

Endogenous stratal splits and the life cycle of affixes

Ricardo Bermúdez-Otero
(University of Manchester)

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RETROSPECT AND PROSPECT

The debate on stratal splits

§1 Stratal Phonology, the constraint-based stratal-cyclic theory of phonological computation adopted in this course (◀1), is often criticized on the grounds that the patterns of stratification exhibited by individual languages are **arbitrary**.

This criticism takes several forms:

(i) *The objection*

Many opacity effects fail to emerge from the relative sizes of the cyclic domains of the phonological processes involved.

In such cases, Stratal Phonology is forced to resort to ‘**strata of convenience**’ (McCarthy 1999 [ROA ms]: 10, Calabrese 2005: 460).

The response

The stratal affiliation of a phonological process is determined solely by the size of its cyclic domain. Therefore, two processes with cyclic domains of identical size must belong to the same stratum.

Stratum-internal opacity does exist, but it yields to independently motivated constraint-based solutions such as distantial faithfulness (◀2 §4-§24).

Some lines of inquiry within the broad stratal tradition seem to give less prominence to these considerations (e.g. Rubach 2000, 2014), but they nonetheless uphold the basic principle that strata are distinguished by domain size, with lower strata having larger domains (Rubach 2018: 20-21).

(ii) *The objection*

The three levels of Stratal Phonology (◀1 §13ff) are not enough to capture the often rampant **phonological non-uniformity** shown by different grammatical constructions within the same language.

Stratal analyses that do real justice to this non-uniformity become indistinguishable from less restrictive models like Cophonology Theory (Inkelas 2012: 155-156).

The response

The three levels of Stratal Phonology prove sufficient if one makes a principled distinction between lexically stored allomorphy (◀5), morphological exponence, and phonology proper. In particular, apparently nonconcatenative exponence involves Generalized Non-Linear Affixation.

See e.g. Trommer & Zimmermann (2010), Trommer (2011), Zimmermann (2017), and the references in Bermúdez-Otero (2018: 123).

(iii) *The objection*

Stratal Phonology lacks explanatory depth because the split between stem-level and word-level affixation is **synchronically arbitrary** (Newell 2015: 12) and varies erratically from language to language.

The response

Deradical items are always stem-level. Also typically stem-level are low-productivity non-compositional derivational constructions (◀4 §30-§32) and suppletive inflected forms (Bermúdez-Otero 2011: 2022).

The theory of the stem level works fine as long as this inner core of stem-level items is subject to non-analytic listing. The location of the outer boundary between the stem and word levels is a contingent product of diachronic forces and is less crucial (◀4 §30-§32).

A pending assignment: the life cycle of affixes

§2 Nonetheless, the argument under §1iii highlights a pending task:

a complete theory of stratal phonology requires

- not only a diachronic account of the stratal affiliation of phonological processes (◀6),
- but also a diachronic account of the stratal affiliation of grammatical constituents.

This session makes a preliminary contribution to the latter.

§3 One of the main diachronic forces driving the life cycle of affixes is **grammaticalization**, which converts phrase-level into word-level elements (Givón 1979: 209, Hopper & Traugott 2003: 6).

I illustrate this phenomenon with an analysis of prosodic words in European Portuguese (Bermúdez-Otero & Luís 2009):

Presumably under the influence of a universal Suffixation Bias (Cysouw 2006, Hupp et al. 2009), European Portuguese pronominal enclitics have grammaticalized as affixes whilst pronominal proclitics remain independent phrasal elements.

§4 I then turn to show how endogenous morphological and phonological change can cause **splits between stem- and word-level affixation**.

I illustrate this phenomenon with a discussion of the behaviour of affixes in respect of closed syllable shortening in the Early Middle English dialect of the *Ormulum* (Bermúdez-Otero 1999: 212-215).

Two factors played a key role in this split:

- low-**productivity** items that required listing (e.g. irregular inflection, unproductive derivation) remained in the scope of closed syllable shortening;
- high-productivity constructions (e.g. regular inflection, productive derivation) escaped the domain of closed syllable shortening, presumably under the influence of the **Anti-Alternation Bias** (◀ 5 §34ii, 6 §23).

§5 Finally, I use evidence from suffixes like *-ism* and *-ize* in Late Modern English to illustrate a mechanism of **affixal emancipation**, whereby erstwhile stem-level affixes can become word-level when their selectional restrictions are relaxed and their productivity increases.

GRAMMATICALIZATION

The phonology of prosodic words in European Portuguese (Bermúdez-Otero & Luís 2009)

§6 *Derivational suffixation ≠ evaluative suffixation*

(i) Derivational suffixes beginning with /i/ trigger softening of final /t, k, g/ in a lexically specified subset of roots: e.g.

<i>profet-a</i> [pru'fɛtɐ]	'prophet'	~	<i>profec-ia</i> [prufɨ'siɐ]	'prophecy'
<i>católic-o</i> [kɐ'tɔliku]	'Catholic'	~	<i>catolic-ismo</i> [kɛtuli'siʒmu]	'Catholicism'
<i>psicólog-o</i> [psi'kɔlugu]	'psychologist'	~	<i>psicolog-ia</i> [psikulu'ʒiɐ]	'psychology'

(examples from Mateus & d'Andrade 2000: 99)

(ii) In contrast, the evaluative suffixes *-inho* and *-ito* never trigger softening: e.g.

<i>profet-inha</i>	[prufɨ'tiɲɐ], not *[prufɨ'siɲɐ]	'prophet-DIM'
<i>catoliqu-inho</i>	[kɛtuli'kiɲu], not *[kɛtuli'siɲu]	'Catholic-DIM'
<i>psicologu-inho</i>	[psikulu'giɲu], not *[psikulu'ʒiɲu]	'psychologist-DIM'

These examples are naturally attested (e.g. *profetinha* in the website of *IOL Portugal Diário* 1 June 2007), though at extremely low frequencies, probably owing to competition from the diminutive allomorph *-zinho* (whose prosodic behaviour is different: see e.g. Vigário 2003: 48, 219ff.). However, forced elicitation demonstrates that the absence of softening is absolutely systematic.

(iii) Hypothesis A: • derivational suffixation is stem-level;
• evaluative suffixation is word-level.

§7 *Inflectional suffixation ≠ pronominal encliticization*

Multiple phonological criteria oppose inflectional suffixes to pronominal enclitics:

- (iv) Therefore the correct generalization is that word-level unstressed vowel reduction fails to apply to non-low vowels in ω -initial position and that prefixes like *re-* and *des-* adjoin under ω' :

[ω əku'par] [ω' dɪz[ω əku'par]]

§9 *re- and des- prefixation = pronominal encliticization*

Unexpectedly, pronominal enclitics behave exactly like the prefixes *re-* and *des-* in two respects:

(i) Mid-vowel prepalatal centralization

Mid-vowel prepalatal centralization (§7iii) fails

- across verb=enclitic boundaries *dê=lbe* *[ɐ] 'give to him/her'
- across prefix+stem boundaries *rê-isolar* *[ɐ] 'to isolate again'
- cf. *veicular* [ɐ] 'to diffuse' (Vigário 2003: 167-8)

(ii) Resolution of hiatus between [i] and a following vowel

• verb=enclitic:	<i>bebe=a</i>	*[∅], [j]	}	gliding obligatory, deletion blocked
	drink.3SG=3SG.ACC.FEM			
• prefix+stem:	<i>rê-organizar</i>	*[∅], [j]	}	deletion blocked
	'reorganize'			
cf.				
• proclitic=verb:	<i>tê=ofereci</i>	[∅]-[j]	}	deletion
	2SG.DAT=offer.1SG.PAST			
• P NP:	<i>dê assunto</i>	[∅]-[j]	}	optional
	'of matter'			

(iii) Hypothesis B' (cf. §7v):

- inflectional suffixes are word-level and incorporate under ω^o ;
- pronominal enclitics, like the prefixes *re-* and *des-* (§8iv), are word-level too
but adjoin under ω' ;

(iv) Obligatory word-level gliding bleeds optional phrase-level deletion:

	[_{phrase} [_{word} <i>reorganizar</i>]]	[_{phrase} <i>de</i> [_{word} <i>assunto</i>]]
WL (gliding)	<i>r[j]organizar</i>	<i>assunto</i>
PL (deletion ~ gliding)	—	<i>d[∅-j]assunto</i>

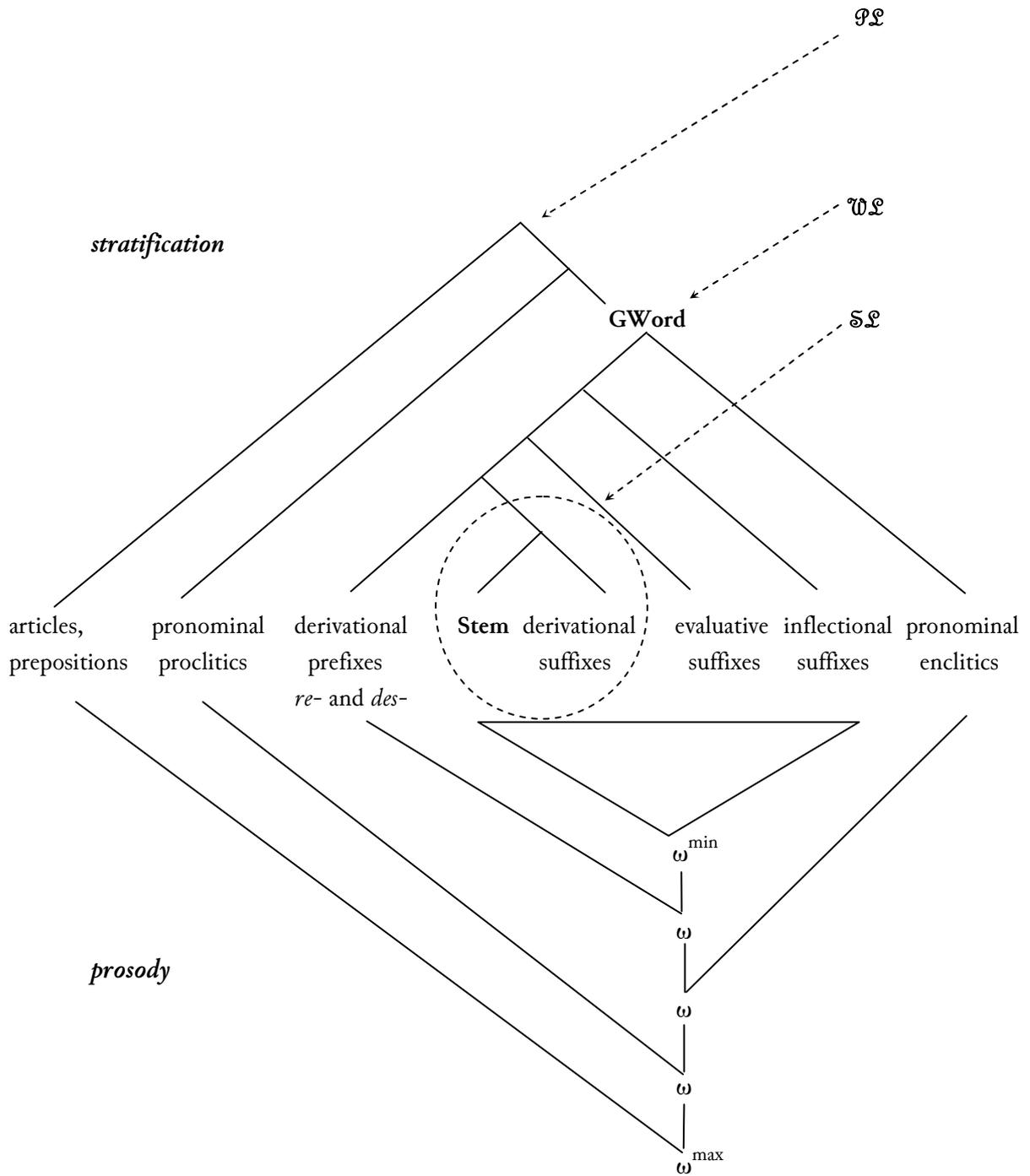
§10 *Pronominal encliticization ≠ pronominal procliticization*

(i) Pronominal proclitics behave

- like articles and prepositions
- and • unlike pronominal enclitics and prefixes,
- in respect of hiatus resolution (§9ii).

- (ii) Hypothesis C: pronominal proclitics, articles, and prepositions are phrase-level (and adjoin under ω').

§11 *Summary: stratification and prosody in the European Portuguese word*



For a similar analysis of word phonology in Ancient Greek, see Jatteau (2016: ch. 2, 2019).

(ii) Coordination

	<u>Proclitics?</u>	<u>Enclitics?</u>
Clitic takes wide scope over coordination:	YES	NO
<i>Acho que lhes [leram uma história e deram um livro].</i>		
I.think that 3PL.DAT [they.read a story and they.gave a book]		
‘I think that they read them a story and gave them a book.’		

(iii) Allomorphy

	<u>Proclitics?</u>	<u>Enclitics?</u>
Verb+clitic combination displays arbitrary allomorphy:	NO	YES
<i>Procuramo=lo todo o dia.</i> (not expected * <i>procuramos=o</i>)		
searched.1PL=3SG.MASC.ACC all the day		
‘We searched for him all day.’		
Cf. <i>lápiz azul</i> (not * <i>lápi[Ø]zul</i>)		
pencil blue		
‘blue pencil’		

Discussion and implications

- §14 Q. Why do European Portuguese pronominal proclitics remain independent words, whilst pronominal enclitics are contained within the same grammatical word as the host?
- A. Because the synchronic demarcation between word-level and phrase-level elements is the outcome of diachronic processes of grammaticalization, and the universal Suffixation Bias (Cysouw 2006, Hupp et al. 2009) causes left-leaning elements to grammaticalize faster than right-leaning ones.
- §15 The fact that a stratal analysis of European Portuguese
- (i) splits enclitics from proclitics
 - and (ii) groups prefixes together with enclitics
- is not a liability, but an achievement.
- These groupings
- (i) are real, as confirmed by independent diagnostics,
 - and (ii) look arbitrary only if considered from a purely synchronic viewpoint.

ENDOGENOUS STRATAL SPLITS

The early history of the stem-level/word-level split in English

§16 It is sometimes suggested that the stratal split between stem-level and word-level affixation in English arose historically through intense contact with French, Latin, and Greek in the Middle and Early Modern periods.

If stratal splits were the product of **exogenous contingencies like contact**, we would have cause to doubt the hypothesis that lexical stratification is a deep architectural property of language.

But, in fact, key elements of the stratal organization of present-day English arose **endogenously** and were already in place in Early Middle English in dialects showing no effect of contact with French (Bermúdez-Otero 1999: 214).

§17 *Present-day native suffixes with stem-level behaviour*

(i) In present-day English, Latinate stem-level suffixes trigger closed syllable shortening under final consonant extrametricality (see e.g. Myers 1987):

e.g.	<i>intervēne</i>	~	<i>intervĕn-tion</i>		<i>percēive</i>	~	<i>percĕp-tive</i>
	<i>inscrībe</i>	~	<i>inscrĭp-tion</i>		<i>describe</i>	~	<i>descrĭp-tive</i>
	<i>detāin</i>	~	<i>detĕn-tion</i>		<i>redūce</i>	~	<i>redūc-tive</i>

(ii) But a few Germanic suffixes show the same behaviour:

- the irregular weak past-tense suffix *-t*: cf. word-level regular *-ed*

e.g.	<i>kĕep</i>	~	<i>kĕp-t</i>		<i>sĕep</i>	~	<i>sĕep-ed</i>
	<i>fĕel</i>	~	<i>fĕl-t</i>		<i>hĕal</i>	~	<i>hĕal-ed</i>
- the unproductive derivational suffix *-th*: cf. word-level *-ness*

e.g.	<i>dĕep</i>	~	<i>dĕp-th</i>		<i>stĕep</i>	~	<i>stĕep-ness</i>
	<i>wĭde</i>	~	<i>wĭd-th</i>		<i>rĭpe</i>	~	<i>rĭpe-ness</i>

§18 *Stratification in the Ormulum*

Bermúdez-Otero (1999: 212-215) observes that the facts of §17ii are already in place in the dialect of the *Ormulum* (Holt 1878),

a South Lincolnshire text dating to c1180 and showing no influence from French (Parkes 1983).

The *Ormulum* provides direct orthographic information about the application of closed syllable shortening because the author doubled consonant letters in the coda if the preceding vowel was short (Anderson & Britton 1999).

(i) Forms defining domains for closed syllable shortening:

- underived stems

e.g.	<blosstme>	‘blossom’	OE <i>blōstma</i>
	<lihht>	‘light’	OE <i>lēohht</i>
- irregular athematic past-tense and past-participle forms of weak verbs

e.g.	<demnde>	‘deem.PRET.3SG’	OE <i>dēman</i>
	<hidd>	‘hide.PST.PTCP’	OE <i>hȳdan</i>
- *-þe/-te* suffixation

e.g.	<maʒʒþe>	‘kin’	OE <i>mæg</i>
	<seollþe>	‘happiness’	OE <i>sæl</i>

(ii) Forms that do not define domains for closed syllable shortening:

- nominal inflection

e.g.	SG <dækenn>	~	PL <dæcness>, not *<deccness>	‘deacon’	OE <i>dēacon</i>
	SG <tákenn>	~	PL <tacness>, not *<taccness>	‘token’	OE <i>tācen</i>
- zero-derived regular weak verbs (including their thematic past-tense and past-participle forms)

e.g.	N <tákenn>	~	V <tacnenn>, not *<taccnenn>	‘betoken’	OE <i>tācen</i>
	N <wæpenn>	~	V <wæpnedd>, not *<weppnedd>	‘arm’	OE <i>wāpen</i>
- derivational suffixation

e.g.	<god> ‘good’	~	<godnesse> ‘goodness’, not *<goddnesse>	OE <i>gōd</i>
	<soþ> ‘true’	~	<soþlike> ‘truly’, not *<soþþlike>	OE <i>sōþ</i>
- compounding

e.g.	<boc> ‘book’	~	<bocstaff> ‘letter’, not *<bocstaff>	OE <i>bōc</i>
	<shep> ‘sheep’	~	<shephirde> ‘shepherd’, not *<shepphirde>	OE <i>scēap</i>

§19 *The role of productivity*

The constructions diagnosed as stem-level by the operation of closed syllable shortening in the *Ormulum* are unproductive and require lexical listing:

(i) Athematic weak-verb inflection

In Old English, syncope of the verbal theme vowel in past-tense forms had been predictable:

- the *-e-* of class-1 weak verbs was syncope-prone,
 - the *-o-* of class-2 weak verbs was syncope-resistant,
- and

- class-1 *-e-* syncope only after heavy syllables.

e.g.	‘do’ (class1)	‘hear’ (class 1)	‘love’ (class 2)	‘end’ (class 2)
PST.PTCP	<i>frem-e-d</i>	<i>hīer-e-d</i>	<i>luf-o-d</i>	<i>end-o-d</i>
1/3SG.PST.IND	<i>frem-e-d-e</i>	<i>hīer-∅-d-e</i>	<i>luf-o-d-e</i>	<i>end-o-d-e</i>

In Middle English, vowel reduction has neutralized the distinction between *-e-* and *-o-*, and independent developments have obscured the weight conditions on syncope (Bermúdez-Otero & Hogg 2003: 116–117).

As a result, Middle English weak verbs have been re-organized into two classes (Lass 1999):

- an open, regular class of weak verbs with thematic *-e-* (> modern *-ed* verbs)
- a closed, irregular class of weak verbs with thematic *-∅-* (> modern *-t* verbs).

(ii) *-th* derivation

The Old English precursor of *-th*, the suffix *-iþu*, had been involved in fearsomely complex vowel~∅ alternations (Bermúdez-Otero 2015: 14), and was associated with increasingly unproductive *i*-umlaut.

By Early Middle English, it has become unproductive.

§20 *The role of the Anti-Alternation Bias*

The constructions that remained in the scope of closed syllable shortening in the *Ormulum* are those that we would associate with the stem-level ‘inner core’ in any case (§1iii).

However, if closed syllable shortening started its life cycle as a transparent process applying across the board (◀6§9,§13), then we need to invoke an Anti-Alternation Bias to explain how its domain become narrowed (◀6§23), allowing new superheavy syllables to be created.

Implications

§21 Stratal splits may arise endogenously through domain narrowing as relatively highly productive affixes escape the scope of existing phonological alternations under pressure from an Anti-Alternation Bias.

AFFIXAL EMANCIPATION

§22 In this section, I show that, when a stratal split is already in existence, the same mechanisms can cause stem-level affixes to escape to the word level if their selectional restrictions are relaxed and they experience an uptick in productivity.

The rise of dual-level behaviour in Late Modern English

§23 Focus on *-ism* (for *-ize*, which behaves in the same way, see Bermúdez-Otero 2018: §5.3.2)

§24 The suffix first entered the English language smuggled inside loanwords borrowed whole (e.g. *baptism*, *Judaism*, *Christianism*).

Initially, *-ism* behaves as a stem-level ‘retracting’ suffix, causing a foot to be erected immediately to its left:

e.g.	<i>so(líp)(sism)</i>	cf.	<i>sòlipsístic</i>
	<i>me(tábo)(lism)</i>	cf.	<i>mètabólic</i>
	<i>pa(rálo)(gism)</i>	cf.	<i>pàralógical</i>

As a stem-level suffix, it triggers stress shift when added to free bases:

e.g.	<i>cápital</i>	but	<i>capítal-ism</i>	(on innovative <i>cápitalism</i> , see below)
	<i>búreaucrèt</i>	but	<i>buréaucrat-ism</i>	

§25 However, as the number of words containing *-ism* increased, the suffix became more parsable and, eventually, experienced an uptick in productivity, perhaps because of its ability to exploit an unoccupied semantic niche.

This manifested itself, among other things, in an ability to attach promiscuously to all types of bases, including the native Germanic word-stock:

e.g.	<i>Thátcher-ism</i>
	<i>Réagan-ism</i>

§26 At this point, however, *-ism* becomes word-level and so stress-neutral:

e.g.	<i>proféssional</i>	so	<i>proféssional-ism</i>	(not * <i>pròfessiónalism</i>)
	<i>cónsonant</i>	so	<i>cónsonant-ism</i>	(not * <i>cònsonántism</i>)

As in our *Ormulum* case-study, then, high productivity entails greater exposure to the Anti-Alternation Bias and a greater likelihood of becoming word level.

§27 Crucially, existing words derived from bound bases retain the old metrical contour created by stress retraction:

e.g.	<i>solíps-ism</i>	
	<i>metábol-ism</i>	(most speakers don't know the word <i>metábole</i>)
	<i>parálog-ism</i>	

This is predictable: there is simple no free base to which the suffix could attach in a word-level cycle.

A similar phenomenon may have affected certain Armenian suffixes, such as *-ig-*, which resists high vowel deletion after free stems but undergoes it after bound roots (◀ 1 §16):

e.g.	had	'piece'	tapantš-él	'to penetrate'
	had-ig	'grain'	tapantš-ig	'transparent'
	had-ig-avór	'granular'	tapantš-g-utjún	'transparency'

(Dolatian 2019)

§28 Similarly, new learned creations derived from bound roots follow the stress-retraction pattern too because deradical items are obligatorily stem-level:

e.g.	<i>àpo-sémat-ism</i>
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§29 Crucially, the original pattern of stress retraction is gradually retreating from old items derived from free bases, as inherited realizations are replaced on an item-specific fashion by new formations involving word-level stress-neutral suffixation:

e.g. *buréaucratism* remains
capítalism is gone, replaced by *cápitalism*

As late as 1969, the art historian Lord Kenneth Clark (1903-1983) said *capitalism* and *capitalist*: listen to 07:15 and 09:18 in <https://tinyurl.com/y56ywmk3>.

§30 This diachronic process of lexical diffusion among the remnants of old stem-level formations with free bases containing a now dual-level affix is precisely what is predicted if stem-level outputs are listed nonanalytically in the lexicon (◀④).

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