Tense? (Re)lax! (A new formalisation for the tense/lax contrast)

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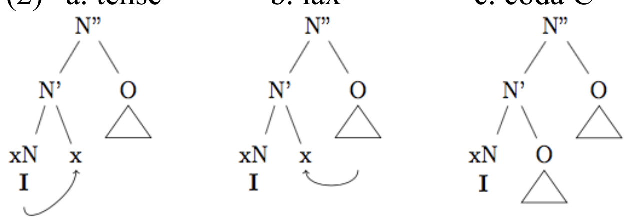
I. Problem. The two sets of English stressed vowels bear various names: tense/lax (focus on quality), long/short (quantity), free/checked (behaviour). Stressed checked vowels are disallowed finally (1a) and pre-hiatus (1b) as they need 'checking' by a following consonant, cf. Wells (1982). This explains their distribution but not why they need 'checking' in the first place (or why they have the phonetic quality they have). Similarly, Government Phonology equals tense with (melodically) headed and lax with unheaded (Kaye 2000) and requires branching nuclei to link to headed expressions, thus deriving long vowels to be tense and connecting quality to quantity. However, this does not capture or explain (1) in a non-arbitrary fashion (without extra stipulation). That is, previous accounts capture different aspects of the tense/lax distinction, but never the full range. This abstract derives all properties from one single assumption.

II. Proposal. Tense (2a) and lax (2b) vowels have the same basic structure, a nuclear head (xN) and a complement (x), but differ in who makes use of the complement: In a tense vowel, xN claims x by spreading its melody, while in a lax vowel the complement is not claimed by xN and therefore needs licensing by a following consonant (marked 'O'). (For the general model of consituency employed here cf. Pöchtrager 2006.) In both (2a) and (2b) the head is annotated with the element **I**, hence the structures represent the vowels in [biːt]/[bɪt], respectively.

(1) stressed V:	tense	lax
a. finally	b[iː], z[uː]	*b[ɪ], *z[ʊ]
b. pre-hiatus	l[iː].o, th[iː].atre	*l[ɪ].o, *th[ɪ].atre

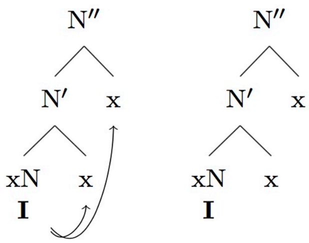
(2) a. tense b. lax c. coda C



III. Predictions. 1. The need of lax vowels to be 'checked' by a following consonant is no longer a stipulation, but follows from there being a complement not licensed by the head and allowing the following consonant to license it; (1a–b) follow. (See below for yet another possibility.) **2.** Tense vowels take up more space (head *and* complement) than corresponding lax vowels (head only). Their greater duration ([biːt]/[bɪt] have vowel ratios of 3:2) follows, thus explaining the quantitative difference. **3.** The different quality can be pinned on the status of the nuclear head: laxness means there is no other point for the nuclear head to take care of. **4.** Tense vowels require more room than lax ones. A coda consonant (in the sense of GP; Kaye 1990) goes in the same position otherwise taken up by a nuclear complement, i.e. as the sister of the nuclear head. Thus, before a coda consonant (the first O in (2c)) only lax vowels are possible: [ˈɪmp], *[ˈiːmp]. (Alveolar clusters as in *fiend* allow for that limit to be exceeded, cf. Pöchtrager 2010 for discussion and anlysis.)

IV. Extensions. 1. Wells (1982: 215) points out that (bisyllabic) hiatus sequences of tense vowel+schwa have often been relexicalised as monosyllabic centering diphthongs, i.e. *id*[ɪə] for older *id*[iːə] and *th*[ɪə]*tre* alongside *th*[iːə]*tre* (thus eliminating some cases from 1b), identical to those arising from the influence of following (historical or still present) *r*, e.g. *fear*. (3a), representing the vowel in *fee*, shows that the vowel is overlong

(3) a. *(f)ee* b. *(f)ear*



(it involves three positions) as it is not clipped by a following fortis consonant (Pöchtrager 2006); and it is tense, since the head claims the complement. (3b) shows the vowel of (non-rhotic) *fear*, with the nuclear head claiming neither its sister nor the specifier. Consequently, the two unclaimed positions are spelled out by the Empty Category Principle (Kaye, Lowenstamm & Vergnaud 1990) as schwa, hence [ɪə]. (For schwa consisting of two positions cf. Pöchtrager 2018.)

2. Québec French laxing ([vide] 'to empty' vs. [vɪd] 'empty'; Walker 1984) can be derived by one extra stipulation on constituency: A consonant in the *same syllable* will claim the nuclear complement (cf. 2b), thus laxing the preceding vowel. The restriction of laxing to high vowels can also be derived from structure: Non-high vowels are structurally more complex, hence the sister to the nuclear head is more deeply embedded (Pöchtrager 2018) and thus not as easily accessible to following consonants as with high vowels.

3. The unstressed position in English is restricted to schwa and some tense vowels (*happy*, *into*). **a.** That the latter group be tense is unsurprising; final vowels are not followed by a consonant, so they must be tense, i.e. xN must take care of x. (At least in some varieties of English.) Tellingly, once this vowel finds itself followed by a consonant it becomes lax (*happily* vs. *happy*). **b.** It is tempting to treat schwa as tense (as argued by Booij 1995 for Dutch), thus uniting all vowels, but the lack of a parallel to *happy*/*happily* remains problematic.

4. In some languages all vowels are tense (e.g. Spanish) and they match their English counterparts in quality and quantity, but not in distribution (e.g., they are not banned from closed syllables). Either there is something still missing in our account of the tense/lax distinction or something about constituent structure needs clarification (or both). That constituent structure is not fully understood is also clear for English, which does allow tense vowels before coda-onset clusters, albeit under very special circumstances. (Recall cases like *fiend* in III/4.)

5. My proposal can be seen as a (possibly language-specific) extension of Kaye's (1990) (universal) Coda Licensing Principle, requiring a coda to be licensed by a following onset: Not only codas need such a license, but lax vowels do, too.

References

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