

Phonotactic restrictions in phonological theory: from Optimality Theory to symbolic Neural Networks

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Optimality Theory is ideal to handle phonotactic restrictions: phonological structures that are non-occurring in a language can be simply excluded with high-ranked constraints such as *rj (e.g., Hall & Hamann 2010). Such structural OT constraints have been shown to apply not only in the process of phonological production, but also in speech perception, where they can account for observed phenomena in L2 perception and loanword adaptation (see Boersma & Hamann 2009).

It seems, however, much more likely that our brain, rather than excluding non-occurring structures, keeps track of all co-occurring structures. In this talk I will illustrate challenges that phonologists are faced with when moving from OT to more realistic representations of phonological knowledge in the form of symbolic neural networks: how can phonotactic restrictions be represented in such networks, and can they account for the same observations as structural OT constraints?

Boersma, Paul & Silke Hamann (2009). Loanword adaptation as first-language phonological perception. In: Andrea Calabrese & Leo Wetzels (eds.) *Loan Phonology*. Amsterdam: Benjamins, 11–53.

Hall, T. A. & Silke Hamann (2010). On the cross-linguistic avoidance of rhotic plus high front vocoid sequences. *Lingua* 20: 1821–1844.