

## On Fusion and the Architecture of PF

### 1. Fusion and its Place in the PF Derivation

In the framework of Distributed Morphology (DM), Fusion is understood to be a post-syntactic operation of the PF component in which discrete sister terminals are collapsed into a single node prior to Vocabulary Insertion (VI) and linearization, (Halle and Marantz 1993: 136, Halle and Marantz 1994: 277, Halle 1997: 148, cf. (1)). Fusion was designed primarily to account for a particular syntax-morphology mismatch involving the phonetic realization of fewer vocabulary items at PF than there are terminal nodes in the narrow syntactic representation. For example, morphemes such as Number and Case, whose exponents are separately spelled out in some languages (cf. Turkish), are realized as a single exponent in others (cf. Latin, Latvian, and Russian). Halle and Marantz analyze this mismatch as stemming from the Fusion of two terminals into a single node, followed by the insertion of a discrete conglomerate exponent into the collapsed position. Because Fusion is understood as applying after the narrow syntactic computation and prior to VI, it is taken to be an operation of the Morphological component, alongside other operations such as Morphological Merger (Marantz 1984, 1988, Bobaljik 1995), Fission (Noyer 1997, Halle 1997), and Impoverishment (Bonet 1991, Halle and Marantz 1993, 1994). All operations transpiring after VI, on the other hand, are taken to characterize the Phonological component. This conception of PF architecture in DM is shown in (2a). In this paper, we present evidence that Fusion also applies late in the PF derivation, that is, *after* VI and prior to linearization. In this way, we argue that the PF architecture is not evenly divided into an initial phase of Morphology and a later stage of Phonology as in (2a). Rather, morphological operations occur throughout the entirety of the PF derivation, with the exception of the final stage, which is reserved for purely phonological Readjustment. If we are correct, a consequence of our proposal is that Morphology is even more distributed than originally thought. That is, Morphological operations span a wider range of the PF architecture than previously envisioned. The PF architecture we will argue for is presented in (2b).

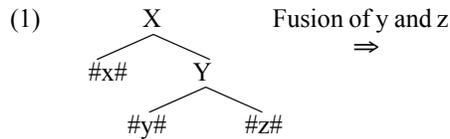
### 2. Evidence for Late Fusion

Our evidence for late Fusion comes from the phenomenon of verbal repetition in Nupe, a central Nigerian language. In this construction, two segmentally identical copies of the verb Root surface within the same clause (3). Multiple copies of the verb Root are generated in the narrow syntax as the Root raises to support  $v^0$ 's affixal needs. Ordinarily, multiple non-distinct copies of a given occurrence cannot be simultaneously realized at PF because the resulting output will fail to yield a coherent linear order (Nunes 2004). Nunes claims that multiple links of non-trivial chains may be phonetically realized if at least one link can somehow become invisible to the linearization computation (i.e. the LCA). If a link undergoes Fusion, he claims, the link becomes word-internal. Because the LCA cannot see inside words, the fused link is rendered invisible to the LCA and hence, no longer poses a threat to linearization if it is pronounced. Accordingly, we assume that in the case of Nupe verbal repetition, V2 has undergone Fusion with an independently motivated functional head present only in this construction. Although there is no segmental evidence to back this claim, there is phonological evidence. Following Fusion, V2's tonal realization is noticeably depressed (4). In response, two questions immediately present themselves. One, what triggers this occurrence of Fusion? And two, why is the tone on V2 depressed *following* the operation? In answer to both questions, we propose that the Fusion-triggering functional head is spelled out as a low floating tone, an independently attested morpheme in Nupe. By "floating tone", we mean a suprasegmental tonal entity not lexically linked to an overt segmental/timing unit. Given that suprasegmental entities must dock onto overt prosodic material if they are to be phonetically instantiated, the floating tone must associate with a prosodic unit if the PF derivation is to converge. We claim that Fusion makes this association possible. Following insertion of the floating low tone, the hosting terminal and the verb Root fuse, resulting in a tonologically depressed copy of the verb that is invisible to the linearization computation (5). On this analysis, VI *feeds* Fusion in Nupe because it introduces prosodically dissociated exponents (floating tones) into the derivation, which in turn poses problems for PF legibility. As a result, Fusion applies to repair the output, providing a way for dissociated suprasegmental material to achieve phonetic realization. In this respect, Nupe Fusion is a late morphological operation driven by PF convergence.

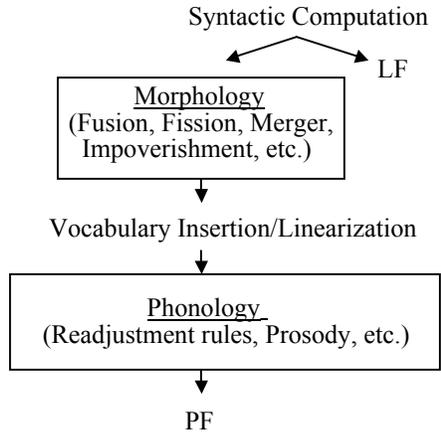
### 3. Converging Results

Some older and recent work within DM converges on the result that certain Morphological processes occur late in the PF derivation. Schütze (1994) argues that following VI, certain clitics in Serbo-Croatian undergo "prosodic inversion", an instance of morphological merger/dislocation affecting prosodic constituents. Likewise, Embick and Noyer (2001, to appear) motivate a variant of morphological merger they refer to as "local dislocation", an operation that applies after VI and linearization in a variety of languages. Thus, motivation for "late morphology", that is, the existence of morphological processes triggered after VI, does not solely rest on the shoulders of Nupe Fusion.

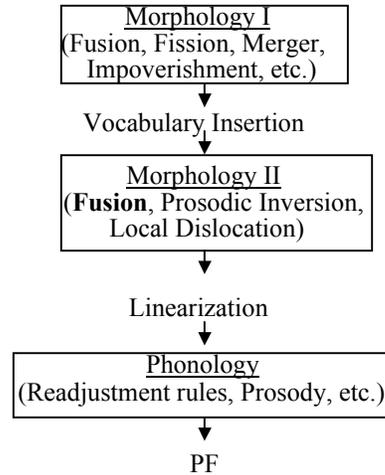
## Diagrams and Data



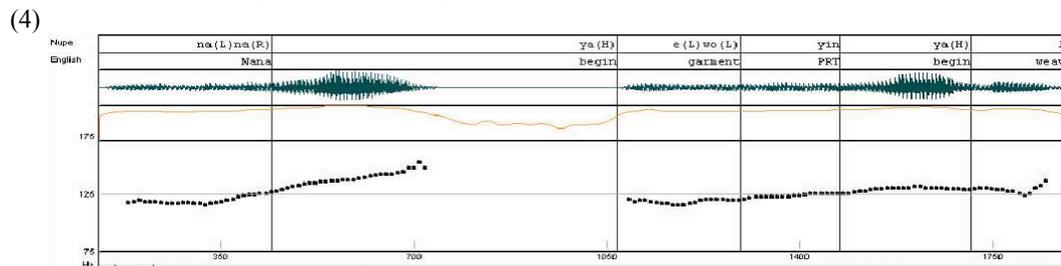
(2) a. Halle and Marantz' (1993) conception of PF



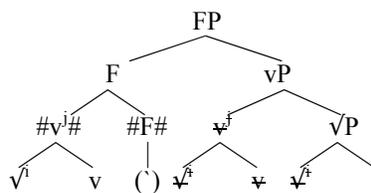
b. Late Morphology at the PF interface



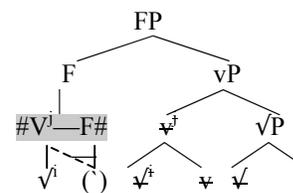
(3) Musa yá èwò yin yá lu.  
Musa begin garment PRT begin weave  
'Musa DID begin to weave the garment.'



(5) a. Pre-Fusion (Post-Insertion of F<sup>0</sup>)



b. Post-Fusion



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