Social structure and linguistic complexity: experimental modelling

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One of basic questions in the language sciences is to what degree (if at all) linguistic structure is affected by sociocultural factors. While a view that these factors have little or no influence on language has been dominating for quite a long time, recent years have witnessed an accumulation of evidence that languages are being shaped by their environment. One example of such influence is the hypothesized causal link between social structure and linguistic complexity (Wray and Grace 2007, Sampson et al. 2009, McWhorter 2011, Trudgill 2011). The key idea behind this theory can be formulated in terms of differences between *normal* and *broken* language transmission from "old" speakers to "new". In the former condition, morphological complexity of the language is likely to stay constant or increase, while in the latter, when tranmission is somehow inhibited (e.g. by a large share of adult learners in the population), complexity is likely to decrease.

This view is supported by solid theoretical reasoning (see references above), mostly based on observations on individual languages, by some nomothetic quantitative studies (Lupyan and Dale 2010, Bentz and Winter 2013) and even diachronic analyses (Carroll et al. 2012). What these approaches do not offer is a direct insight into potential mechanisms of simplification, which is why modelling approaches are required (Nettle 2012, Berdichevskij 2012) to complement the idiographic and nomothetic data and provide further evidence for the existence (or absence) of the causal link. There are, however, very few studies that actually employ modelling and experimental approaches (but see Atkinson, Smith and Kirby 2014; Little 2011).

We present two iterated learning experiments, where participants had to learn an artificial language with some "redundant" morphological features (gender and number) in two conditions: normal (every participant has enough time to learn the language) and broken transmission (some participants have less time than required). The first (pilot) experiment, performed in a laboratory setting using voice communication and microsociety design (Caldwell and Smith 2012), provides some evidence in favour of the causal link, but turns out to be extremely resource-consuming. For that reason, statistical significance is low.

With this methodological insight in mind, we run the main experiment (currently ongoing) in a much simpler setting (online and with diffusion chains instead of microsocieties), but with much larger samples. This design allows to get more robust results and investigate whether the insufficient learning time leads to simplification and what the actual simplification mechanism might be.

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