Sources of phonological structure John J. McCarthy University of Massachusetts Amherst (This is a report of joint research with Kathryn Pruitt, also of UMass Amherst.)

The input to the syntax consists of lexical items with little or no structure. This assumption is more or less standard in Minimalist (Chomsky 1995: 225) and OT syntax (e.g., Grimshaw 1997).

It is usually assumed that phonology is different in this respect. For example, Inkelas (1999) argues that exceptional stress in Turkish requires metrical foot structure in underlying representations, and Cassimjee (1992: 77-80) argues that Venda requires tonal structure in underlying representations. ("Tonal structure" refers to autosegmental association lines between tones and tone-bearing units (TBUs).)

We argue instead that phonology is like syntax: metrical and tonal structure are always absent from underlying representations. The overall argument is embedded in Optimality Theory (Prince & Smolensky 1993/2004) and, in outline, goes like this:

- I. If underlying metrical or tonal structure is allowed in some languages i.e., those with unpredictable stress or tone-TBU association — it must be allowed in all languages — including those with fully predictable structure. This follows from richness of the base, which is one of OT's core principles.
- II. In languages with completely predictable metrical or tonal structure, "wrong" underlying structure has to be removed by the grammar. E.g., a language with left-to-right trochaic stress has to delete the underlying foot in /pa('taka)/.
- III. There are good reasons to think that metrical and tonal structure are built one piece at a time, in a derivational version of OT called Harmonic Serialism (HS) (McCarthy 2008, 2009; Pruitt 2008).
- IV. In HS, an input goes into GEN, which emits a candidate set consisting of all of the ways of making a single change to the input. EVAL picks the most harmonic member of this set, which becomes the input to another application of GEN, and so on. Because of EVAL's role, the winners at each step of a derivation must show monotonic harmonic improvement relative to the grammar of the language in question.
- V. GEN cannot remove wrong structure and add correct structure in a single step. Furthermore, it is not in general possible to maintain monotonic harmonic improvement while removing bad structure and adding good structure in successive steps. E.g., the putative HS derivation /pa('taka)/ → [pataka] → [('pata)ka] has to temporarily do worse on PARSE-SYLLABLE, which is high-ranking in languages with iterative stress.
- VI. We therefore conclude that metrical and tonal structure are absent from underlying representations in all languages, so this structure is always derived by the grammar, much like syntax.

We then go on to show that languages where metrical or tonal structure is not completely predictable can be reanalyzed at least as well by means other than underlying structure.

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