Inflectional complexity and cognitive processing: An experimental and corpus-based investigation of Russian nouns

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Abstract

Inflected forms vary in how predictive they are of other forms of the same lexeme and the inflection class to which they belong. Recent studies suggest that the implicative relationships between inflected forms play an important role in the complexity of inflectional systems (Ackerman and Malouf 2013; Stump and Finkel 2013; Sims 2015). Independent lines of research suggest that distributional traits of inflected forms and the inflection class to which they belong affect how speakers process them (Kostić 1991; Moscoso del Prado Martín et al. 2004; Milin et al. 2009a). In this dissertation I use corpus-based and experimental data to bring these research agendas together. I investigate the role of implicative paradigmatic structure in the complexity of Russian nouns as a formal system and as a reflection of speakers' cognitive sensitivities.

To investigate the importance of implicative paradigmatic structure I investigate its importance in both macro-level and micro-level complexity in inflectional systems. Macro-level complexity reflects properties that emerge from the interaction of the parts within an inflectional system. Micro-level complexity is how the access and representation of individual items are affected by the structure of the system in which they are embedded. In Chapter 4 I use information-theoretic tools to illustrate that implicative paradigmatic organization and inflection class type frequency lower the systemic uncertainty of Russian nouns, and that their role is increasingly apparent as more semi-regularity is included in the representation of the system. In Chapter 5 I also find that implicative structure has consequences for lexical access and representation. Data from behavioral experiments suggest that inflected forms that are more predictive of other cells may occupy a central role in lexical organization. This suggests that the implicative structure of inflectional systems has consequences for both macro-level and micro-level complexity in inflectional structure.

Investigations of inflectional systems differ in how they measure complexity, the level of structure at which they make generalizations and the theoretical assumptions they adopt. In Chapter 3 I present a fine-grained investigation of the morphological exponence of Russian nouns and argue that there is a continuum of semi-regularity apparent in the type frequency and paradigmatic distribution of inflectional patterns. This challenges the idea that regularity is a discrete aspect of inflectional systems. In Chapter 6 I investigate the extent to which measures of inflectional structure motivated by divergent theories of morphology capture distinct effects in processing. I find that two measures, namely the primitive features and uncertainty associated with inflectional suffixes, are similarly predictive of reaction times to inflected forms. This suggests that theoretical differences may not correspond to cognitive sensitivities of speakers, and that both measures are capturing the same underling information structure of the system.

This dissertation brings together corpus-based and experimental evidence to better understand the nature and cognitive consequences of inflectional structure. At both the macro-level and micro-level of the inflectional system, complexity emerges from the frequency and distribution of forms in the system. There is, thus, a dynamic relationship between distributional and structural properties of inflectional systems, reflected in complexity at multiple levels of generalization.