

Root faithfulness and featural affixation in competition

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German displays an alternation between the mid front lax vowel / ϵ / and the high front lax vowel [ɪ] (1a), between the mid front tense vowel / e :/ and [ɪ] (1b), and between the low vowel /a/ and [ɛ] (1c) only in 2SG and 3SG present indicative forms.

(1) Alternating verbal paradigms

a. / ϵ /	~	[ɪ]	b. / e :/	~	[ɪ]	c. /a/	~	[ɛ]
hɛlf-ə		‘help-1SG’	ne:m-ə		‘take-1SG’	halt-ə		‘hold-1SG’
hɪlf-st		‘help-2SG’	nɪm-st		‘take-2SG’	hɛlt-st		‘hold-2SG’
hɪlf-t		‘help-3SG’	nɪm-t		‘take-3SG’	hɛlt		‘hold-3SG’
hɛlf-t		‘help-2PL’	ne:m-t		‘take-2PL’	halt-ət		‘hold-2PL’
hɛlf-ən		‘help-1/3PL’	ne:m-ən		‘take-1/3PL’	halt-ən		‘hold-1/3PL’

Interestingly enough, non-alternating verbs *always* select the inflectional endings [-əst] (2SG) and [-ət] (3SG) (2) instead of [-st] and [-t], which either deletes or fuses in contact with stem-final /-t/, as in previous [hɛlt] ‘hold-3SG’ (cf. [halt-ə] ‘hold-1SG’).

(2) Non-alternating verbal paradigm

falt-ə	‘fold-1SG’	
falt-əst	‘fold-2SG’	cf. *fɛlt-əst
falt-ət	‘fold-3SG’	cf. *fɛlt-ət
falt-ət	‘fold-2PL’	
falt-ən	‘fold-1/3PL’	

These data pose the following interesting puzzle: (i) alternating verbs are a closed class; (ii) the phonological context for the alternations is opaque, that is, synchronically unretrievable from surface forms; and (iii) the selection of either [-əst] and [-ət], on the one hand, and [-st] and [-t], on the other, depends on the non-alternating *versus* alternating character of verbs, respectively.

The solution proposed in this paper is couched within Optimality Theory (Prince & Smolensky 1993/2004), according to which linguistic forms arise from the interaction of universal but violable constraints, and exploits the notion of featural affixation (Akinlabi 1996).

The basic assumption of the analysis is that the 2SG and 3SG morphemes not only contain segmental material, but also the floating features [+high, –ATR, –low] (Wiese’s 1996 feature specifications are assumed, except for schwa, which is left underspecified for backness in this analysis; see 3). These input floating features need to be affixed. This is compelled by the constraints ANCHOR[F] (Finley 2009) specified for each feature, which all dominate their correspondent IDENT[F] constraints. These input floating features can either be realized on an existing vowel, *i.e.* the stem vowel, or can be linked to a vocalic timing slot not present in the input but inserted in the output. The latter option is dispreferred because it incurs a violation of DEP-V, which is satisfied by all alternating verbs, because the floating features are realized on the stem vowel. These verbs are therefore followed by the inflectional endings [-st] and [-t]. In order to account for non-alternating verbs, the morpheme-specific, lexically indexed version of the constraint IDENT[F]_I is employed. The root of non-alternating verbs is indexed as for IDENT[F]_I. This constraint, and ANCHOR[–low], dominate DEP-V. The effect of this ranking is that the stem vowel cannot alternate, but the floating feature [–low] still needs to be anchored. And this is why non-alternating 2SG and 3SG forms always surface with [-əst]

and [-əʔ], respectively. The inserted vocalic timing slot surfaces as a schwa. The floating features [-ATR] and [-low] are linked to the vocalic slot. The floating feature [+high], however, surfaces unfaithfully as [-high]. It is assumed that this is due to a specific case of vowel reduction that can be formalized with the ranking $*[+high]/_{unstressed} \gg \text{IDENT}[high]$. Finally, the alternation between /a/ and [ɛ], and not *[ɪ], needs to be captured. Locally conjoining the constraints $\text{IDENT}[high]\&\text{IDENT}[low]$ (Kirchner 1996), ranked above $\text{ANCHOR}[+high]$, which in turn dominates $\text{IDENT}[high]$, blocks the candidate in which both [+high] and [-low] are anchored to the stem vowel. In (4) comparative *tableaux* generated with OT-Help 2.0 (Staubas *et al.* 2010) are illustrated for all 2SG present indicative forms exemplified in (1) and (2).

To conclude, this analysis demonstrates that making use of the notion of featural affixation explains both the opaque character of height harmony in German verbs, and also why a vocalic slot is inserted only in non-alternating verbs as a way to anchor the floating affix features when (morpheme-specific) root faithfulness takes priority.

(3) Vocalic features assumed (Wiese 1996)

	[high]	[low]	[ATR]	[back]
i	+	—	+	—
ɪ	+	—	—	—
e	—	—	+	—
ɛ	—	—	—	—
a	—	+	—	—
ə	—	—	—	—

(4) Comparative *tableaux*

input	winner ~ loser	Id(F)-Ind	Id(high)&Id(low)	*[+high]/unstr	Anchor(-ATR)	Anchor(-low)	Dep-V	Anchor(+high)	Id(ATR)	Id(low)	Id(high)
neem-Fst	nim-st ~ neem-st				W			W	L		L
	nim-st ~ neem-est						W		L		
	nim-st ~ neem-ist			W			W		L		L
	nim-st ~ niim-st				W				L		
helf-Fst	hif-st ~ helf-st							W			L
	hif-st ~ helf-ist			W			W				L
halt-Fst	helt-st ~ halt-st					W				L	
	helt-st ~ halt-est						W	L		L	W
	helt-st ~ halt-est						W	L			W
	helt-st ~ halt-ist			W			W	L		L	
	helt-st ~ hilt-st			W				L			W
falt(Ind)-Fst	falt-est ~ falt-st	W					L	W		W	L
	falt-est ~ falt-st					W	L	W			L
	falt-est ~ falt-ist			W							L
	falt-est ~ flit-st	W	W				L			W	

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