Modelling the "Aoristic Drift of the Present Perfect" as Inflation

From the very beginning of grammaticalisation literature on (cf. Meillet, 1909/1982), present perfects have been found to "invade" the domain of simple past tenses, and eventually, to replace them. Since this process involves that the present perfect becomes more and more past-tense-like, it is known as the "aoristic drift of the present perfect". The process itself is crosslinguistically quite frequent, and we know well the grammaticalisation-paths of the forms, thanks to the work of the "Bybee-Dahl school" (cf. Bybee, 1985; Dahl, 1985; Dahl, 2000). However, not much progress has been achieved in finding a causal explanation of the drift process, or in explaining why a specific form trods down a specific grammaticalisation path, rather than taking another. The aim of this paper is to propose an underlying causal mechanism for the aoristic drift.

Prerequisites I will elaborate on and render operational an idea by Dahl (2001), namely that grammaticalisation is an inflation-process. While I agree with Dahl's basic intuition, the examples provided by him fall short of a true inflationary process, and are rather instances of once-only devaluations. For instance, he gives the example of the professor-title awarded at some point to a bigger number of people: presumably, this will diminish the value of the title, but is basically a transition from one equilibrium into another. Once the new value has been attained, no further movement out of the equilibrium is expected. This is, however, not the typical process underlying inflation. Under many accounts, inflation is seen as an autocatalytic cycle (cf. the familiar price-wages spirale), that is, inflation provokes effects that cause inflation, and once in the cycle, there is no easy way out of it. My proposal will view the aoristic drift as such a runaway-process, and model it as a dynamic system.

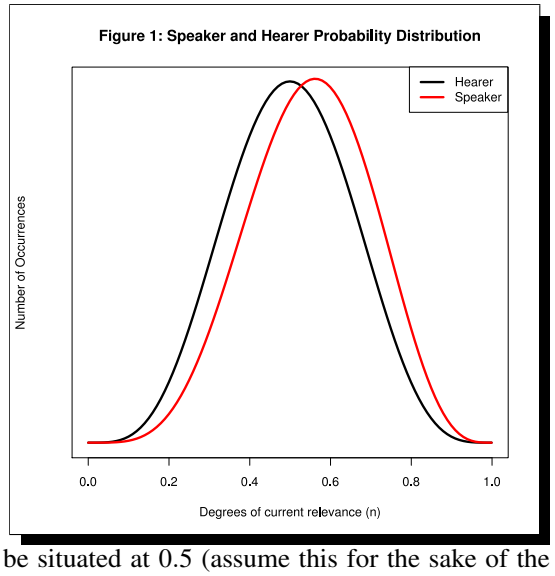
The second prerequisite I assume — following here Schaden (2009) — is that the present perfect competes against the simple past tense, and that the difference between languages such as English and German is rather an instance of difference in use than a difference in the underlying grammatical system (that is, in semantics or syntax). The difference can be seen as a difference in the inference of *current relevance* (or the lack of it) with respect to the present perfect and the simple past forms. Current relevance is the core meaning associated with the category "perfect" in standard non-formalist approaches (cf. below).

The Model The model consists of two components: first, a *hearer* will infer a semantic representation for past tense and the present perfect tense, based on the data he is exposed to. This is the grammatical-inference step. Second, the hearer becomes a *speaker* who produces data, based on the inferred representation. The result of the production forms then the input for a new generation of hearers, who infer a representation, etc.

(1) a. hearer infers from $\mathbf{data}_0$ a $\mathbf{representation}_0$ [grammatical inference]
b. speaker produces from $\mathbf{representation}_0$ an amount of $\mathbf{data}_1$ [production]
c. hearer infers from $\mathbf{data}_1$ a $\mathbf{representation}_1$ etc. [grammatical inference]

If $\mathbf{data}_n$ and $\mathbf{data}_{n+1}$ are identical with respect to relevant parameters, the representations will be identical, and the system will be in equilibrium. Else, the representations will shift, possibly causing a shift in produced data. We require therefore a mechanism inferring a representation from data, and also, a mechanism producing data from an underlying representation.

I assume that hearers have as a prior common a probability distribution of past events with respect to the current relevance these events have, along a graph as provided by figure (1). An eventuality obtaining a current-relevance score of 0 has no current relevance whatsoever, while an eventuality obtaining a current-relevance score of 1 has maximal current relevance. Since present perfects encode current relevance denoting devices (for instance, Extended Now intervals or perfect states) that past tenses lack, they are situated at the upper end of the interval (i.e., between some n and 1), and past tenses at the lower end (i.e., between 0 and some n). I assume that, for some n, the hearer infers — based on the data he is exposed to — the interval to which the simple past tense and the present perfect apply, following the schema illustrated in (2). Given the hearer's probability distribution in figure (1), and if the data contains 90% of past tenses and 10% of present perfects, the hearer may infer n as being equal to 0.8; if the data contains 50% of past tense and 50% of present perfects, n will be situated at 0.5 (assume this for the sake of the argument; the precise shape of the probability distribution is not based on any kind of investigation).



(2) a. Past tense = [0,n] b. Present perfect = [n,1]

I propose that the causal mechanism underlying the aoristic drift of the present perfect is that speakers systematically overestimate the current relevance of their contributions. Thus, the probability distribution a speaker assumes for their utterances is (however slightly) shifted to the right (cf. figure (1)). The rationale behind this assumption is the following: current relevance is the current relevance of a proposition *given some evaluating person*. There is thus no way of objectively assessing current relevance (which is why this notion is rejected by formalists). A hearer will be confronted with the average of what many speakers tell about the past — which he may or may not consider as current relevant; however, as a speaker, he will *a priori* utter propositions he thinks of as being important (and one way of acquiring importance is current relevance). The proposed mechanism makes use of a standard instance of self-serving bias, and does not seem very problematic from a psychological point of view.

Assume now that the initial value of n (noted n_0) is 0.8, which means 10% of present perfects in the input. Since the production probability distribution is shifted to the right, speakers will believe that they are entitled not to a mere 10%, but say 13% of present perfects. In the next generation of hearers, the fact that the present perfect has become more frequent will entail setting n_1 to a value below n_0. Speakers will adopt n_1, overuse the present perfect, such that $n_2 < n_1$ (and more generally, for each n_k, if $n_k \neq 0$, $n_{k+1} < n_k$). This will drive n towards 0, and the system has a single equilibrium at $n = 0$, that is, when the past tense has died out, and the present perfect has taken over all of its uses.

Discussion The present model is clearly only the first step into an investigation of the underlying mechanisms of grammaticalisation. As it stands here, the model deterministically and continuously drives the past tense out of a language, as soon as a present perfect has come into use. Even given the usual *ceteris paribus* restrictions, this is probably not a realistic assumption. It seems that quite often, the relative distribution of past tense vs. present perfect remains stable for a long time. There may be several different reasons for that, which may or may not be related to the proposed causal mechanism, that is, the overestimation of current-relevance by speakers.

First, the mechanism is in part dependent on the shape of the probability distribution — which will probably prove difficult to assess empirically: any unimodal beta-distribution (that is, a distribution with a single 'peak') will be fine, but probability distributions that are U-shaped or containing a sufficiently large hole somewhere may bring the process to a halt. While U-shaped curves do not appear to be likely (since this would entail that the common prior includes high probability mass at the extremities, and less in the center), non-unimodal distributions might be a reasonable assumption. Such a distribution might be appropriate if we are not dealing with a single probability distribution, but with a combination of several probability distributions, each relative to a given *genre*. Clearly, in narrative discourse within a novel, the expected peak of the current relevance distribution will be much lower than in any kind of spontaneous, oral face-to-face conversation.

Second, it might be necessary to explore a system having more than one single equilibrium. An easy way of stabilizing the system would be to allow for hearers to anticipate the overuse of present perfects by speakers up to a certain threshold, and to adjust the value of n accordingly. Once the threshold is passed, however, the system may move.

Last, the current system also fails to be fully adequate because of the learning algorithm's hard-coded reliance on the idea that present perfect forms intrinsically denote more current-relevance than simple past tense forms do. Therefore, the simple past will always remain at the lower end of the current relevance-scale, and the present perfect at the upper end. However, in some Romanian dialects, the simple past (form) has come to denote recent past (cf. Cojocaru (2003, p. 145)), while the present perfect (form) has become a general perfective past tense, such that the polarity has been reversed (or else, the opposition cannot be captured in terms of current relevance anymore). In order to deal successfully with such developments, we need a more general learning algorithm for the acquisition of meaning. At present, the proposed learning mechanism is a gross oversimplification, and further investigations of the nature of semantic grammar-inference will be necessary in order to achieve progress. While there is work about the learning-procedures involved in the acquisition and change of lexical categories (cf. Benz (2006)), I am not aware of any such work on grammatical categories.

References

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