On the role of phonology at Vocabulary Insertion

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1. Introduction: The prevailing assumption within realizational frameworks of morphology (Halle 1990) is that Vocabulary Insertion precedes phonology and thus applies independently from it, as for instance in Distributed Morphology (DM, Halle & Marantz 1993). Purely phonological demands thus play no role when it comes to the selection of a vocabulary item (VI). The contrary opinion is assumed in Optimal Interleaving (OI, Wolf 2008), where constraints on morphological feature realization and purely phonological constraints compete within a single OT grammar. The prediction made by OI is that the potential influence of phonology at Vocabulary Insertion is not restricted. Evaluating different morphological processes in which the phonology seems to 'overrule' morphology, I conclude that neither strictly modular models like DM, nor OI make accurate predictions. I propose an OT account (Prince & Smolensky 2004) with the following assumptions:

(1) Phonological constraints are active at Vocabulary Insertion.
(2) Subset relation between input and output: All VIs in the output are specified for a subset of the morphosyntactic features in the input.

The assumption in (2) bears the consequence that the effect of phonological constraints at Vocabulary Insertion is limited, contrary to the predictions made in OI. A phonological constraint can only trigger the insertion of VIs that are specified for a subset of the morphosyntactic features in the input: If the input is specified for the syntactic features [A, B], the effect of a phonological constraint is limited to the non-insertion of a VI or the insertion of VIs that are specified for either [A], [B] or [A, B]. A phonological constraint thus cannot result in the insertion of a VI that is specified for a morphosyntactic feature that is not contained in the input (no feature insertion by VIs). To exemplify the assumptions in (1) and (2), I will apply the proposed OT account to a number of phenomena, where the phonology creates a morphological mismatch, as for example non-realization of plural in Catalan (Bonet, Lloret & Mascaró 2015), Romance clitic clusters (Grimshaw 1997) and the agreement mismatch in Vata illustrated below.

2. Phonology is limited to the non-realization of features: In the Kru language Vata an agreement mismatch exists between adjectives and nouns which is triggered by the phonological content of the adjective. Plural nouns in Vata fall in two agreement classes. Nouns in class A trigger the agreement marker [ɪ] on adjectives (3a) and nouns in class B trigger the agreement marker [wa] on adjectives (3b).

(3) a. *fil-i* — *kad-**ɪ***
rat.A-PL — big-AGR:A.PL
b. *dɔlj-a* — *kad-**wa***
mouse.B-PL — big-AGR:B.PL

When adjectives with the stem-vowel [ɔ] like *pɔp* 'white' or *wɔt* 'cold' agree with **class-B** nouns, these adjectives take the **class-A** agreement marker [ɪ] instead of the **class-B** agreement marker [wa]. The vowel [ɔ] thus triggers a mismatch in class between adjective and noun.

(4) *dɔlj-a* — *kad-wa* — *pɔp-**ɪ*** — *wɔt-**ɪ***
mouse.**B**-PL — big-AGR:B.PL — white-AGR:**A**.PL — cold- AGR:**A**.PL

The assumed VI for A-agreement is given in (5a). The VI for regular B-agreement is given in (5b). The VI in (5a) is underspecified for class.

(5) a. [AGR:PL ⇔ ɪ] b. [AGR:B.PL ⇔ wa]

At Vocabulary Insertion, the abstract morphosyntactic agreement features in (6a, 7a) are mapped to a phonological realization (6b, 7b) by the VIs in (5).

(6) A-agreement: a. Input: √big-AGR:A.PL → b. Output: kad-ɪ

(7) B-agreement: a. Input: √big-AGR:B.PL → b. Output: kad-wa
When an adjective contains the stem-vowel [ɔ], however, B-agreement is realized by the VI in (5a) instead of the more specific VI in (5b). This creates the agreement mismatch. The phonology of the adjective thus triggers the non-realization of the class-B feature. As stated in (2) the selected VI [AGR:PL ⇔ I] realizes a subset of the input features [B, PL].
(8) Agreement mismatch: a. Input: √white-AGR:**B**.PL → b. Output: pɔp-**ɪ**
The agreement mismatch in (4) is determined by the **phonological** constraint OCP[round]:
(9) OCP[round]: No adjacent syllables with rounded segments.
The combination of [ɔ-w] violates this constraint, as [ɔ] and [w] are both rounded. Since the form ******pɔp-**wa*** violates OCP[round], the VI in (5a) is inserted instead of (5b).
3. The OT-analysis: I propose that Vocabulary Insertion is determined within a separate OT-component of grammar. As stated in (1), phonological constraints are active at Vocabulary Insertion. As a result, the insertion of a VI can depend on the resulting phonological structure. For each input of morphosyntactic features, the Generator creates a set of candidates by concatenating VIs of the language in question. The requirement for a subset relation between in- and output (2) is attributed to GEN, following a similar proposal in Trommer (2001):
(10) Constraints on GEN: Each morphosyntactic feature specified in the output is co-indexed with at least one identical feature in the input.
The determinative power of phonological constraints is thus restricted by the candidates that GEN determines as eligible for competition. The realization of morphosyntactic input features is demanded by constraints of the type PARSE-FEATURE (Grimshaw 1997, among others). Here, it is sufficient to assume that these constraints demand that a feature specified in the input must be realized by a co-indexed feature in a VI. The evaluation of the agreement mismatch in Vata (4, 8) is shown in (11). Co-indexation is illustrated by subscripts.

(11)

input:	√white -AGR:B_1.PL_2	OCP[round]	PARSE-F
a. ☞	*[√white ⇔ pɔp]-[AGR:PL_2⇔ I]*		*
b.	*[√white ⇔ p**ɔ**p]-[AGR:B_1.PL_2 ⇔ **w**a]*	*!	
c.	*[√white ⇔ pɔp]-∅*		**!

OCP dominates PARSE-F and therefore candidate (b) is ruled out due to its violation incurred by OCP, even though it is the only candidate that does not violate PARSE-F. The candidate in (a) is optimal as it violates PARSE-F only for the class-B feature whereas candidate (c) does not realize any agreement features and is thus ruled out. Since the set of candidates is restricted by the subset requirement in (10), another VI than (5a) cannot be inserted to satisfy OCP.
Regular class-B agreement (3b, 7) is decided by PARSE-F: As OCP[round] does not apply, the violation assigned to *[AGR:PL⇔I]* by PARSE-F becomes fatal.
If the input features class-A agreement (3a, 6) the VI *[AGR:B.PL ⇔ wa]* cannot appear in any candidate that GEN creates, as the input does not contain a class-B feature. Therefore, the subset requirement on GEN (10) is not met. As a result, the VI in (5a) is inserted.
4. Models that separate phonology and Vocabulary Insertion: In frameworks that separate Vocabulary Insertion and phonology like DM, possible solutions lack conceptual motivation. For the agreement mismatch in Vata, one could for instance stipulate an impoverishment rule that deletes the class-B feature on adjectives in the context of the stem-vowel [ɔ]. In that case, the VI in (5b) is not applicable and the VI in (5a) is inserted instead. Analyses like these, however, are not insightful, as they do not implement the phonological motivation to avoid the combination of [ɔ] and [w].
5. Conclusion: Under the assumption that phonological constraints are active at Vocabulary Insertion (1), a less specific VI can be inserted instead of a more specific one to avoid a violation of a phonological constraint. Since GEN is restricted, candidates that insert morphosyntactic features are not available to satisfy a phonological constraint, as specified in assumption

(2). Since the analysis extends to other mismatch-phenomena like the one in Vata, I conclude that the assumption of an unrestricted influence of phonology on Vocabulary Insertion, as in Wolf's (2008) OI, is unmotivated.

6. References:

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