminates are essentially found in this group of words, where they represent the *phonetic* geminates of the languages they were borrowed from, which explains their stress pattern in *these* languages. The written form thus allows for a simplified, and historically motivated, account of penultimate stress placement in contemporary English. Within a framework that would not wish to take graphic data into account, they still could be accounted for by grouping them with the classes described in Section 3, on account of their semantic, or stylistic, status, to which add similar specific phonemes sequences. Prefixed derivatives, which are analyzed below, essentially display actual phonetic clusters: the conclusion we come to would thus still hold within such a purely phonetic/phonologic framework.

if Latin heavy penultimate, which is a crucial feature of Latin phonology, had no role in the formation of the new stress system of English, it becomes very difficult to hold to the idea that its antepenultimate stress did. Another hypothesis is called for. We would like to offer the following.

In words of three syllables, antepenultimate stress is also initial. It is only the fact that longer words also display an antepenultimate stress that leads us to make the hypothesis of a unified stress-assignment rule. Besides, this subclass of long words contains a number of ordinary words (*apricot, appetite, elephant, vinegar...*), while longer words, and the longer the more so as often observed, are mostly learned words. Hence the following hypothesis: being relatively ordinary, trisyllabic words were probably integrated earlier by English speakers; if such was the case, we will infer that they followed the same course as disyllables: they retained the initial stress of Old English, constituting a reference pattern for long words. This initial stress would thus have been not a ‘retracted’ Romance stress, but another stress altogether, a Germanic stress, due to the simple continuation of a characteristic process of Old English:

“The assignment of stress to the initial syllable of the stem was a productive process in Old English, as shown by the fact that words borrowed from the classical languages received initial stress regardless of their original accentuation.” Halle and Keyser (1971, p. 88).

But longer words (four syllables or more), because of their learned character, were also mostly Romance, and probably those which remained so the longest. The reference set by trisyllabic words would then have been reinterpreted in terms of Romance logic, i.e. a set position from the end: the antepenultimate. The origin of antepenultimate stress would thus not be Latin, nor French, but a Romance interpretation of Germanic stress, a hypothesis which would be more consistent with the observations we have made about final and penultimate stress in contemporary English, but also with the dynamics of the merging between both languages, or both groups of speakers.

In turn, this hypothesis allows for a logical, and dynamic, explanation of secondary stress. Such a reinterpretation was problematical for Germanic logic: on very long words, primary stress could now fall on a syllable further than the first two. The idea is that Germanic logic reasserted itself by inserting a compensating secondary stress. Indeed, secondary stress shows all characteristics of the Germanic system: preservation of the relationship with the deriving form whenever possible; otherwise demarcative stress on the beginning of the word. In terms of speakers, who should not be overlooked in an attempt at a realistic reconstruction, the hypothesis comes to:

- Anglicizing French, or at least Anglicizing bilinguals, who would be the source of Romance reinterpretation;
- English natives acquiring learned vocabulary alongside status, who would be the source of Germanic compensation.

4. Conclusion

In conclusion, I would like to insist on an aspect which – though implicit throughout the whole exposition – underlies each of the analyses made, and makes English such

a fascinating language for the phonologist: the conviction that it has inherited not *one* phonology but *several* phonologies, whose workings are determined by morphology and word-length, but also by learned or foreign word characteristics. I feel the latter should not be overlooked: in everyday speech, i.e. when using everyday life (ordinary) words, the stress patterns of English may very well be interpreted exclusively in terms of a Germanic type of logic.

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