

Lexical storage vs. phonological computation: a case study of stress variation in English *-(at)ory* derivatives

This paper presents a formal analysis based on the results of a production experiment on English *-(at)ory* derivatives. The participants, 31 native speakers of British English, were asked to read 25 sentences with *-(at)ory* derivatives extracted from an oral corpus. The sentences of a parallel experiment served as fillers. The experiment shows a higher degree of stress variation than previously acknowledged, both across and within speakers. (e.g. *compénsatory~cómpensatory~compensátory*, while the OED only registers the first form). The proposal is that the variation can be explained by taking into account the interaction of morphological and prosodic structure, phonological computation, faithfulness to a verbal base, and storage of prosodically specified forms.

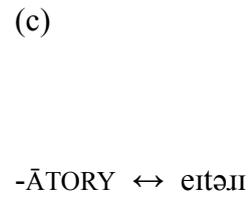
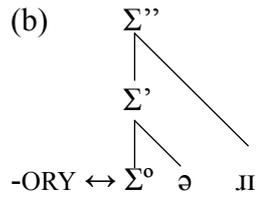
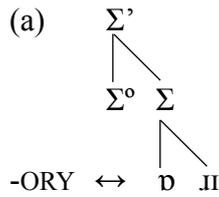
The analysis divides the participants in the experiment into two major groups depending on the default suffix they produce, *-ORY* or *-ĀTORY*. The *-ORY* type is further subdivided into those speakers pronouncing a full low vowel in *-ory* and those exhibiting (several degrees of) vowel reduction. Figure (1) shows how the default morphemes are mapped into different prosodic representations (modeled after previous proposals to formalize the recursion of prosodic structure made by Itô and Mester (2009) and Bermúdez-Otero (forth)). The main idea is that syllables and feet can be underlyingly specified as adjoined to another feet. By placing a constraint requiring faithfulness to this type of adjunction ($\text{IDENT-}\sigma\text{-}\Sigma^\circ$) above the alignment constraints, we obtain the different outcomes observed in the experiment (see Figure (2)).

Figure (3), on the other hand, explains why no speaker is completely consistent in showing a unified stress pattern as predicted by a particular underlying suffix. High ranking faithfulness to a specified prosodic head may cause primary stress to move a syllable leftward with respect to the unmarked pattern in order to comply to the prosodic configuration of a local base (i.e. an immediate subcomponent of the derivative). For those speakers with the default *-ĀTORY* suffix, a derivation from a verb ending in *-ate* would undergo either a process of haplology or morphological selection, and primary stress would be preserved as secondary stress.

Next, intra-speaker variation is accounted for by the possibility for complex words, not only independent morphemes, to be stored in the mental lexicon with their prosodic specification (see e.g. Jackendoff 2002). E.g., figure (4) shows that, among speakers with default *-ORY*, there are two possible stress patterns for a word such as *oscillatory*. The reason for this is to be found in the date the word entered the English lexicon. *Oscillatory* is documented more than half a century earlier than the verb *oscillate*, so it was probably first stored with the default *oscillatory* pattern, as illustrated by the derivation in (2). Once the *-ate* verb form entered the lexicon and was able to influence the *-ory* derivative, the alternant *óscillatory* could then be generated (see Figure 3). As a result, current speakers may either use the stored derivative or generate a new stress-preserving one, giving the impression of a nonsystematic variety of forms (cf. the absence of variation in *Litigatory*).

By allowing only for local bases to influence the structure of the derivative and also limiting the access of morphosyntactic information to the phonology to indirect reference to prosodic structure, the analysis offers a more restrictive approach to the data than previous accounts of stress variation in English complex words (e.g. Stanton and Steriade 2014, Zamma 2014). This in turn has the advantage of yielding a higher degree of empirical content: “the more a statement forbids, the more it says about the world of experience” (Popper 2002:103). In addition, the proposal opens the way towards a diachronic analysis in which a highly specified morpheme becomes less idiosyncratic by progressively losing parts of its prosodic specification. Thus, the suffix that has completely lost all underlying specification renders derivatives that comply to the less marked stress pattern in the language; i.e. the pattern exhibited by the majority of monomorphemic words (cf. Figures (1a) to (1c)).

(1) Underlying representations



(2) Phonological computation: preservation of prosodic structure from the suffix

		IDENT- σ - Σ°	NON-FINALITY	ALIGN-HEADFT-R
oscillat- Σ' Σ° Σ o ry	☞ o(scí.la)(tò.ry)			**
	(ò.sci)(llá.to)ry	*!		*
	(ò.sci)lla(tó.ry)	*!	*	
oscill-ātory	o(scí.llā)(tò.ry)			*!*
	☞ (ò.sci)(llá.to)ry			*
	(ò.sci)llā(tó.ry)		*!	

(3) Phonological computation: preservation of prosodic structure from the local base

(ò.sci)llāte- Σ° (o.ry)	MAX-FTHEAD	ALIGN-HEADFT-R
☞ (ò.sci)lla(tò.ry)		***
o(scí.la)(tò.ry)	*!	**

(4) Lexical storage (dates of first attestation from OED)

1660: *oscillatory* enters the lexicon → 1726: *oscillate* enters the lexicon

oscillat-ory → o(scí.la)(tò.ry)

variation $\left\{ \begin{array}{l} \text{o(scí.la)(tò.ry)} \\ \text{(ós.ci)llāte-ory} \rightarrow \text{(ò.sci)la(tò.ry)} \end{array} \right.$

1606: *litigate* enters the lexicon

→ 2016 (not in OED): *litigatory* enters the lexicon
 (lí.ti)gāte-ory → (lí.ti)ga(tò.ry)

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