Improving the Formalism of Phonological Parameter Hierarchies

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1 Aims and Structure

The growing *Substance Free* phonological movement (Hale & Reiss 2008; Samuels 2017 and articles within) argues that markedness has no place in a formal theory of phonological competence. This is considered to be overlapping both with Blevins' program of eliminating formal phonological universals (2004, 2009, 2017), and Haspelmath's critique (2006). However, when it comes to syllable structure, we think this idea has been overextended. There are implicational universals that properly belong to the phonology. Moreover, in the correct formalism, markedness is more than just a 'metaphor for a cognitive state' (Haspelmath 2006). Following Ulfsbjorninn (2017), we will show that markedness is epiphenomenal but that it converts directly into linguistic categories, both in the complexity of a representation ($\mathfrak{R}$), and the corresponding number of positive setting of parameters ($\mathfrak{P}$) required to describe/permit it.

Taking consonant clusters (CCs) as a case study, we will defend the view that the formal typology of CCs is explained by the decision tree in (2).[1] Markedness does not have any *active* role to play in the grammar, however, it does directly correspond to the number of <yes> parameter settings. These, in turn, directly correspond to the complexity of the related phonological form. Moreover, because the parameters are arranged in a hierarchy, a parameter's <yes> setting may be contingent on the <yes> setting of other parameters. The hierarchy explains the implicational universals.

At the end, we will concede that the parameter hierarchy itself needs to be explained. Why is the hierarchy is this way, and not some other way? For two of the hierarchical steps, the solution appears to be quite general: (a) Filled categories are stronger than weak categories, and (b) Non-locality implies locality. Similar implications are expected in other parts of the grammar and could be captured in the same way, by arranging the corresponding parameters into a hierarchy. The third implicational step (so far) resists obvious explanation in general terms, (c) Final nuclei are stronger than Medial nuclei (cf. Charette 1990; 1992).

2 Background

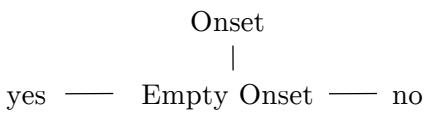
Ulfsbjorninn (2017) shows that a number of implicational universals (related to syllable structure) are best modelled by parameter hierarchies. Consider the simple case of an onset at the beginning of the word. There are no languages where syllables may *only* begin with vowels. For any given language, vowel-initial syllables presuppose the presence of consonant-initial syllables.[2] This

[1] Counterexamples from Malagasy, Thai and Gbe/Kru languages will be discounted on the basis of phonological behaviour and loanword adaptation.

[2] Arrernte is sometimes cited as a counterexample but 25% of the Arrernte lexicon begins with a consonant (cf. the re-analyses of Kiparsky 2013, Topintzi & Nevins 2017).

typological fact is explained by the decision tree in (1). According to this schema, vowel-initial words require **Empty Onset** to be set to <yes>. However, the choice of setting **Empty Onset** is contingent on the presence of **Onset** (which allows consonant-initial words).

(1)

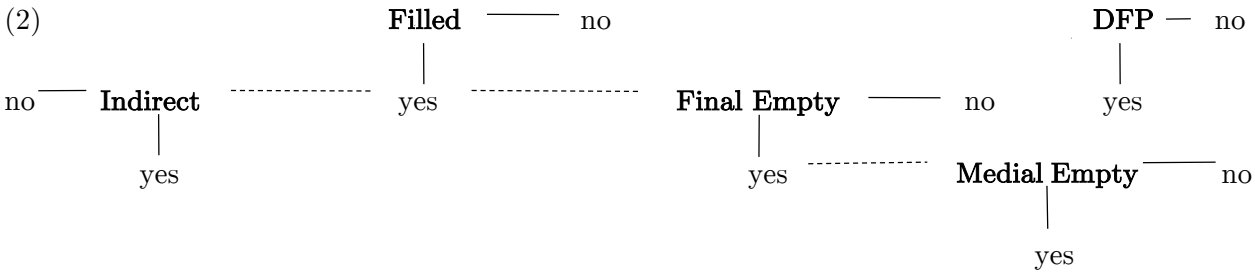


The structure in (1) also shows the formal difference between a Principle like **Onset** and a Parameter like **Empty Onset**: a Parameter is a Principle with a decision point.[3] The hierarchy in (1) gives a satisfying formal account of the typology but it also makes markedness epiphenomenal on the representation (if we assume Strict CV (Lowenstamm 1996; Scheer 2004)). In Strict CV, there is universal template for syllable structure. This can be defined in terms of precedence: # → C, C → V, V → % or C (ibid.; Faust & Ulfsbjorninn to appear). In the default/unmarked state, each of these C and V positions is filled with featural content. This means that for every representation that is not $CVCV^{(n+1)}$, every move away from the default will require an empty node as part of its structural description and every empty node requires a <yes> setting to permit it.

3 Proposal

Taking the typology of CCs as a case study, we accept Charette's (1990, 1992) two key insights: (a) CCs are licensed by the nucleus that follows them, and (b) the following implicational universals hold: **Medial** implies **Final**, **Empty** implies **Filled**, and **Indirect** implies **Direct**.[4]

(2)



We propose the following formal innovations. Parameters are instructions of how to move away from the CVCV baseline so: (1) the default is always a <no> setting. (2) the <yes> setting is dominated by its parameter (which is on the same level as the <no> default setting). Being dominated takes you to a lower level in the parameter hierarchy. (3) Only <yes> settings allow

[3] Unlike OT, no re-ranking is possible in this system and there are no violable principles.

[4] In addition to these related parameters, the DFP (domain-final parameter) is also required. Since this parameter is independent of the others, it is represented in its own treelet.

you to descend a level. A parameter that is contingent on a higher <yes> setting is linked at the same level as that <yes> setting. (4) Principles (such as **Direct**) are not part of the tree, the tree now only shows decisions (parameters). (5) Markedness is a description of the <yes> settings only and each <yes> setting corresponds directly to a linguistic category or state in the representation.

In addition to providing a formal and precise definition of markedness, this model also allows reference to a second formal property, namely depth in the hierarchy, which can be determined for any given parameter. While some parameters are accessible immediately (such as Filled and DFP), others are embedded to a varying degree. Parameter Hierarchies therefore formalise the difference between Principles and Parameters (by excluding the former due to their lack of a decision point) as well as a difference between parameters, which are grouped into different accessibility classes.

References

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