

Languages adapt to minute differences in their speakers' ecology

In evolutionary linguistics (Steels 2011), languages are considered as complex systems adapting to the niche occupied by the speech community (Kusters 2003 Christiansen & Chater 2008; Bentz & Christiansen 2013). This adaptationist view assumes the existence of selection pressures and fitness on the part of languages. What exactly is this fitness? The obvious candidate is 'learnability', which can differ according to the ecology of the speech community. What is optimally learnable for young L1 speakers differs from what is optimally learnable for adult L2 speakers. In this talk, I will look at how grammar responds to changes in the population structure, shifting the ecological niche. Rather than focussing on large cross-linguistic differences mainly on synchronic data as done in Lupyán & Dale (2010) and Bentz & Winter (2013), I will look into diachronic changes within one subfamily, namely West-Germanic. Combining traditional linguistic methods with agent-based simulation, it can be shown that languages are highly responsive to population change. This suggests that externally-driven language change does not need sudden demographic upheaval with a concomitant large-scale break in the transmission.

- Bentz, C. & M.H. Christiansen. 2013. 'Linguistic adaptation: the trade-off between case marking and fixed word orders in Germanic and Romance languages'. In: F. Shi & G. Peng (eds.), *Eastward flows the great river. Festschrift in honor of Prof. William S-Y. Wang on his 80th birthday*. Hong Kong: City University of Hong Kong Press. 48-56.
- Bentz, C. & B. Winter. 2013. 'Languages with more second language learners tend to lose nominal case'. *Language Dynamics and Change* 3: 1-27.
- Christiansen, M.H. & N. Chater. 2008. 'Language as shaped by the brain'. *Behavioral and Brain Sciences* 31(5): 489-509.
- Kusters, W. 2003. *Linguistic complexity: the influence of social change on verbal inflection*. Utrecht: LOT Dissertation Series.
- Lupyán, G. & R. Dale. 2010. 'Language structure is partly determined by social structure'. *PLoS ONE* 5(1).
- Steels, L. 2011. 'Modeling the cultural evolution of language'. *Physics of Life Review* 8: 339-356.