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Tracking the Dynamics of Change in Jespersen's Cycle in Middle English

Focusing on changes to the system of sentential negation marking in Middle English between 1150 and 1500, this paper investigates the trajectory of linguistic change and the dynamics of syntactic variation in stages of Jespersen's Cycle (Jespersen 1917, Dahl 1979). Although the number of intermediate stages may vary according to different approaches to Jespersen's Cycle (van der Aura 2009), the cycle is usually characterized by at least three distinct stages in the history of English sentential negation: in Stage 1, negation is expressed by a single negative marker (*ne*) in pre-verbal position; Stage 2, by a type of discontinuous bi-partite negation with the negative marker and an adverbial (*ne...not*), and in Stage 3, by the adverbial (*not*) by itself in post-verbal position.

As a point of departure for this paper, we examine the dynamics of change within the system of negation to determine if Jespersen's Cycle exhibits cyclic or linear properties. In order to do so, we model data on negation in Middle English according to two dynamic models of epidemic expansion (Keeling & Rohani 2008). The first model (Susceptible -Infection-Recovered, or SIR model) assumes that the dynamics flow linearly throughout a stochastic chain of un-reversible stages. The SIR model describes typical patterns of change as seen in diseases like the measles in which individuals are not susceptible again after a period of recovery. The second model (Susceptible-Infection-Susceptible, or SIS) assumes the dynamics may flow cyclically throughout a series of stochastically reversible stages. Much like in the case of the common cold, individuals in the SIS model are susceptible again immediately after recovery. For the same input distribution of sentential negation, both models make different predictions about the dynamics of Stage 3 across the entire period under investigation.

In the empirical portion of the paper, we present data on the distribution of the three types of sentential negation in texts written between 1100 and 1500 in the Penn Helsinki Parsed Corpus of Middle English (PPCME2). We examine 5,969 examples of negation from 53 texts that we organized in clusters using a K-means algorithm. Our findings corroborate those found in Frisch (1997) and Wallage (2007), who found that negation with a single marker (*ne*) declines before a short period of transition in which bi-partite negation (*ne...not*) increases before the prominent rise in the frequency of negation with a single negator (*not*) by 1500 in Middle English. Next, we model the data on the three types of negation according to the SIR and SIS models of epidemic expansion. Results indicate that the SIR model is the most accurate, with an error significantly lower than the error of the SIS model. This result suggests that the Stage 3 is non-reversible and, thus, that the development of negation in the history of English is better explained by non-cyclic dynamics.

The implications of this study are two-fold. First, the data shed light on the dynamics of change in Jespersen's Cycle more generally and the development of negation in the history of English more specifically. The data reveal problems with the notion that the three types of negation are part of a repeating cycle in a strict sense of the term. Secondly, the study provides a new way to measure more accurately the dynamic aspects of trajectories during periods of linguistic change using clustering algorithms and statistical models from other scientific disciplines.

Selected References

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