

Inclusiveness in the phonology and the source of the Prosodic Hierarchy

Overview: The call for papers asks “whether the domains where phonological processes apply are determined by syntax directly [*direct reference*], or are mediated by the Prosodic Hierarchy [*PH*]”. We see this as a false dichotomy: alternatives to both direct reference and the PH (such as the initial CV in Lowenstamm 1996, Scheer 2004) should be pursued instead, since the former both violate Modularity. Focusing on the PH in this talk, we argue that it should be ruled out on grounds that the PH violates Inclusiveness within the phonology---a property that only comes to light only when one is forced to be explicit about where and how the PH is constructed within a Minimalist, strictly-modular framework. We support this novel claim with arguments from interface phenomena involving ellipsis and epenthesis domains. We conclude that pursuit of alternatives to the PH is not only desirable, but also essential, if the architecture of grammar is to be both Minimalist and strictly modular.

An overlooked player in the interface game: Inclusiveness “bars introduction of new elements (features) in the course of computation: indices, traces, syntactic categories or bar levels, and so on.” (Chomsky 1995:228). In Modularity theory, Inclusiveness is known as *Encapsulation* (Scheer 2011:§648), and is distinct from the more often discussed *Domain Specificity*---the requirement that a module only read and write its own proprietary alphabet (which we adopt). Inclusiveness/Encapsulation states that a module’s computation is input-bounded: it prohibits the addition of new material mid-computation that was not present in the module’s input (regardless of whether that material would otherwise satisfy Domain Specificity). In syntax, Inclusiveness has been used to adjudicate among theories of movement, binding, and projection (for example). We argue that contemporary analyses invoking the PH all violate Inclusiveness in the phonology (in addition to, in most cases, violating Domain Specificity), a fact which demands either radical reanalysis of the PH, or pursuit of alternatives.

The Prosodic Hierarchy and Modularity: Historically, the PH grew out of a strictly-modular theory of grammar (Selkirk 1986, Nespor & Vogel 1986), with the mapping of syntactic constituents onto PH constituents constituting the main task of intermodular *translation* (Scheer 2011:§§360,381); i.e., the conversion of the syntactic vocabulary into the phonological vocabulary, in satisfaction of Domain Specificity. However, with the advent of Optimality Theory, the importance of this modular division -- and the translation procedure that accompanies it -- was all but forgotten. It is now commonplace to find OT implementations of the PH in which construction of PH constituents is done in the phonology, e.g. by Match constraints ranked alongside purely phonological ones (e.g. *Complex, regulating syllable structure). Simply put: if Strict Modularity is to be maintained, then such implementations of the PH must be rejected. Lately, though, the PH literature is attempting to return to its modular roots. The two main proposals within this vein are Sande et al. (2020: co-phonologies by phase / CPbP), and Selkirk & Kratzer (2020), Lee & Selkirk (to appear), Elordieta & Selkirk (to appear) (MSO-PI-PO). In CPbP, translation constraints (e.g. Match) are abandoned entirely: the phonology exhaustively encases in a prosodic domain each string it receives upon completion of a cycle, with encasing of subsequent cycles leading to recursive embedding -- and thus the PH -- without reference to syntax. In MSO-PI-PO, the Phonological Input (PI) is computed from the Morphosyntactic Input (MSO) before the Phonological Output (PO) is computed from the PI (hence: MSO-PI-PO). The computation from MSO to PI is where the PH is introduced: in other words, the construction of the PH is entirely segregated from the PI-PO computation (the “phonology *per se*”, *ibid.*).

Both attempts violate Inclusiveness: For CPbP, we claim that by satisfying Domain Specificity, it violates Inclusiveness (*qua* Encapsulation) instead: the PH is not part of translation, but is created within the phonological computation with no reference to syntax (see also the literature independently arguing that structure-building cannot be allowed in the phonology: Bromberger & Halle 1989, Idsardi 2018, a.o.). On the other hand, in MSO-PI-PO (as in classic OT), the MSO-PI stratum involves computation, a defining characteristic of a module (and thus not of translation, which is neither computational nor modular: Scheer 2012:§169); as a module of its own, MSO-PI violates Inclusiveness (and Domain Specificity). In

sum, no attempt to ‘re-Modularize’ the PH avoids a violation of Inclusiveness, because all attempts involve the addition of a (hierarchical, and thus non-phonological) object mid-computation---one which could not have been in the input to the module that it arises in.

How to not violate Inclusiveness: It seems the PH cannot be restored to its original Modularity-respecting form (Selkirk 1986, Nespor & Vogel 1986), as current approaches agree that prosodic domains are mapped as isomorphic with the syntactic structure, undermining the motivation originally used for the PH (Scheer 2011:§417). We conclude that the problem is inherent to the PH, and therefore argue in support of alternatives. Concretely, we argue that the PH cannot be involved in analyses of either ellipsis or of segmental epenthesis, two interface phenomena which have previously been taken to involve the PH.

Ellipsis: Much of the vast literature on how ellipsis domains are derived appeals to a process of PF-deletion (Merchant 2001), commonly assumed or argued to operate on constituents of the PH.

- (1) a. Mary caught a fish on MONday with a fly rod and on TUESday with a spear.
 b. (ϕ caught a fish (on MONday)) (with a fly rod)
 and
 (ϕ caught a fish (on TUESday)) (with a spear) (Bruening 2014:4)

Crucial evidence that this is not the case comes from cases of ellipsis bleeding allomorph selection, as in Taiwanese (Sailor, to appear). Below, bolded words undergo tone sandhi, which Sailor argues is an allomorphic alternation, not a phonological one.

- (2) a. **A**-Ying chang **b-o** **khi hak**-hau, **tan-si** **A**-Ha **u** **khi hak**-hau.
 A-Ying yesterday NEG-PERF go school but A-Ha PERF go school
 ‘A-Ying didn’t go to school yesterday, but A-Ha did go to school.’
 b. **A**-Ying chang **b-o** **khi hak**-hau, **tan-si** **A**-Ha { u / *u } ~~{ khi hak -hau }~~.
 A-Ying yesterday NEG-PERF go school but A-Ha PERF
 ‘A-Ying didn’t go to school yesterday, but A-Ha did.’

If deletion of a prosodic constituent at PF were responsible for the non-pronunciation of *khi hak hau*, then this would have to follow Vocabulary Insertion---the PH has to be projected first. But if deletion follows Vocabulary Insertion, then the allomorphy rule that conditions the sandhi form of *u* in (2a) should also apply in (2b), contrary to fact (see Sailor, to appear). Appeals to the PH simply make the wrong predictions for this phenomenon, demanding an alternative; this follows if the PH is entirely ruled out on grounds of Inclusiveness, as we claim.

Segmental Epenthesis: Analyses of variable epenthesis within a single language often appeal to distinct restrictions on different positions of the PH. One famous example is *r*-epenthesis in certain dialects of English. This epenthesis occurs after a lexical(L) word (*Wanda* [ɪ] *eats*) but not after function(F) words (*I wanna* *[ɪ] *eat*). Analyses like that of Ito & Mester (2007) propose that the F-L sequence (ω *wanna-eat*) constitutes a Prosodic Word (PW), while sequences of L-L like (ω *Wanda*) (ω *eats*) constitute two PWs; and, that *r*-epenthesis occurs at the left edge of a PW. However, this common appeal to the role of the ‘strength’ of the left edge of the PW is clearly disconfirmed by examples like the well-known word-internal epenthesis in (ω *withdraw*[ɪ] *al*). We argue that the theoretical considerations above add weight to the proposition that “epenthetic” r is underlying rather than prosodically determined (cf. Vaux & Samuels 2017 for an overview and proposed complications for the underlying-r account). Function words, like those exempt from *r*-epenthesis, are argued in Newell & Scheer (2021) to be underspecified for syllabic space, explaining not just this alternation, but other distinctions between functional and lexical word phonology without recourse to the PH or violations of Inclusiveness.

Conclusion: The foregoing case studies show that phenomena previously taken to require the PH can instead be accounted for without the PH---and, indeed, are better accounted for without the PH, given our novel claim that all implementations of the PH should be ruled out on grounds of Inclusiveness within the phonology.