



Simulating semantic change:

A methodological note

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Objective

Closing a gap pertaining to diachrony

- ▶ Experimental semantics as a bridge to cross the gap between semantic fieldwork and diachrony

Human Diachronic Simulation Paradigm (HUDSPA)

Humans confronted with new meaning-form pairings modeled after an attested semantic change will react similarly when they are placed in conditions that resemble those of the actual change (e.g. via a cognate that is similar but did not undergo the transformation investigated).



Background

The problem

Diachronic and fieldwork semantics model natural language variation, but they are often viewed as not (yet) fully compatible (e.g. Deal, 2020)

Issues:

- ▶ no negative data (well-known classic); but just as crucial in combination with:
- ▶ no graded judgments to select candidates for change
- ▶ more often than not, needed contextualization missing

The general point:

- ▶ How can motivated paths of change (and even reliable lexical entries) be established given lack of judgments?



Towards a solution

- ▶ One useful window can be changes in progress (e.g. D'Arcy, 2007).
- ▶ However: by far not enough detectable changes in progress to match numerous interesting meanings that have arisen historically.

Instead (and even if clear differences exist):

- ▶ Draw from other cases of semantic development with disadvantaged extraction of speaker intuitions; viz. the earliest stages of acquisition (Gleitman et al., 2005)
- ▶ Here: target and sort out suboptimal (“ungrammatical”) but relevant judgments with a potential for change in pertinent environments.



Two experiments

Overview

2 experiments:

- ▶ development of (E)nglish *even*; simulated from the perspective of (G)erman *eben* (no improbability)
- ▶ G discourse particle *doch* through the prism of E *though*

2 cues to activate speakers to unavailable readings:

- ▶ context to clarify the intended meaning
- ▶ instruction to treat the examples as spoken by some non-mainstream G (and E) community and to grade the naturalness of the examples encountered w.r.t. to the context given



Eben manipulated as *even*

Design and data processing

- ▶ 12 target items grouped in 3 sets respectively licensing readings of *sogar* ('even'), *nur* ('only') and *auch* ('also')
- ▶ Context, stimulus, and a comment section; 7-point scale ('fully acceptable in context' – 'not at all acceptable in context'); restrictions of interest: only G native speakers and suggestion to replace *eben* with *sogar/nur/auch* in the respective licensing contexts
- ▶ Resulting numbers: 199 observation (53 for *sogar*-condition, 94 for *nur*, 52 for *auch*)

	<i>sogar</i> -`even'	<i>nur</i> -`only'	<i>auch</i> -`also/too'
Mean	5.17	4.34	4.62
(median; SD)	(6; 1.46)	(5; 1.7)	(5; 1.83)



Eben manipulated as *even*

Statistical analysis

- ▶ Data (transformed into norm-scores) was fitted into a random slope model with NormScore as a function of *condition* (3 levels: *sogar*, *nur*, *auch* & allowing for different slopes per subject:

$$(1) \quad \text{NormScore} \sim \text{condition} + (1 + \text{condition} \mid \text{subject})$$

Results

- ▶ Estimate *sogar*/'even'-level – 0.222
- ▶ slope *nur*/'only'-level: -0.561
- ▶ slope *auch*/'also/too': -0.382

Likelihood ratio test; full model against null model (w/o *condition*):

3 levels of *condition* affected transformed ratings ($\chi^2(2) = 13.221, p < 0.01$), lowering them by:

- ▶ 0.561 – *nur*-level
- ▶ 0.382 – *auch*-level



Though manipulated as *doch*

Experimental design

- ▶ Questionnaire with 12 target items and 14 filler items
- ▶ 3 target item sets (4 items), each approximating readings of *doch*, *ja* and *wohl* (cf. Zimmermann (2011) for untranslatable material).

Some of the main points were different in this experiment

- ▶ Slightly longer and dialogic contexts
- ▶ due to the absence of counterparts in E, two tasks:
 - ▶ Task 1: How 'very easy/very hard to understand' is the item? (slider from 1 to 101 & comment section)
 - ▶ Task 2: Forced choice regarding the knowledge state of the participants introduced in the item context (slider from 1 ('no') to 101 ('yes'))



Though manipulated as *doch*

Data processing & analysis

- ▶ 432 observations from 36 subjects (E native speakers)

Mean (SD):	<i>doch</i>	<i>ja</i>	<i>wohl</i>
Task 1:	95.40 (10.48)	92.47 (18.53)	92.15 (17.53)
Task 2:	84.45 (25.33)	59.94 (38.34)	23.73 (34.07)

- ▶ While the sentences seemed easy to understand (Task 1), not all intended meanings were captured reliably.
- ▶ *Doch*-readings were rated significantly higher in Task 2 than for *ja* and *wohl*.



Discussion I

- ▶ Meanings of cognates (unavailable in the respective target language) were interpreted more appropriately than competitors; HUDSPA shows convergence towards actually developed meaning
- ▶ Discourse particle seems calculable from the relationship between the currently available concessive component, which is close in meaning to the presupposition of contrast in *doch*
- ▶ The additive case may seem more surprising



Discussion II

However:

- ▶ German *eben* can have a meaning similar to what Traugott (2006) calls a particularising focus modifier (PFM) (for Early E *even*), cf. (2).
- ▶ This helps to explain better acceptability ratings for items with *eben* manipulated for *even*.
- ▶ Traugott describes PFM-*even* as precursor (Stage 2 in 3-stage development) towards Mod.E *even*.

- (2) *Peter hat letzte Woche im Krankenhaus Maria kennengelernt. Eben diese Maria hat er heute zufällig in Supermarkt getroffen.*
'Last week, Peter met Maria at the hospital. Today, he ran into exactly that Maria by chance at the grocery store.'



Discussion III

- ▶ Possible availability of *eben* as in (2) in subjects' grammars, might facilitate accommodating a scale of (im)probability rather than items where *eben* is manipulated for *only* and *also/too*.
- ▶ The *only*-meaning can be associated with the use of *eben* only in varieties of Austrian G, as in (3) (note, all subjects in the *eben*-experiment were speakers of Federal G):

(3) *Ich habe so viel zu tun, aber ich habe eben zwei Hände.*
'I have so much to do, but I have only two hands.'

(Only Austrian G varieties)

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