

# **Phonological (in)stability and language evolution**

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The aim of this workshop is to explore the stability and instability of sound patterns, understood here as the set of phonetic and phonological properties of languages. The inherent stability of linguistic properties is a crucial component of any explanation of cross-linguistic and language-specific distributions, alongside considerations such as the number, frequency, and complexity of diachronic sources and developmental pathways (Greenberg 1978; Harris 2008) on the one hand, and the likelihood of diffusion from speaker to speaker or language to language, on the other.

In particular, the question of stability is an important one because linguists often draw inferences about human language on the basis of a sample, whether small and biased or large and balanced in terms of area and genealogy. Specifically, it would be ideal if linguists could infer the universal probability (or ‘learnability’) of a linguistic type from the empirical frequency of that type (Cysouw 2011). The possibility to draw valid inferences of this sort depends, however, to a large extent on some version of the uniformitarian assumption, i.e., the idea that ‘human languages have always been pretty much the same in terms of the typological distribution of the units that compose them’ (Newmeyer 2002).

The uniformitarian assumption has been called into question in a number of ways. For example, Maslova (2000) argued that the assumption of a stationary distribution, such that the present-day distribution of linguistic properties in the world's languages, is independent of an initial state, and cannot be maintained. As a result, it becomes crucial to directly target transition probabilities between types (see also Dunn et al. 2011; Cysouw 2011; Bickel 2015). Greenberg (1978) observed that particular distributions might indicate different degrees of inherent stability. Nichols (1992, 2003) and Wichmann & Holman (2009) provide concrete measures of the relative stability of cross-linguistically comparable properties. Of the 137 properties examined, 19 deal with sound patterns, which show varying degrees of stability. For example, consonant inventories are rated as ‘very unstable,’ while tone is ‘very stable.’ While these studies provide us with a big picture of the relative stability of a number of properties, as well as some methodological foundations, we are still far from understanding the relative stability of a wide range of sound patterns. In particular, many aspects of (in)stability are potentially invisible to particular methodologies. For example, it may be the case that the phonetic precursors of, e.g., three-way length distinctions or prenasalized stops distinctions, are frequently innovated by speakers yet are not phonologized. Such frequent but evanescent innovations were envisioned already by Greenberg (1978), who predicted that they would be relatively frequent in languages and distributed relatively evenly among genealogical stocks.

Some proposals have been made about the inherent stability or instability of particular sound patterns. For example, Jacques (2011) argues that aspirated fricatives, despite the multiplicity of diachronic sources, are inherently unstable, due to their tendency to merge with other sounds. Dediu & Cysouw (2013) found that the feature [round] is unstable, i.e., hard to get and easy to lose. Blevins (2008) proposes that three-way vowel nasality distinctions, as in Palantla Chinantec, or three-way length distinctions, as in Estonian, Saami, or Dinka, may be inherently unstable, and tend to be eradicated by sound change. On the other hand, coronal places of articulation for consonants seem to be especially stable, since total coronal loss is vanishingly rare (Blevins 2009). Moran & Verkerk (2018) found that consonants and vowels change at different rates, i.e., not uniformly across language families; these findings may point to broad differences between consonant inventories and vowel inventories in terms of stability.

A crucial issue in studying the stability of sound patterns is the need to tease apart the relative contributions of – and interactions between – inheritance, on the one hand, and areal effects, on the other. For example, it has recently been argued that affricate-dense inventories are inherently unstable in Eurasia, and tend to simplify unless supported areally (Nikolaev & Grossman 2018).

Sound patterns are an especially exciting domain for the study of stability, thanks to the possibility of experimental modelling (Ohala 1995, Silverman 2006). Another exciting avenue for studies of stability involve the comparison between the abundant data on reconstructed phonologies of proto-languages, on the one hand, and on present-day phonologies, on the other (see, e.g., Marsico et al. 2018; Moran & Verkerk 2018). Phonological areas provide yet another fascinating domain for research on phonological (in)stability, to the extent that they can reveal differential, areally-conditioned, patterns of innovation, loss, and retention. Furthermore, they allow a detailed examination of simple persistence vs. ‘merry-go-round’ areal stability, in which sound patterns diffuse from language to language.

Finally, it may be that particular types of sound pattern are ‘attractors,’ i.e., any state that is easier to enter or acquire than to leave or lose, and/or easier to retain than lose (Nichols 2018). This is essentially a matter of stability, although it is not clear to what extent the notion of attractor is explanatory, or requires, in turn, more primitive explanations.

We invite proposals for 20-minute talks that explore the stability of particular sound pattern types and on any of the following (or related) questions:

- How can the notion of ‘stability’ be defined and operationalized?
- What are the units of analysis in the study of phonological stability (phonemes, oppositions, features, etc.)?
- What are the differences between present-day distributions of sound patterns and earlier distributions, whether at a global level, at a macro-areal level, or at a micro-areal level?
- Can differential rates of change for different types of sound patterns be identified, and if so, what explanations explain these differences?

- Are different patterns of (in)stability found in different parts of the world or at different stages in the evolution of human language?
- What light can experimental phonetics and phonology shed on (in)stability?
- What light can modelling shed on (in)stability?
- What are the causal links between facts of human physiology and cognition, on the one hand, and the (in)stability of sound patterns?

## References

- Bickel, Balthasar. 2015. Distributional typology: Statistical inquiries into the dynamics of linguistic diversity. In: Bernd Heine and Heiko Narrog (eds.) *The Oxford handbook of linguistic analysis*, 2nd ed., 901–23. Oxford: Oxford University Press.
- Blevins, Juliette. 2008. Natural and unnatural sound patterns: A pocket field guide. In Klaas Willems & Ludovic De Cuyper (eds.), *Naturalness and iconicity in language*, 121–148. Amsterdam: Benjamins.
- Blevins, Juliette. 2009. Another universal bites the dust: Northwest Mekeo lacks coronal phonemes. *Oceanic Linguistics*, 48/1: 264–273.
- Cysouw, Michael. 2011. Understanding transition probabilities. *Linguistic Typology*, 15: 415–431.
- Dediu, Dan & Michael Cysouw. 2013. Some structural aspects of language are more stable than others: A comparison of seven methods. *PLoS ONE*, 8(1), e55009.
- Dunn, Michael J., Simon J. Greenhill; Stephen C. Levinson; and Russell D. Gray. 2011. Evolved structure of language shows lineage-specific trends in word-order universals. *Nature*, 473: 79–82.
- Greenberg, Joseph H. 1978. Diachrony, synchrony and language universals. In Joseph H. Greenberg, Charles A. Ferguson and Moravcsik, Edith A. (eds.), *Universals of Human Language. Volume 1: Method and Theory*, 61–92. Stanford: Stanford University Press.
- Guillaume Jacques. 2011. A panchronic study of aspirated fricatives, with new evidence from Pumi. *Lingua*, 121 (9): 1518–1538.
- Harris, Alice. 2008. On the explanation of cross-linguistically unusual structures, in Jeff Good (ed.), *Linguistic universals and language change*, 54–76. Oxford: Oxford University Press.
- Maslova, Elena. 2000. A dynamic approach to the verification of distributional universals. *Linguistic Typology*, 4: 307–333.
- Marsico, Egidio, Sebastien Flavier, Annemarie Verkerk & Steven Moran. 2018. BDPROTO: A Database of Phonological Inventories from Ancient and Reconstructed Languages. In *Proceedings of the Eleventh International Conference on Language Resources and Evaluation (LREC 2018)*, 1654–1658. May 7–12, Miyazaki, Japan.
- Moran, Steven & Annemarie Verkerk. 2018. Differential rates of change in consonant and vowel systems. In C. Cuskley and M. Flaherty and H. Little and Luke McCrohon and A. Ravignani and T. Verhoef (eds.), *The Evolution of Language: Proceedings of the 12th International Conference (EVOLANGXII)*. April 16–19, Toruń, Poland.
- Newmeyer, Frederick. 2002. Uniformitarian assumptions and language evolution research. In *The Transition to Language*, ed. by Alison Wray. Oxford: Oxford University Press.
- Nichols, Johanna. 1992. *Linguistic diversity in space and time*. Chicago: The University of Chicago Press.

- Nichols, Johanna. 2003. Diversity and stability in languages. In: Brian D. Joseph, and Richard D. Janda (eds.), *The Handbook of Historical Linguistics*, 283–310. Malden/Oxford/Melbourne/Berlin: Blackwell Publishing.
- Nichols, Johanna. 2018. Non-linguistic conditions for causativization as a linguistic attractor. *Frontiers in Psychology* 8:2356. doi: 10.3389/fpsyg.2017.02356
- Nikolaev, Dmitry & Eitan Grossman. 2018. Areal sound change and the distributional typology of affricate richness in Eurasia. *Studies in Language*.
- Ohala, J. J. 1995. A probable case of clicks influencing the sound patterns of some European languages. *Phonetica* 52: 160-170.
- Silverman, Daniel. (2006). The diachrony of labiality in Trique, and the functional relevance of gradience and variation. *Papers in Laboratory Phonology VIII*.
- Wichmann, Søren & Eric Holman. 2009. *Assessing temporal stability for linguistic typological Features*. München: LINCOM Europa.