Words divided: Morphological interactions in Turkish auxiliary formation

I show, firstly, that in the Turkish verbal domain two auxiliaries as independent words arise only when there are excessively marked feature combinations – too many to be realized on a single verb. Secondly, I show that apparent counterexamples to this claim, where the main verb and the AUX verb seem to form one word for certain morpho-phonological processes, can be explained if we assume different layers of words. Finally, I show the analysis for Turkish can shed light on very similar data found in Japanese.

Auxiliaries arise contextually. The two dummy AUX in Turkish I discuss are ol- and i-/y- (Sağ 2013, Göksel 2001, Kornfilt 1997 a.o.). The presence of these AUX forms does not depend on a single feature, but on specific marked feature combinations. For example, both the morpheme for FUT(URE) and AOR(IST) can be expressed on the main verb (1a-b). Even though both features can be used together in one clause, they cannot occur in a single word, (2a). Instead an AUX is needed to host one of the features, (2b).

   H. every morning breakfast do-AOR H. tomorrow assignment-3SG-ACC finish-FUT
   ‘H. has breakfast every morning’ ‘H. will finish his assignment tomorrow’
   (Kornfilt 1997)

(2) gelecek yaz üniversite-ye…. a.*gid-er-eceg-im b. gid-ˈer ol-acağ-im
   next summer university-DAT come-AOR-FUT-1.SG come-AOR AUX-FUT-1.SG
   ‘Next summer I will be going to the university (regularly)’
   (Kornfilt 1997)

Thus, AUX arise when two features compete for the same slot (Embick 2000, Kiparsky 2004, Bjorkman 2011, Pietraszko 2017). In other words: in the case of (2), FUT cannot be inherently specified for occurring with AUX, since the morpheme can be expressed on the main verb.

Analysis part I: failed head movement forms two X^0. I assume, following Embick (2000) that when dummy AUX arise, head movement is blocked. I combine this idea with the idea that constraints block certain operations (Calabrese 2011). More precisely, I propose that head movement is blocked due to constraints against the co-occurrence of specific feature combinations inside a single complex head (X^0), illustrated in table 1i. This constraint leads to stranding of the inflectional feature higher in the clausal spine (table 1iii). To still express both features in the same clause, an AUX is inserted as a host for the stranded inflectional feature, since Turkish disallows functional morphemes without hosts (table 1iii-iv), cf. Lasknik’s (1976) Stray Affix Filter. After this, the morpho-phonology takes care of vocabulary insertion (table 2i). I assume that stress and vowel harmony (VH) apply to every highest X^0, in this case both the main verb and the AUX (table 2ii-iii). I assume that verbs behave as phrasal compounds, which receive stress on the leftmost element (following Güneş 2009, Kabak and Vogel 2003). This derives (1iii).

<table>
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<th>Table 1: Morpho-syntax</th>
<th>Table 2: Morpho-phonology</th>
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<td>i Constraint *[AOR, FUT]X^0</td>
<td>i Vocabulary [gid-Ar] [ol-AcAk- im]</td>
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<td>ii Head mov’ [[V AOR] [FUT]]</td>
<td>ii Stress [gid’ Ar] [olAcAk’ im]</td>
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<tr>
<td>iii Infl Constraint *[INFL]X^0</td>
<td>iii Vowel Harmony [gid’er] [olacağ im]</td>
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<td>iv Aux insertion [[V AOR] [AUX FUT]]</td>
<td>iv Phrasal stress [gid’er] [olacağım]</td>
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An apparent contradiction. Apart from ol-, there is an AUX, which alternates between i- and y-, where i- occurs at the beginning of a word and y- otherwise. Assuming that both AUX are underlyingly the same (Sağ 2013, Kornfilt 1997), I predict i-, like ol- to arise only when there is a clash of features and to trigger phrasal. This is found in (3a). However, when i- is expressed as...
a γ-, (3b), the stress pattern remains identical, but there is only one domain for vowel harmony 
(note the different forms of COND in 3a-b), indicating that the AUX and the main verb form one 
word. Apart from this difference, (3a-b) are identical.

(3) a.  kal-`di i-se-niz  
    stay-PST AUX-COND-2.PL  
    ‘If you have stayed’

   b. kal-`di-y-sa-niz  
    stay-PST-AUX-COND-2.PL  
    ‘If you have stayed’

Thus, (3b) seems contradictory: (i) AUX is indirectly needed because PST and COND cannot be 
expressed in the same X0 but, (ii) there is only one vowel harmony domain in (3b), which means 
both PST and COND are in the same X0. I now show how this apparent paradox can be resolved.

**Analysis part II: lowering after VI forms new X0.** I propose an analysis inspired by Kornfilt 
(1996). The data can be accounted for if we assume that rebracketing (Noyer and Embick 2001) 
takes place (i) after vocabulary insertion and stress assignment and (ii) before VH. The derivations 
for (3a-b) are given in table 3A-B. Since the morpho-syntax is the same, apart from the 
feature combinations, only the morpho-phonology is shown. I assume that underlyingly AUX is a 
glide, which can form a full vowel when it is at the beginning of a word (table 3i A vs B). Stress 
is assigned in the same way in both words (ii). After this, only in the case of the glide, AUX 
lowers onto the main verb, forming a new X0. Now, when VH applies (iii), it finds two X0 in 
table 3A, leading to two VH domains, but one X0 in table 3B, leading to one VH domain.

<table>
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<tr>
<th>Table 3</th>
<th>A. kal-`di i-se-niz</th>
<th>B. kal-`di-y-sa-niz</th>
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<tr>
<td>i</td>
<td>Vocabulary</td>
<td>kal-TI [y-sA-nlz]</td>
</tr>
<tr>
<td>ii</td>
<td>Stress</td>
<td>kal-`TI [y-sA-nlz]</td>
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<td>iii</td>
<td>Lowering</td>
<td>kal-`TI [i-sA-nlz]</td>
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<td>iv</td>
<td>Vowel harmony</td>
<td>kal-`di [i-se-niz]</td>
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<td>v</td>
<td>Phrasal Stress</td>
<td>kal-`di [i-se-niz]</td>
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**Language variation** is expected, I propose, when we assume (in)activity of constraints. In Japanese, I propose there is no constraint against stranded inflectional features. This means that, like 
in Turkish, usually in words (4), accent shifts with the addition of suffixes. However, with specific feature combinations, in this case PROG and PAST (5), accent does not shift. I assume (5) is parallel to (3b), with one difference. Both patterns arise due to conflicting features competing for 
one X0. The difference between Turkish and Japanese is that in Japanese there is no constraint 
against stranded affixes, even though the same lowering operation is active as in Turkish.

(4) a. ha’tarak-u  
    b. hatarak-a-se-ru  
    c. hatarak-ase-ra’re-ru  
    work-INFL  work-CAUS-PRES  work-CAUS-PASS-PRES  open-INTR-PROG-PAST 
    ‘to work’  ‘Make X work’  ‘X is made to work’  ‘was opening X’

In **Conclusion**, the analysis presented here sheds new light on Turkish auxiliaries and potentially Japanese verbs. Secondly, the data presented here contribute to the discussion on the status of 
words and supports the distinction between different layers of the notion of ‘word’, and the need 
for ordering of operations in the morpho-phonology.

**Selected References:** Bjorkman, B., 2011, BE-ing Default: the Morphosyntax of Auxiliaries. 
auxiliary verb ol at the morphology-syntax interface. Kornfilt J.,1996, On copular clitic forms in 
Turkish. Sağ, Y., 2013, Copula in Turkish.