abstract 112

Estimating diachronic preferences of phonological features cross-linguistically
Oral presentation

In this paper we apply Family Bias Theory (FBT, Bickel 2011, in press) to the PHOIBLE phonological typology database (Moran 2012) to investigate the diachronic developments of phonological features in the world's languages. The idea behind FBT is that the synchronic distribution of a typological variable within language families allows estimating systematic preferences or dispreferences (i.e. biases in certain directions) in the history of the variable under various conditions, such as linguistic areas. For this, it is necessary that families are sampled densely (as is the case with PHOIBLE), but FBT also includes statistical extrapolation to small families and isolates.

Using FBT's statistical approach, we look for universal (dis)preferences in the diachronic development of certain phonological features in PHOIBLE, which contains a broad sample of over 1600 segment inventories and a set of 33 distinctive features expanded from Hayes (2009) to attain full typological coverage of cross-linguistic segment types. We use a dimensionality reduction algorithm to identify the language-specific system of distinctive features that is minimally required to encode each language's inventory of contrastive segments. This approach is in line with an emergentist theory of features (cf. Mielke 2004), which in contrast to features being innate and part of UG, posits features as learned and language-specific. We then use FBT to detect universal and area-specific (dis)preferences in the resulting feature systems.

Results: we identify universal biases towards the features [continuant, dorsal, front, high, labial, low, nasal, period glottal source, sonorant, syllabic, coronal] and against [consonantal, back, spread glottis, long, tap, labiodental, short, retracted tongue root, advanced tongue root, fortis, lowered larynx implosive, raised larynx ejective, round] being required to capture contrasts in individual languages. These preferences are statistically independent of geographic area and are largely in line with notions of universal perceptual saliency, while features like [consonantal] are dispreferred because they are mostly predictable from other features in the system.

One third of the features with universal biases also so show additional (but not interacting) differences across areas [period glottal source, sonorant, syllabic, coronal; lowered larynx implosive, raised larynx ejective, round]. Features with no universal biases all show area-specific biases [distributed, strident, trill, anterior, tense, lateral, constricted glottis, approximant].

We conclude that most of the 33 features are subject to strong universal constraints in their development, while about 50% appear to have spread in certain areas, some with and some without being subject to universal constraints in addition.

References

Bickel, B. 2011. Statistical modeling of language universals. Linguistic Typology 15, 401-414.
Bickel, B. In press. Distributional biases in language families In: Bickel, B., L. A. Grenoble, D. A. Peterson, & A. Timberlake (eds.) Language typology and historical contingency: a festschrift to honor Johanna Nichols. http://www.spw.uzh.ch/bickel-files/papers/stability.fsjn.2011bickelrevised.pdf
Hayes, B. 2009. Introductory Phonology. Blackwell.
Mielke, J. 2004. The Emergence of Distinctive Features. PhD thesis, The Ohio State University.
Moran, S. 2012. Phonetics Information Base and Lexicon. PhD thesis, University of Washington.