THE IMPACT OF L2 SPEAKERS ON THE EVOLUTION OF CASE MARKING

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This paper is a summary of a research project addressing the question of how L2 speakers in linguistic communities can shape the structure of languages. We present evidence in support for the view that L2 speakers have an impact on the future development of grammar, namely, that languages with more L2 speakers tend to lose abundant case marking systems. This is in line with the idea that language structure is predominantly the outcome of the processes of cultural evolution, language contact and language learning rather than biological evolution.

1. Introduction

While biolinguistic accounts of language evolution have focused on the evolution of the genetic underpinnings of language, functional linguistics and the Language as Shaped by the Brain Hypothesis (Christiansen & Chater, 2008) focus on seeing language as the product of cultural evolution. Rather than assuming a biological adaptation towards language, language itself is viewed as an adapting structure (see also, Beckner et al., 2009). The general idea is that there are functional and pragmatic pressures that shape languages through repeated interactions, i.e. pressures that arise from the learning constraints of language learners. Language structures are viewed as entities that are more or less suitable for the minds of speakers, and that are more or less suitable for being used by speakers (see also Deacon 1997: 328-333; Johansson 2005: 190).

A version of this general idea is the Linguistic Niche Hypothesis (Lupyan & Dale, 2010), which emphasizes the interaction between social structure and language structure. Languages are considered to be adapting to specific 'niches'. In particular, there are languages that are used by large speaking communities

that interact a lot with surrounding communities and have many second language learners (so-called 'exoteric languages'), and there are languages that are used by small communities with less contact and less L2 learners (so-called 'esoteric languages'). In support of this view, Lupyan and Dale (2010) show that languages in the exoteric niche seem to exhibit less morphosyntactic complexity than languages in the esoteric niche. Bentz and Christiansen (2010) discuss the evolution of case systems in the Latin and Romance languages from this perspective, arguing that Latin exhibited the strongest degree of case reduction when there was the largest influx of L2 learners of Latin. A similar argument for the case of English and German is reviewed in Bentz and Christiansen (submitted).

In this paper, we present further evidence for the Linguistic Niche Hypothesis, focusing on the role of L2 learners and how languages adapt to fit the learning constraints of these learners. We demonstrate that languages that are spoken by a relatively large amount of L2 speakers tend to exhibit less case paradigms, suggesting that the learning constraints of L2 learners shape the evolution of case systems. This evidence can be linked to research on L2 acquisition of case, which suggests that case is difficult to acquire for adults.

2. The impact of L2 speakers on case systems

The question whether population size does enhance or slow down language change in general has been scrutinized by different researchers (Trudgill, 1994; Nerbonne & Heeringa, 2006; Wichmann & Holman, 2009), and both affirmative and negative evidence has been presented. There are different reasons to suppose that population size should be associated with faster or lower rates of change. The hypothesis we address here is that population size indirectly reflects potential language contact situations of the past and therefore might enhance the loss of grammatical markers. This hypothesis has been tested by Lupyan and Dale (2010), where population size was used as shorthand for assessing the role of language contact in a quantitative way. We want to go one step further and provide an even more direct test of the Linguistic Niche Hypothesis by correlating the number of L2 speakers with linguistic structure.

Here, we consider the association between L2 learning and case. There is experimental evidence showing that nominal morphology, and case marking in particular, is difficult to acquire by adult learners of a second language (Parodi, Schwartz & Clahsen, 2004; Gürel, 2000; Haznedar, 2006; Papadopoulou et al., 2011; Jordens, De Bot & Trapman, 1989). Note that these difficulties seem to be independent of whether the native language of the learner itself uses case

marking or not. We believe that the difficulty of L2 learners to acquire case paradigms probably poses structural pressures against case marking in languages that have a high proportion of L2 speakers. We want to test this idea quantitatively with a cross-linguistic sample.

Using a variety of sources such as the SIL Ethnologue (Lewis, 2009), the WorldLingo website[1], the Rosetta project website[2], the UCLA Language Materials Project[3], as well as the countries' censuses, we were able to collect the numbers of L2 speakers for 226 languages. We linked this data to Iggesen's (2011) chapter on "Number of Cases" in the *World Atlas of Language Structures* (WALS). Iggesen (2011) adopts 8 ranked case categories to describe a total of 261 languages. For 66 (28%) of these languages, we had the respective information about the number of L1 and L2 speakers. These languages form the dataset that we analyzed. Although the dataset is relatively small compared to other typological samples, it features a wide range of language families (25 families) from a diverse set of geographic areas such as Europe, Southeast Asia, Southern Africa, Greater Abyssinia, Greater Mesopotamia, NE South America, Alaska-Oregon and others (15 areas).

We used linear mixed effects models with the ratio of L2 speakers and L1 speakers (henceforth L2/L1 ratio) as the predictor variable and the number of case categories as the dependent variable. In order to control for specific language areas or families having particular baselines with respect to the number of case paradigms (e.g. South East Asia tends to have languages that have no case), we included language area and language stock as random effects.[4] Controlling for areal and genealogical effects is crucial for typological research in general (e.g. see Dryer 1989), but for case paradigms in particular, because strong areal effects in this domain have been demonstrated by Bickel and Nichols (2009).

The results of the analyses for the relationship between ratio L2/L1 and case marking categories can be seen in figure 1. The figure shows that languages with fewer L2 speakers (smaller log L2/L1 ratios) tend to have larger case inventories (the numbers on the x-axis represent the ranks of categories in Iggesen's WALS chapter). This pattern is significant ($p=0.0002$) and generalizes over language families and language areas. On the other hand, taking only the number of L1 speakers as a predictor does not produce a significant effect ($p=0.51$, for the sample of 66 languages) suggesting that the restricted L2 learning abilities

[1] www.worldlingo.com
[2] www.rosettaproject.org
[3] www.lmp.ucla.edu
[4] For a detailed description of the statistical methods applied see (Bentz & Winter, submitted).

discussed in the literature actually 'shaped' the languages of our sample towards using less abundant case marking paradigms.

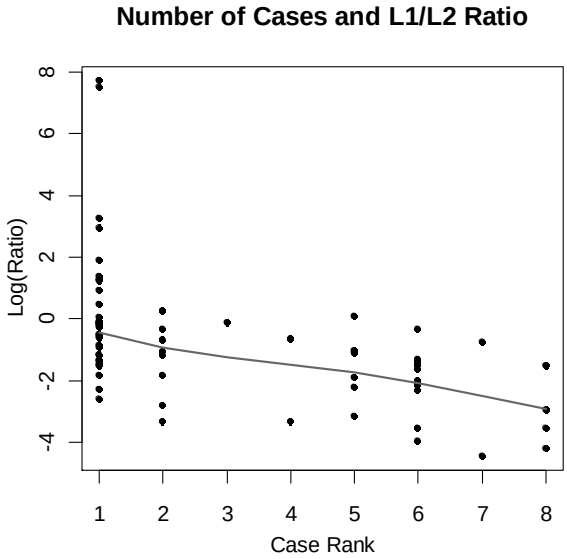

Figure 1. The correlation between number of nominal cases and the ratio L2/L1 in 66 languages; the numbers on the x-axis represent ranks as in Iggesen (2011) with higher ranks indicating more case paradigms. The ratio on the y-Axis was transformed logarithmically in order to reduce distances to outliers.

3. Conclusion

In this paper, we presented the effect of the presence of L2 learners on case systems: languages with more L2 speakers tended to exhibit less complex case systems. This pattern is reminiscent of Lupyan and Dale (2010). However, we provide more direct evidence for the role of L2 speakers. This data only makes sense when we assume that a large part of language is shaped by cultural evolution with the cognitive capacities of language learners constraining language structure, a view that in this particular example seems much in line with the experimental evidence for the difficulty of acquiring case as L2 speakers. Different societies have different social structures, and these social structures in turn interact with the learning constraints, i.e. a society with many L2 learners potentially poses selective pressures against overabundant nominal morphology. From this perspective, every society is a new niche to which language adapts.

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