Some prerequisites for the emergence of phonological compositionality

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This paper will investigate the problem of prerequisites for the emergence of the compositional principle in the phylogeny of phonology. A number of researchers have addressed the issue, including, in particular Lindblom, Studdert-Kennedy and MacNeilage. One common thread in their proposals is the role attributed to "pressure for a larger lexicon" in the development of phonological compositionality.

The present paper will argue that "pressure for a larger lexicon" is not the best candidate for the main driving force behind the process (cf. e.g. Carstairs-McCarthy 1998). Instead, it will propose that expansion of the "lexicon" was the result rather than cause of the gradually increasing availability of recombinable articulations. Some arguments against the "pressure for lexicon" scenario include the following:

Ancestral species of Homo probably had at their disposal a functioning system of vocal communication. To be selected, the larger lexicon would have to confer a significant advantage over the old system. But for recombinable units to be extracted from larger articulations, such units must have been present in them in the first place. If these "calls" had been used for communicative purposes, the discriminatory power of the "old system" would have been large enough for a pressure for a larger lexicon to become questionable as a motivation for phonological compositionality, requiring a saltationist scenario in which the new development would have had to be quick, abrupt and dramatic. Additionally, such an approach suggests a teleological goal in the evolutionary development of early Homo communication systems.

The proposed alternative scenario will be as follows:

(1) Progressive changes in the anatomy of the upper vocal tract and its innervation (cf. Demolin 2003) led to an increased availability of articulations (consonant-like in particular).
(2) Self-organisation of these articulations into a repertoire of recombinable units may have started in younger members of the population, especially in vocal play.
(3) Iterative learning (cf. Hurford and Kirby) and imitation may have led to social spread of articulations offering robust acoustic effects.
(4) With time, these may have come to be used in communicative interactions, with the first step possibly being what might be termed "signature calls" (cf. Ujhelyi 1998).

This scenario has at least two interesting aspects. Firstly, it seems that the process may have been strongly dependent on the appearance of an increased number of stable consonant-like articulations, as such articulations, in addition to acoustic feedback (useful for imitation), also offer good orosensory feedback (useful for exploring one's own vocal capabilities, cf. Vihman's Articulatory Filter, and in consolidating and stabilising the articulations, cf. Perkell et al. 2000). Secondly, the role of young "speakers" cannot be overestimated, as the youngest members of proto-linguistic populations may have started the process by not only discovering their own articulatory capacities but also by progressively dissecting the allegedly holistic utterances found in the ambient communication system.

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