

**Title of session:** The Locus of Linguistic Variation

**Type of session:** Symposium

**Organizers:**

Constantine Lignos, University of Pennsylvania (lignos@cis.upenn.edu)

Laurel MacKenzie, University of Manchester (laurel.mackenzie@manchester.ac.uk)

Meredith Tamminga, University of Pennsylvania (tamminga@ling.upenn.edu)

**Length of session:** 1 hour 30 minutes

### **Session abstract**

Early accounts of generative grammar (e.g., Chomsky 1965) postulated a firm separation between the variability present in language production and the grammar itself. Performance was regarded as extraneous, simply a frosted window obscuring the view of the key object of study, competence. Around the same time, early researchers in sociolinguistics moved to explicitly integrate variation into the grammar, developing such concepts as inherent variability (Labov, Weinreich, and Herzog 1968) and variable rules (Cedergren and Sankoff 1974). Decades of study and three major "waves" of sociolinguistic scholarship later, the study of variation has grown from a marginalized topic to a substantial linguistic discipline. We propose a symposium that seeks to revisit these two perspectives and examine whether a middle ground between them can and should be reached. The papers in this session address the relationship between variation and the grammar and discuss the extent to which the two may be dissociated.

The symposium consists of three papers which provide novel quantitative data on a total of four linguistic variables. In each case, the authors argue for an addition to the typology outlined above: an approach under which grammar and variation are linked but still show some amount of modular separation. Specifically, the session participants argue that while variation is not exclusively the purview of grammar, variation and grammar are not completely separate, either. Instead, some effects on variation support the inherent variability of Weinreich et al., while others are best localized outside of the grammar. Between the three papers, a catalog emerges of these grammar-external effects, which are shown to comprise particular conditioning factors as well as amplification in magnitude of factors that have a grammar-internal source. Each paper also provides a different perspective on how the linguistic system may be structured in order to account for the demonstrated extragrammatical effects.

Tamminga and MacKenzie present data on two linguistic variables: the alternation between *-in'* and *-ing* and the variable contraction of English auxiliaries. Their findings lead them to adopt a framework that distinguishes two components, grammar and use, allowing both to operate probabilistically but be conditioned by distinct factors. Then, extending their argument that grammatical and extragrammatical conditioning factors on variation are qualitatively different, they provide a more detailed investigation of the role of extragrammatical factors in variation. Their exploration of the interactions between stylistic and processing components of language use is in line with their vision of a highly-articulated, highly-modular account for divergent types of variable phenomena and promises to aid in the identification of grammar-internal stochastic processes.

Nycz uses evidence from gradient and variable Canadian raising of /aw/ and /ay/ to argue in favor of a two-system model of variation. She proposes that the socioindexical factors conditioning this variation are representationally distinct from the linguistic factors. The latter are the purview of a grammatical component, while the former are best modeled in a separate system and can be captured within an exemplar-theoretic framework. Her use of data from second dialect acquisition provides a unique perspective on the nature of grammar by probing its malleability in adult speakers.

Coetzee identifies two types of conditions on variable t/d-deletion: grammatical factors, which refer to elements of the surrounding linguistic context (e.g., following segment), and extragrammatical factors. He suggests an analysis of the interaction between grammatical and extragrammatical factors under which grammar is variable and both types of factors determine variation. Specifically, grammar defines the space of possible variation, while extragrammatical factors affect the realization of variation within this space. He proposes a noisy Harmonic Grammar model that provides this level of dissociation and applies it to data from t/d-deletion. Consistent with the predictions of the proposed analysis, a noisy Harmonic Grammar model allows for extragrammatical factors to affect the overall rate of deletion without overriding grammatically-specified relations.

The general consensus emerging from these three papers is that a well-developed understanding of how extragrammatical factors impinge on variation is necessary in order to accurately recognize the grammar-internal origins and conditioning of variation. Researchers who seek to construct grammatical models that capture the appropriate amount of grammar-internal variability must first factor out the extragrammatical effects that this session documents. In addition to the theoretical issues explored, this symposium also provides a demonstration of how modern quantitative methods can enable the exploration of theoretical questions in ways previously impossible. Through careful use of a combination of theoretical and quantitative approaches, the speakers in this symposium demonstrate the unity of linguistic methods and the importance of using all available empirical techniques to reach an understanding of the structure of language in the mind.

(761 words)

## References

Cedergren, Henrietta, and David Sankoff. 1974. Variable rules: Performance as a statistical reflection of competence. *Language* 50:333–355.

Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. MIT Press.

Weinreich, Uriel, William Labov, and Marvin Herzog. 1968. *Empirical Foundations for a Theory of Language Change*. Austin: University of Texas Press.

## **Elaborating extragrammatical effects on variation**

Meredith Tamminga, University of Pennsylvania

Laurel MacKenzie, University of Manchester

Paper presenters

This paper takes as a starting point the concept of inherent variability (Weinreich, Labov, and Herzog 1968, Guy and Boberg 1997). While we agree with previous researchers that some instances of linguistic variation motivate a unified treatment of variable and categorical phenomena within the grammar, we argue that some cases of variation are better localized to a distinct component of use. We explore the nature of this use component, considering the types of effects that are located there and the extent to which they may interact with other factors conditioning variation.

First, we argue for a distinction between the conditioning of variation by factors that can trigger synchronic linguistic processes and the conditioning of variation by factors that are not known to control categorical rules. We present data from the Philadelphia Neighborhood Corpus (PNC) demonstrating the effect of persistence on ING (*working ~ workin'*) and data from the PNC and Switchboard demonstrating subject length effects on auxiliary contraction (*Mary is ~ 's here*). Persistence is the repetition of a previously-used linguistic option, which is often taken to reflect psycholinguistic priming (e.g., Gries 2005). The subject length effect is the decline in contraction rate as an auxiliary's subject increases in length, previously attributed to the demands of the production-planning system (Wasow 1997, MacKenzie 2012). We argue that the long-distance persistence effect and the counting-based subject length effect differ from other factors that condition these variables, like phonological context and subject type, in that they are not found to condition invariant alternations. This supports a model that differentiates grammar and use, with both being probabilistic, and with the persistence and subject length effects localized to the use component.

We then consider the nature and typology of extragrammatical factors more carefully. We suggest that the primary division that needs to be taken into account is between style and processing (where 'processing' covers such factors as memory, planning, and activation). We draw on extended stylistically-diverse datasets from two speakers, Carol M. and Celeste S., to ask how these two processing factors interact with socio-contextual style. Preliminary exploration of the Celeste S. data, which is coded for style using Labov's Style Decision Tree (2001), indicates that persistence can shift in magnitude in response to variant frequency differences across stylistic contexts (Figure 1). Our early results on contraction in Carol M.'s speech in professional versus social situations suggest an interaction between stylistic context and the subject length effect, whereby the difference between 1-Pword and 2-Pword subjects is amplified in careful speech (Figure 2). This finding reappears on a macro scale when we compare the subject length effect in Switchboard to that shown in the PNC, whose focus on narratives and face-to-face interaction create an arguably more casual style (Figure 3).

We argue that these findings support a model where style and processing effects are distinct but can interact. We elaborate our framework to distinguish between these two types of extragrammatical

conditioning and identify several predictions for the relationship and interactions between grammar and each extragrammatical component.

(500 words)

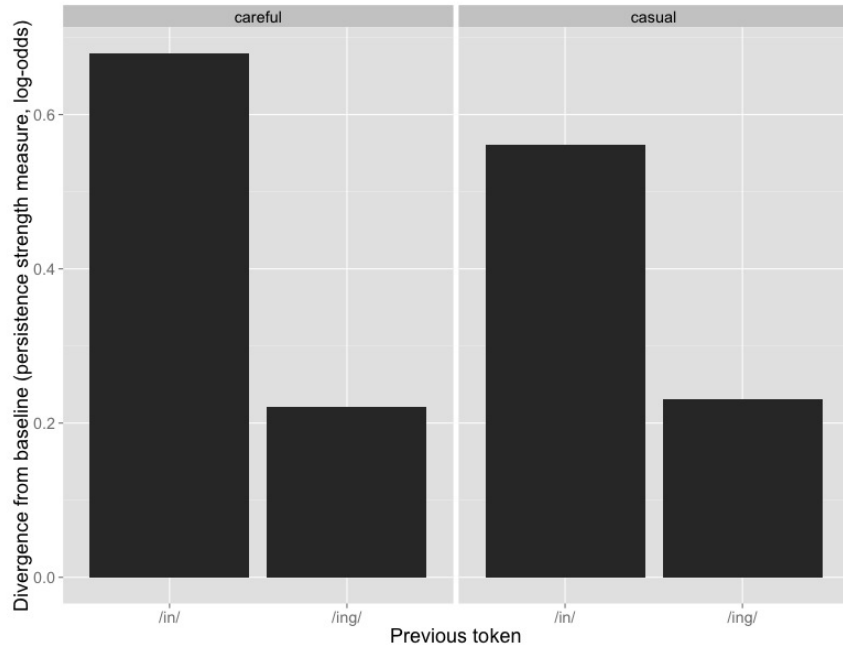


Figure 1: Interaction between persistence and style in speech of Celeste

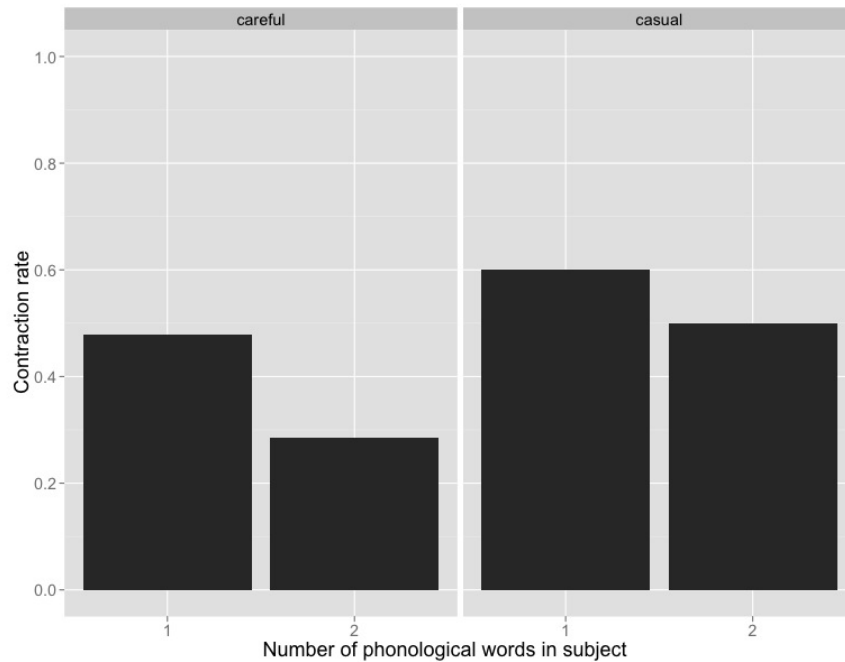


Figure 2: Interaction between subject length and style in speech of Carol M.

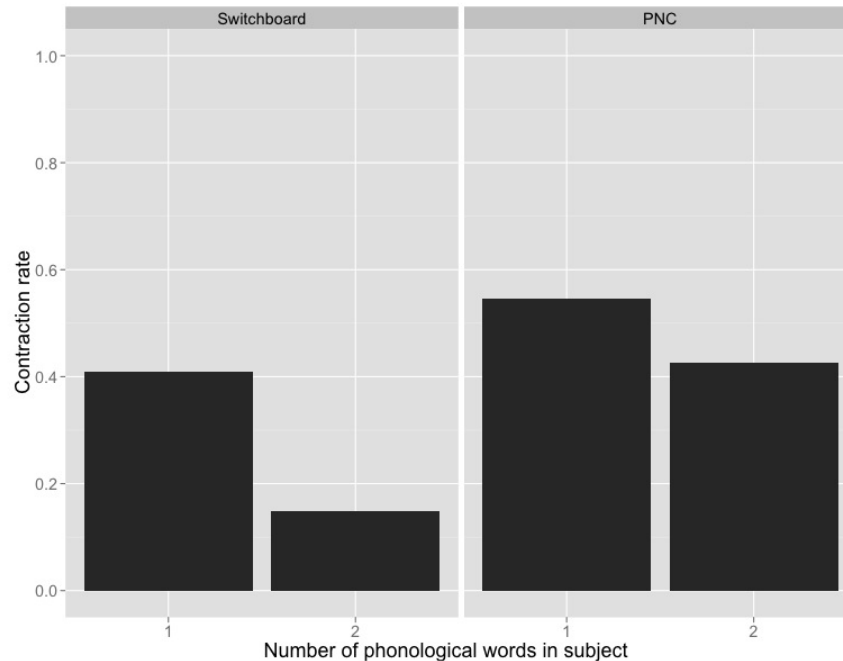


Figure 3: Interaction between subject length and corpus.

## References

- Gries, Stefan Th. 2005. Syntactic priming: a corpus-based approach. *Journal of Psycholinguistic Research* 34(4):365-299.
- Guy, Gregory R., and Charles Boberg. 1997. Inherent variability and the obligatory contour principle. *Language Variation and Change* 9:149–164.
- Labov, William. 2001. The anatomy of style-shifting. In *Style and Sociolinguistic Variation*, ed. Penelope Eckert and John R. Rickford, 85–108. New York: Cambridge University Press.
- MacKenzie, Laurel. 2012. Locating Variation Above the Phonology. Doctoral Dissertation, University of Pennsylvania.
- Wasow, Thomas A. 1997. Remarks on grammatical weight. *Language Variation and Change* 9:81–105.
- Weinreich, Uriel, William Labov, and Marvin Herzog. 1968. *Empirical Foundations for a Theory of Language Change*. Austin: University of Texas Press.

## **Variable rules or variable inputs? Process-based and representational approaches to variability**

Jennifer Nycz, Georgetown University

Paper presenter

Since the late 1960s, structurally minded variationists have argued that many variable phenomena reflect aspects of linguistic competence and as such should be accounted for within the grammar. The variable rule (Labov 1969, Cedergren & Sankoff 1974), a modification of the context-sensitive rewrite rule described by Chomsky and Halle (1968), was the first attempt to incorporate variability into grammatical processes. With the rise of Optimality Theory (Prince & Smolensky 1993) in the 1990s, views changed regarding the architecture underlying those processes, but scholars interested in variable phenomena continued to locate them within the grammar, deriving qualitative and/or quantitative patterns from different models of the variable rankings of constraints (e.g. Anttila 1997, Boersma & Hayes 2001, Coetzee 2006, Kimper 2011).

More recently, there has been some shift within sociolinguistics towards representational accounts of variation, often based in Exemplar Theory (e.g. Mendoza-Denton 2003, Hay et al 2006, Foulkes & Docherty 2006). In many exemplar theoretic (and other usage-based) accounts, variation arises not from the variable application of rules or probabilistic reranking of constraints, but from variable sampling of the representational space in constructing production targets.

This raises questions about the locus of (socio)linguistic variation: is variation in the grammar, in the representations, or outside both of these? Are different kinds of variability more easily accounted for in one component or another, or in some cases can particular variable phenomena be partially located in multiple places? Is it possible to develop a typology of variable phenomena based on where variation arises in the system?

This paper begins to address these questions through the examination of variable and gradient Canadian Raising in the speech of Canadians who have moved to the U.S. While Raising may be analyzed in terms of a phonological rule in non mobile speakers (e.g. Chambers 1973), I show how the process of second dialect adaptation in my mobile speaker set cannot be accounted for in terms of alterations of a single rule. I argue that the socioindexical aspects of this variation require reference to changing and variable representations, while linguistic conditioning factors are best located in the grammatical component. I outline a complementary-systems model (Goldinger 2007) of this variation, and discuss its broader implications for the understanding of variation.

(371 words)

### **References**

Anttila, Arto. 1997. Deriving variation from grammar. In Hinskens et al., (eds.), *Variation, Change and Phonological Theory*. John Benjamins: 35–68.

Boersma, Paul & Bruce Hayes. 2001. Empirical tests of the gradual learning algorithm. *Linguistic*

*Inquiry* 32:45–86.

Cedergren, Henrietta J. & David Sankoff. 1974. Variable rules: Performance as a statistical reflection of competence. *Language* 50:333–355.

Chambers, J.K. 1973. Canadian Raising. *Canadian Journal of Linguistics* 18: 18–35.

Chomsky, Noam & Morris Halle. 1968. *The sound pattern of English*. Harper and Row.

Coetzee, Andries. 2006. Variation as accessing ‘non-optimal’ candidates. *Phonology* 23:337–385.

Foulkes, Paul & Gerard Docherty. 2006. The social life of phonetics and phonology. *Journal of Phonetics* 34:409–438.

Goldinger, Stephen. 2007. A complementary systems approach to abstract and episodic speech perception. *Proceedings of ICPHS*.

Hay, Jennifer, Aaron Nolan, & Katie Drager. 2006. From fush to feesh: Exemplar priming in speech perception. *Linguistic Review* 23:351–379.

Kimper, Wendell. 2011. Locality and globally in phonological variation. *Natural Language and Linguistic Theory* 29(2).

Labov, William. 1969. Contraction, deletion, and inherent variability of the English copula. *Language* 45:715–762.

Mendoza-Denton, Norma, Jennifer Hay, & Stefanie Jannedy. 2003. Probabilistic sociolinguistics: Beyond variable rules. In *Probabilistic linguistics*, ed. Rens Bod, Jennifer Hay, and Stefanie Jannedy, 97–138. MIT Press.

Prince, Alan & Paul Smolensky. 1993. Optimality Theory: Constraint interaction in generative grammar. *Technical Report 2*, Rutgers University.

## A grammar-delimited variable space

Andries W. Coetzee, University of Michigan

Paper presenter

Approaches to variation in phonology (and other domains of grammar) can be classified into three groups:

- (1) a. *No role for grammar*: In early generative phonology, variation was either explicitly or implicitly considered to fall outside the domain of grammar. Grammar was assumed to produce categorical outputs, which may be realized variably under influence of non-grammatical factors.
- b. *Equal role for grammatical and non-grammatical factors*: In the Labovian variationist approach, grammar itself is variable. The widely-used Cedergren/Sankoff (1974) implementation of this approach makes no formal distinction between grammatical and non-grammatical factors. Variation data are coded for factors (grammatical or not), and are then subjected to regression analyses. However, all factors are treated alike, and non-grammatical factors can invert the contribution of grammar.
- c. *Only grammar*: Purely grammatical models have been developed in constraint-based phonology since the mid 1990's (Anttila 1997, Boersma & Hayes 2001, etc.). These models make no allowance for non-grammatical factors to contribute, and accounts for all aspects of variation by grammar alone.

In this presentation, I will develop a fourth possibility that draws on, yet also crucially differs from, the earlier models:

- (2) a. *Variable grammar*: Grammar itself is variable – like (1b) and (1c), different from (1a).
- b. *Not grammar alone*: Grammatical and non-grammatical factors co-determine variation – like (1b), different from (1c).
- c. *Grammar dominant*: Grammar defines the space of possible variation, and non-grammatical factors can only affect how variation is realized within this grammar-defined space – different from (1b).

The model will be developed in a version of noisy Harmonic Grammar (HG) that allows non-grammatical factors to scale the weights of faithfulness constraints up or down (as in Coetzee & Kawahara 2013). I will use English t/d-deletion to illustrate the model, focusing on the influence of the following phonological context on t/d-deletion.

- (3) a. *Grammatical limitations*. It has been shown for countless varieties of English that t/d deletes more in pre-consonantal (*west bank*) than pre-vocalic (*west end*) or pre-pausal (*west.*) contexts (Labov 1989). This is captured in HG by using positional faithfulness constraints against deletion in pre-vocalic and pre-pausal contexts (MAX-PRE-V, MAX-PRE-PAUSE). No such positional constraint, however, is assumed for pre-



consonantal context. Pre-consonantal deletion therefore violates only general MAX, while deletion in the other contexts violates general MAX and a positional MAX-constraint. Consequently, it is impossible to model a language with more deletion pre-pausally and/or pre-vocally than pre-consonantly.

- b. *Influence of non-grammatical factors.* Non-grammatical factors move faithfulness constraint weights (like the MAX-constraints) up for factors inhibiting deletion, and down for factors promoting deletion. However, non-grammatical factors cannot add or eliminate constraints, and therefore cannot undo the grammatically expressed preference for deletion in pre-consonantal position.

I will review evidence from the sociolinguistic variationist literature on t/d-deletion showing that this agrees with available data. Non-grammatical factors can result in more or less deletion overall, but can never invert the grammatically specified relation between pre-vocalic/pre-pausal and pre-consonantal contexts.

(485 words)

## References

- Anttila, Arto. (1997). Deriving variation from grammar. In Hinskens, Frans, Roeland van Hout & Leo Wetzels (eds.) *Variation, Change and Phonological Theory*. Amsterdam: John Benjamins, 35-68.
- Boersma, Paul and Bruce Hayes. 2001. Empirical tests of the Gradual Learning Algorithm. *Linguistic Inquiry* 32: 45-86.
- Cedergren, Henrietta J. & David Sankoff. (1974). Variable rules: Performance as a statistical reflection of competence. *Language* 50, 333-355.
- Coetzee, Andries W. & Shigeto Kawahara. (2013). Frequency biases in phonological variation. *Natural Language and Linguistic Theory* 31:47-89.
- Labov, William. (1989). The child as linguistic historian. *Language Variation and Change* 1, 85-97.