Linking vowels are paradigm classes in Hungarian

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A vowel occurs after some stems before certain suffixes in Hungarian, known as a linking vowel. Linking vowels pose at least three problems to morpheme-based models (that are intrinsically based on the Item and Arrangement/Process, cf. Hockett 1954), which a Word and Paradigm approach (Blevins 2016), assuming a network of paradigm-internal relations between whole word-forms, can avoid. These problems are:

(1) the ambiguity of morphological affiliation,
(2) the systematic identity of quality between vowels of different morphological status,
(3) the lack of a rule-induced productive pattern.

(1) When parsing Hungarian words a vowel remains in some cases between the stem and the suffix, which can be argued to "belong" to neither, since it does not appear in all other occurrences of the same stem or in all other occurrences of the same suffix. These linking vowels are emboldened and unglossed: *haj-**u**-nk* 'hair-POSS.1PL' (cf. *hajó-nk* 'ship-POSS.1PL'), *old-**o**-tok* 'solve-2PL' (cf. *tud-tok* 'know-2PL'), *pár-**a**-tlan* 'pair-PRIV' (cf. *szó-tlan* 'word-PRIV'). The quality of the linking vowel is partly affected by complex vowel harmony processes (*ü, ö, e* occur after front, *u, o, a* after back harmonic stems). Some suffixes (e.g., *-nk* 'POSS.1PL') require that the linking vowel before them should be high, others (e.g., *-n* 'SUE') require a mid vowel (*pár-**o**-n*), yet others require a low one (e.g., *-tlan* 'PRIV'). A fourth type of suffix is preceded by either a mid or a low linking vowel depending on the preceding stem (we will call these suffixes conformists): *baj-**o**-m, baj-**o**-tok* 'trouble-POSS.1SG, -POSS.2PL' vs. *haj-**a**-m, haj-**a**-tok* 'hair-POSS.1SG, -POSS.2PL'. Stems that are followed by a low linking vowel before a conformist suffix are called lowering stems. The complex interaction of the properties of both stem and suffix which determines the quality of the linking vowel makes an unambiguous morphological segmentation difficult or even impossible in a morpheme-based analysis.

(2) Requirements of agreement hold between linking vowels and suffix-initial vowels which are clearly not linking. This explains the correspondence between linking vowels after lowering stems and the yodless allomorphs in the possessive paradigm: the *a* in *ág-**a**-m* 'branch-POSS.1SG' is a linking vowel, but the same vowel in *ág-a* '-POSS.3SG' is a "contentful" morph, cf. *tag-**o**-m* 'member-POSS.1SG' vs. *tag-ja* '-POSS.3SG', which is the otherwise general productive pattern (Papp 1975, László Kálmán p.c.). Where the linking vowel is *e* it creates a new productive pattern manifested in the occurrence of yodless 3SG possessive forms alongside the yodful ones: *stég-**e**-m* 'pier-POSS.1SG', *stég-je~stég-e* '-POSS.3SG'. This results in an asymmetrical pattern in the case of harmonically variable stems: *hotel-je~ja~e~*a* 'id.-POSS.3SG' (cf. *hotel-**e**/**o**-m* '-POSS.1SG', i.e., *a* does not occur as a linking vowel after *hotel*). This phonological relationship between vowels of different morphological statuses can hardly be achieved (or not at all) in a morpheme-based analysis.

(3) It is often assumed that there is a productive pattern for linking vowels. This assumption is untenable: it is only in the case of nouns that there seems to be an obvious productive pattern, where the linking vowel is *e, o,* or *ö*. But even here there are harmonically mixed forms (e.g., *haver* 'pal', *partner* 'id.', *hotel*) whose linking vowel cannot be predicted with full certainty. Although these words typically vacillate with exponents without a linking vowel (*haver-nak/nek, partner-nak/nek, hotel-nak/nek* '-DAT'), their linking vowel does not always vacillate: *haver-**o**-m, partner-**e**-m, hotel-**o**/**e**-m*. Several factors may play a role in determining the linking vowels: morphological, phonological beyond their vocalism, frequency, even semantic/pragmatic (cf. Hayes et al. 2009, Forró 2013), it is often difficult or impossible to clearly distinguish the different factors. Uncertainty is even greater in

adjectives: some of them are unambiguously lowering, others unambiguously not lowering, but the borderline is often fuzzy, and semantic factors play an even more significant role (for instance, ethnonyms and language names never lower, while adjectives with an unrestricted use typically lower). It is not surprising then that in want of an obvious productive pattern new loanwords often vacillate, they are assigned *a/o* or *e/ö* linking vowels depending on their harmony. (If their harmony is front unrounded, there is no vacillation, the linking vowel can only be *e.*) Furthermore, the choice of the linking vowel may depend on the frequency of the usage of morphosyntactic categories, which is a sign of the nonhomogeneity of paradigms.

The paradigm-based approach advocated here does not make use of (representations of) morphemes in the explanation of word forms. Instead it takes (sub)paradigms as a basic unit of organisation which are defined by the relevant morphosyntactic categories and considers the similarities (analogical relations) between the surface forms of whole words assigned to paradigm cells (Blevins 2016). Similarities can define classes of paradigms. We claim that in Hungarian linking vowels identify distinct paradigm classes: membership in a class is thus associated with certain linking (or other exponent-initial) vowels. If the contents of a cell is not known for some reason, it can be inferred from the analogical relations and paradigm class membership. This is the Paradigm Cell Filling Problem (PCFP), cf. Ackermann & Malouf (2016).

Under such a view the solution of the first two problems listed above is trivial: (1) the morphological affiliation of a (linking) vowel is not an issue if whole words are considered without splitting their phonological forms into morphemes, and likewise (2) if we do not identify morphs within words, the nonexistent morphological status of a vowel makes no difference in the comparison of the word forms, like *hotel-**e**-m* and *hotel-e*. (3) The problem of productivity is here a matter of solving the PCFP: the linking vowel of an unknown form can be inferred from paradigm class membership and the morphosyntactic value it realises (see the chart below). The advantage of this solution is that it can be based on factors and similarities that are not all phonological (e.g., frequency, semantic field, loanword status, etc.), which can hardly be encoded in underlying representations of morphemes.

Paradigmatic patterns by the quality of linking vowels

Paradigm classes	**Morphosyntactic types**				Examples
	low	**conformist**	**"mid"**	**high**	
-o-	**a**	o	o	u	*baj, tag, ...*
-a-	**a**	**a**	o	u	*haj, ág, ...*
-e|e-	**e**	**e**	**e**	ü	*stég, ...*
-e|ö-	**e**	**e**	ö	ü	*szög, ...*
-ö-	**e**	ö	ö	ü	*rög, ...*
-other-	—	—	—	—	*hajó, ...*
Examples	*-tlAn, ...*	*-m, -tOk, ...*	*-n, ...*	*-nk, ...*	

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