

On the nature of the cycle

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A long tradition of research in generative linguistics asserts that phonology is cyclic. In this view, certain constituents in the morphosyntactic structure of a linguistic expression define phonological domains; in the resulting hierarchy of nested domains, phonology applies iteratively from smaller to larger domains (Chomsky et al. 1956: 75, Chomsky and Halle 1968: 20). Powerful support for this claim comes from instances of phonological opacity (Kiparsky 1971, 1973) in which the conditions for the application or nonapplication of a phonological process hold within a morphological subconstituent of the expression but fail to surface transparently anywhere in the paradigm. In such circumstances, output-output correspondence (Benua 1997) is of no use, as the base never surfaces. This state of affairs may arise for purely phonological reasons (i.e. processes applied in later cycles), but, as shown by Trommer (2006), it may also be due to morphological factors (e.g. defectiveness, deponency, etc).

If this argument is correct, then we are confronted with a deeper question: why is phonology cyclic? A possible answer is that cyclicity is hardwired in Universal Grammar, in which case the explanation would have to be sought in evolutionary phenomena: adaptation, exaptation, and/or design constraints. This paper explores the alternative possibility that cyclicity emerges during acquisition from largely independent factors. In particular, I consider cyclicity within the highest phonological stratum (the stem level or ‘level one’).

Theories such as Lexical Phonology simply stipulate the fact that only the stem level is internally cyclic. However, if we adopt the plausible assumption that stem-level phonological outputs are listed in the permanent lexicon, then stem-level cyclicity can be derived from the independently necessary mechanism of morphological blocking, whereby listed items block grammatically derived competitors. In English, for example, online derivation of *originálicity* from its remote base $\sqrt{\text{ORIGIN}}$ will be blocked by the presence of the stored proximate base *original*. In consequence, *originálicity* inherits the foot-head on the second syllable of *original*: hence **òriginálicity*; cf. monomorphemic *àbracadábra*. Crucially, dual-route race models of morphology (e.g. Baayen et al. 1997, Hay 2003) predict that morphological blocking is sensitive to token frequency (Aronoff and Anshen 1998: 240). In turn, this correctly predicts an effect of token frequency on stem-level cyclicity (Collie 2007: Part II, Kraska-Szlenk 2007: §8.1.2): compare cyclic *adv[æ]ntage* (7220) ~ *adv[æ]ntágeous* (372) with noncyclic *inf[ɔ:]rm* (286) ~ *inf[ə]rmátion* (38327) (token counts from the BNC online).

In the framework of Stratal OT, moreover, cyclic transfer from the base to the derived form requires that the relevant faithfulness constraints should be ranked high. Again, this correctly predicts that any stem-level process showing cyclic misapplication must be neutralizing or, at least, have lexical exceptions (Chung’s Generalization). In English, for example, cyclic stress preservation in *original* → *originálicity* implies the existence of exceptional underived items such as *Epàminóndas* (Bermúdez-Otero and McMahan 2006: 400, Kiparsky 2007).

The example of cyclic theories of phonology shows that formal research in the generative paradigm is capable of delivering deep explanations encompassing a wide variety of linguistic phenomena. However, such formal theories stand to gain by incorporating contributions from usage-based models of grammar (e.g. the rôle of frequency) and from psycholinguistic models of memory and processing (e.g. dual-route race models of morphology). This unification of insights can simultaneously increase empirical adequacy and reduce the need to postulate innate domain-specific knowledge.

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