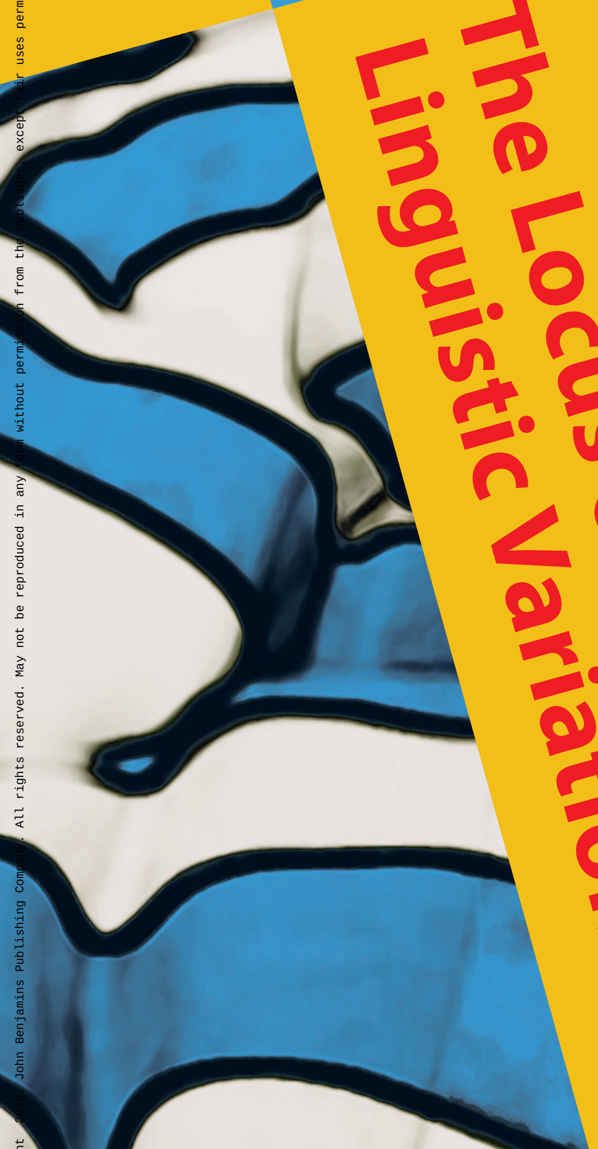
Constantine Lignos, Laurel MacKenzie and Meredith Tamminga (eds.)

The Locus of Linguistic Variation



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The Locus of Linguistic Variation

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The Locus of Linguistic Variation
Edited by Constantine Lignos, Laurel MacKenzie and Meredith Tamminga

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The Locus of Linguistic Variation

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Introduction

The locus of linguistic variation

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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 to 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 (Weinreich, Labov, and Herzog 1968) and variable rules (Cedergren and Sankoff 1974). Decades of study and three major "waves" of sociolinguistic scholarship later (Eckert 2012), the study of variation has grown from a marginalized topic to a substantial linguistic discipline. This volume revisits the two early perspectives sketched here, asks what we have learned in the intervening decades, and puts forward for consideration new views on the relationship between variation and the grammar.

The papers in this volume address both intra- and inter-dialectal variation. They draw on several sources of data, including corpora of naturally-occurring speech and judgment studies, and in many cases they base their conclusions on lesser-studied varieties of familiar languages, such as Northwest British Englishes and varieties of Canadian French. The consistent thread running through these papers is that they all address how the patterning of surface variation can shed light on the grammatical representation of variable phenomena.

The papers by Biggs and Comeau take up this theme through cross-dialectal comparison. Each of these authors compares the behavior of multiple regional varieties with regard to a particular variable, and each argues that observed differences between those regional varieties have an abstract syntactic source. **Biggs** investigates theme passives of ditransitive verbs (e.g. *It was given her*) in varieties of Northwest British English. She shows that, although theme passives are present in a number of different regional varieties (Liverpool, Manchester, Ormskirk), these varieties differ in several related phenomena, including whether they can allow

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theme passives with a definite DP subject, the extent to which they allow preposition drop, and the types of verbs and goal arguments that may occur with their theme passives. Biggs argues that these differences can be explained if theme passives have a different abstract representation in Liverpool than in other Northwest Englishes. **Comeau** examines variation in the structure of yes-no questions and the realization of future temporal reference in Acadian and Laurentian French. He finds that a single constraint, sentential polarity, operates in dramatically different ways between the two varieties. Specifically, in Laurentian French, polarity is a strongly conditioning factor on each of these two variables, to the extent that negative contexts effectively allow only one variant of each variable. By contrast, in Acadian French, polarity does not play a role: all variants of each linguistic variable under study are allowed in both positive and negative contexts. Comeau argues that this difference between the two varieties has a structural source, namely, a negative head present in Laurentian French but absent in Acadian French, which blocks the occurrence of particular variants in the former variety. The take-home message from both of these papers is that patterns of surface variation can provide evidence for abstract structure.

Two other papers investigate the construct of the sociolinguistic variable and the relationship of its variants to one another. **Dinkin** provides a case study of the variant *like* across several distinct variables: as a discourse marker, as a sentence-medial discourse particle, as an approximative, and as part of the verb of quotation *be like*. Surveying the literature, he demonstrates that *like* in all of these variables bears similar social evaluation and is increasing in apparent time. He argues that speakers have targeted *like*, irrespective of the variable it belongs to, for a situation of variant-centered change. In light of this, Dinkin advocates for the traditional variable-centric sociolinguistic analysis to be complemented by renewed focus on the social evaluation and behavior of individual variants. **Haddican, Johnson, and Hilton** similarly find evidence for the independent behavior of variants, in this case through a series of judgment tasks in English and Norwegian. They find that speaker acceptability judgments do not necessarily show inverse patterning for the two variants of a variable: for instance, in the case of the English particle verb alternation, the acceptability of verb–object–particle order has increased in apparent time, while the acceptability of verb–particle–object order has remained stable, rather than decreasing in a complementary manner. However, they argue that there is nevertheless support for a single abstract operation uniting the variants of this and other variables; this can account for what they describe as a synchronic Constant Rate Effect (Kroch 1989), whereby speakers show constant constraints on the alternation between the two variants even when they differ in their baseline rate of application. Both papers, then, demonstrate that the

relationship of variants to their variables is more complex than has traditionally been recognized, and thus open up new questions concerning the representation of items in competition.

The final two papers in the volume relate variable to categorical patterns in language and use them to draw conclusions about how alternations of either type may be abstractly represented. **Burnett** starts from the observation that those factors which determine grammaticality contrasts in some languages often determine probabilistic patterns in others. She then provides novel data showing that this holds true for negative concord patterns: an existing model of categorical negative concord in languages like Spanish (couched in an Optimality Theoretic framework) can be extended to capture patterns of variable negative concord in Montreal French, when constraints are made stochastic. An important point of her paper is that, because constraints on categorical behavior are part of grammar, when we see those same constraints affecting variable behavior too, this must be because variation, and the conditions that govern it, are part of grammar. The issue of overlap between constraints on categorical alternations and constraints on variable ones is raised in the paper by **Tamminga, MacKenzie, and Embick** as well. Tamminga et al., calling for a new focus in sociolinguistic research on the dynamics of variation in individuals, outline a theory in which language production is shaped by three types of factors: internal linguistic, sociostylistic, and psychophysiological. They demonstrate that zeroing in on the individual as the source of surface variability can uncover new types of quantitative patterns, and that internal linguistic and psychophysiological factors must be architecturally distinct. This last point takes the line of reasoning from Burnett's paper cited above – that where conditions on variable and categorical alternations overlap, variation is in the grammar – and articulates its converse: in the many documented cases where variable alternations are conditioned by factors which are *not* found to condition categorical ones, a grammar-external system must be at play. A model of language production that separates domain-general psychophysiological processes from grammatical computations can account for the operation of certain factors on variable but not categorical alternations. Both papers thus provide insights into how variable surface patterns may be generated by the many systems involved in language production.

In sum, the papers in this volume go beyond simply documenting patterns of surface variation to seeking explanations for their existence in the nature of mental representation and abstract processes. They underscore the fact that, though the question of how variation could be incorporated into grammar was first raised decades ago, there is still much to be learned on this front. We hope that this volume can help bring renewed attention to this important line of inquiry.

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*. Cambridge, MA: The MIT Press.

Eckert, Penelope. 2012. Three waves of variation study: The emergence of meaning in the study of sociolinguistic variation. *Annual Review of Anthropology* 41:87–100.

Kroch, Anthony. 1989. Reflexes of grammar in patterns of language change. *Language Variation and Change* 1:199–244.

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

Locating variation in the dative alternation

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This paper investigates the structure of the dative alternation in dialects of Northwest British English. This includes theme passivization of apparent Double Object Constructions (*It was given her*). Detailed investigation shows that different dialects use distinct licensing strategies to derive the Theme passive structure. The main variety discussed is Liverpool English, where Theme passivisation is shown to derive from a prepositional dative with a null preposition. In contrast, Manchester English, a neighbouring variety, derives Theme passives of the Double Object Construction, via an Applicative configuration (Haddican 2010, Haddican and Holmberg 2012). The study shows that a range of syntactic properties and restrictions on a structure can be traced back to variation in the functional lexicon.

Keywords: ditransitives, dialectal variation, syntactic variation, null preposition, parameters

1. Introduction

This paper takes as its starting point the availability of Theme passives of ditransitive verbs in 'Northwest British dialects', linguistic varieties spoken in Northwest England.

(1) a. **It** was sent him.
b. **It** was given her.

Previous studies on the Northwest have noted the availability of pronominal Theme passives across the region, including in varieties in Southwest Lancashire (Siewierska & Hollman 2007), Manchester (Haddican 2010, Haddican and Holmberg 2012), and Ormskirk (Myler 2011, 2013). Corpus-based study has also identified the structure as a feature of the region (Gerwin 2013, 2014).

In addition to pronominal Theme passives, new data shows that speakers of Liverpool English permit Theme passivisation of definite NPs:[1]

1. Crucially (2) involves definite NPs in surface subject position. It is well known that British English generally allows Theme passivisation of indefinite NPs (Woolford 1993, Ura 2000;

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(2) a. **The book** was given the teacher.
b. **The package** was sent her nan's.

(2) does not appear to be accepted in other varieties of English, including other Northwest varieties.[2]

This paper shows that the Theme passives in (1) have different underlying syntactic structures in the closely related Northwest varieties. I argue that Theme passivisation derives from a prepositional dative with a null preposition in the Liverpool variety. In contrast, following previous work, in Manchester English theme passives derive from a Double Object Construction, in an Applicative configuration (Haddican 2010, Haddican and Holmberg 2012).

The data seem to constitute an example of parametric variation, where 'parameter' refers to a single morphosyntactic shift that results in a systematic and predictable array of phenomena through the rest of the grammar. The case study also supports the hypothesis that apparent syntactic variation reflects variation in the distribution of morphosyntactic features on functional heads, rather than variation in the types of syntactic operation available in the derivation, or (for this particular set of data) variation in the post-syntactic component. The distinct licensing strategies result in systematic differences between the varieties for a range of diagnostics, notably in Theme passivization, as well as restrictions on (a) the status of the type of Theme that occurs in these datives (pronoun *vs*. noun), (b) the class of ditransitive verb, and (c) the compatibility of different Goal arguments.

Section 2 lays out the scope and methodology of the paper. Section 3 shows that in Liverpool English, Theme passives derive from an underlying prepositional dative structure with a null preposition. Section 4 presents an analysis of the syntax of the null preposition. Section 5 contrasts Liverpool judgements with

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McGinnis 1998, 2001; Anagnostopoulou 2003; Jeong 2007):

(i) A reward was offered the man. (Jespersen 1927:279, cited in Woolford 1993: fn.8)

(ii) A watch was given him.

Speakers outside of the Northwest typically do not accept pronominal or definite Theme passives. The widespread availability of indefinite Theme passivisation suggests it is a distinct phenomenon from the Theme passivisation found in the Northwest. I leave this to future research.

2. Speakers from Chester seem to accept the full NP in limited environments; for example with the verb *give*, (2a) is judged possible, but (2b) is not. This may reflect influence from the Liverpool variety. Chester is located around 20 miles south of Liverpool, and 40 miles southwest of Manchester. Thanks to Rebecca Woods for judgements and discussion.

'Manchester English' (as reported in Haddican 2010), and shows that the analysis of the dative alternation in Haddican and Holmberg (2012) correctly establishes a set of restrictions on the dative alternations in 'Manchester English' that are systematically distinct from those found in 'Liverpool English'. Section 6 discusses the locus of this variation in the grammar.

2. Scope and methodology

This paper investigates the variable availability of a set of constructions in varieties of Northwest British English. It reports on the results of a survey of groups of speakers of different regional backgrounds, but of closely related linguistic varieties (details given below), based on the premise that comparison of closely related linguistic varieties controls the set of possible grammatical variables, allowing for systematic and precise identification of varying features between groups of speakers (Kayne 2005).

Data were collected from a grammaticality judgement questionnaire. For the survey, speakers were told at the outset that dialectal judgements were of interest, rather than their knowledge of prescriptive grammatical forms. Examples of forms from other dialects of English (*I'm going t' pub)* that were known not to be part of the Northwest speakers' grammars were included in the survey to illustrate to consultants what might be considered a dialectal item, and to provide a control from which speakers could assess whether they would or would not accept a particular form in their own variety.

The survey comprised constructed sentences. Questions were delivered simultaneously in verbal and written form. Consultants judged sentences as 'acceptable', 'marginally acceptable', 'marginally unacceptable', 'unacceptable', or 'don't know'. Examples judged marginal will be indicated through use of a question mark, or discussion of the example in the main text. Consultants were also given the option to rank minimal pair examples relative to one another, and of providing their own comments on their intuitions. Each consultant was presented with roughly a third of the data reported in this paper; there was concern that the full set would induce judgement fatigue.

The 'Liverpool English' results reflect the judgements of five male and four female speakers aged between 20–30. These consultants lived in the city of Liverpool (specifically, in one or more of the wards Toxteth, Allerton, Childwall, Wavertree, or Kensington) until at least the age of 18. Three of the informants have completed a Bachelor's degree in a University outside of Liverpool, three have obtained a Bachelor's degree from a university in Liverpool, and three left formal education at 16. None have studied linguistics or have any linguistic-related

training. Seven of the informants (from across the educational demographic) have lived outside Liverpool for at least three years. Education, sex, and place of residence since the age of 18 did not appear to be relevant factors in whether a particular linguistic form was deemed acceptable or not, although it is possible these factors might affect the tendency to use or produce particular forms.[3]

The same questionnaire was also delivered to a speaker from Southport[4] (age 27) and to two Manchester English speakers (ages 25 and 29). These speakers gave systematically distinct judgements from the Liverpool speakers, but which correspond to the judgements reported in Haddican (2010) for 'Northwest' speakers. Haddican (2010) does not control for precise regional background of participants (Haddican p.c.).[5] I label the judgements reported in Haddican (2010) and Haddican and Holmberg (2012) as 'Manchester English'.

Next, as will be discussed in Section 3, the same survey was delivered to speakers from Liverpool over the age of 60. These speakers again gave distinct judgements from the younger group of Liverpool speakers, patterning with the Manchester speakers.

Finally, the questionnaire was delivered to two 'Southern' (Oxfordshire and Bedfordshire) speakers as a control. These speakers gave different judgements from all of the Northwest English speakers, but consistent with the dative alternation judgements reported in the syntactic literature. This variety is labelled 'Standard (British) English'.

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3. Use is not examined here, as the small size of the survey does not lend itself to meaningful exploration of this question, and data sets of sufficient size are not readily available. A key problem is the rarity of the ditransitive structures in natural contexts. Bresnan and Ford (2010), Siewierska and Hollman (2007), and Gerwin (2014) *a.o.* give full discussion of the frequency of different types of ditransitive verb, and the forms those verbs typically take in corpora. Gerwin (2014) presents a detailed study of the dative alternation in these varieties based on FRED and the BNC; however, these corpora were compiled in the 1970s and 1990s, and are not expected to include the Liverpool English data, which appears to be a more recent innovation (see Section 4.1).

4. Southport is around 20 miles north of Liverpool and 40 miles northwest of Manchester.

5. Haddican (2010:2427) actually reports acceptability of full NP Theme-Goal Ditransitives (the pattern I label 'Liverpool English') amongst a small group of speakers I label 'Manchester English'. Similarly, Gerwin (2014:152) identifies seven attestations of full noun Theme-Goal ditransitives form across England in a corpus-based study. It is possible that these individual speakers have the grammar I label 'Liverpool English'. The claim of this paper is not that certain linguistic forms will only occur in precise geographical regions. Rather, the claim is that the availability of such a construction will correspond to systematic and productive variation in other aspects of that individual's grammar.

The labels applied post-hoc to different groups are adopted to highlight the systematic nature of the variation between the grammars of groups of speakers.

3. Variation in the dative alternation

3.1 Background: The dative alternation in Northwest varieties

The dative alternation is known to have variant forms in Northwest varieties, and it seems likely that the theme passives in (1)–(2) derive from these local variants.

In most varieties of English, ditransitive verbs are associated with two possible structures. The first is a Prepositional Dative, where NP_{Theme} precedes NP_{Goal} (or recipient, or source, etc.), with NP_{Goal} marked by a preposition (3a). The second is the double object construction (DOC), where NP_{Theme} follows NP_{Goal} (3b), and NP_{Goal} is not marked by a preposition. This pair of constructions is known as the dative alternation.

(3) a. John gave the book to Mary. THEME > $_{PP}$ GOAL *Prepositional Dative*
b. John gave Mary the book. GOAL > THEME *DOC*

At least superficially, Northwest British English varieties appear to permit local object movement, giving rise to a Theme>Goal order in ditransitives (Hughes and Trudgill 1979; Gerwin 2013). I refer to the Theme>Goal ordering as a Theme-Goal ditransitive, abbreviated to TGD, following Haddican (2010) and Haddican and Holmberg (2012). In a TGD the Theme precedes the Goal (as in a Prepositional Dative), but the Goal is not marked by a preposition (as in a DOC).

(4) a. John gave it to her. Theme > $_{PP}$Goal *Prepositional Dative*
b. John gave her it. Goal > Theme *DOC*
c. John gave it her. Theme > Goal *Theme-Goal ditransitive*

TGDs, like Theme passives, are known to be associated with Northwestern and Western varieties of England (Hughes & Trudgill 1979); TGDs are also associated with the Midlands (Gerwin 2013), the region immediately south of Liverpool and Manchester. The structure is also reportedly accepted by some speakers in Wales and from certain southern varieties, including London and Cornwall (Hughes and Trudgill 1979; Siewierska and Hollmann 2007; Haddican 2010: 2425; Haddican and Holmberg 2012; Gerwin 2013, 2014). There do not appear to be any reports of TGDs in Northeastern English or Scottish varieties.

This geographic pattern has led to the suggestion that the availability of the Theme passive (5a) correlates with, and may be the result of, the availability of TGDs (5b) (Haddican 2010, Haddican and Holmberg 2012; see also Anagnostopoulou 2003).

(5) a. Mary gave **it** him. *Theme>Goal*
b **It** was given him (by Mary). *Theme passive*

A second reason for believing there may be a correlation between the availability of TGDs and the availability of a Theme passive relates to a correlation in the type of noun phrases permitted in the two structures. The following examples show that Manchester speakers only permit pronominals in TGDs, and only permit pronominals as the derived subject of Theme passives. They do not permit full NP Themes in either TGDs, or in Theme passives.

(6) a. Mary gave **it** the teacher. (^{OK}Liverpool, ^{OK}Manchester)
b. **It** was given the teacher. (^{OK}Liverpool, ^{OK}Manchester)

Liverpool speakers accept the pronominal structures in (6), but also accept NP Themes in both TGDs and in Theme passives.

(7) a. Mary gave **the book** the teacher. (^{OK}Liverpool, *Manchester)
b. **The book** was given the teacher. (^{OK}Liverpool, *Manchester)

(8) a. Mary sent **the package** her nan's. (^{OK}Liverpool, *Manchester)
b. **The package** was sent her nan's. (^{OK}Liverpool, *Manchester)

The correlation between the two constructions and pronominal sensitivity further suggest that the Theme passive construction may depend on the availability of TGDs.

Haddican (2010) and Haddican and Holmberg (2012) discuss this correlation as a possible one-way implication, where the availability of Theme passives is reliant on the possibility of TGDs in the same dialect:

(9) The availability of Theme passivisation correlates with the availability of TGDs. (Haddican 2010, Haddican and Holmberg 2012: 199)

Following McGinnis (1998, 2001), short direct object movement, giving rise to the TGD, might be taken to feed derivation of the Theme passive. We return to this possibility in more detail in Section 5.

3.2 Theme passives and TGDs in Liverpool English

This Section presents evidence that Liverpool English TGDs do not derive via local direct object (NP_{Theme}) movement in a DOC, but instead derive from the Prepositional Dative.

Building on Haddican (2010) we can establish the underlying structure of the TGD using the well-known observation that use of the different forms of the dative alternation in English is constrained by a host of factors such as the semantics of the ditransitive verb (Green 1974, Oehrle 1976, Pesetsky 1995, Harley 2002; cf. also Haddican 2010). The traditional distinction between the two constructions is that the DOC implicates transfer of possession, while the Prepositional Dative encodes transfer of location, but not necessarily possession. The generalisation can be illustrated through negation (Oehrle 1976):

(10) a. James taught the students Japanese, ??but they didn't learn anything.
b. James taught Japanese to the students, ✓but they didn't learn anything.

The argument goes that it is not felicitous to negate possession in (10a), as DOCs necessarily imply transfer of possession (here, knowledge of Japanese). In contrast, a Prepositional Dative does not necessarily imply transfer of possession, so it is possible to negate a possession relation (10b). Leaving aside the adequacy and analysis of this generalisation, the intuition captures the observation that speakers systematically use and interpret the Prepositional Dative ditransitive structure with allative semantics, and the DOC with possessive semantics. The distinction holds across a range of verb classes, and therefore provides a diagnostic to determine the underlying structure of TGDs (as in Haddican (2010)), and consequently the structure underlying the availability of theme passivisation.[6]

First, 'verbs of continuous imparting of force' (*carry*, *pull*, *push*, *lift*, *lower*, *haul*) are fully acceptable as Prepositional Datives, but are degraded in DOCs (Pinker 1989, Levin 1993; Bresnan and Nikitina 2009). This contrast is consistent with Liverpool speakers' judgments. Liverpool speakers accept TGDs with verbs of continuous imparting of force, suggesting they treat TGDs as Prepositional Datives. Crucially, these speakers reject verbs of continuous imparting of force as DOCs.

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6. Further diagnostics distinguishing prepositional datives from the DOC include animacy and idiom-based tests. As the results of these grammaticality judgement tests (although consistent with the conclusions drawn here) were less clear than for those diagnostics reported in the main text, I do not discuss them. I could not find any evidence of a PCC effect amongst the Liverpool English speakers. This result is again consistent with the prepositional dative analysis, but as this is a subtle judgement I leave discussion to one side.

(11) a. She hauled her shopping to the front door. PD
b. *She hauled the front door her shopping.[7] DOC
c. She hauled her shopping the front door. TGD

(12) a. She pushed/hauled/lifted it to me. PD
b. *She pushed/hauled/lifted me it. DOC
c. She pushed/hauled/lifted it me. TGD

(Liverpool)

'Manner of communication' verbs (*whisper*, *yell*, *bark*, *grumble*, *mutter*) also typically occur as Prepositional Datives, and are reported as degraded in DOCs (Bresnan & Nikitina 2009: 165). Again, this verb class is compatible with TGDs in Liverpool British English, but not in DOCs.

(13) a. She muttered the answer to my friend. PD
b. *She muttered my friend the answer. DOC
c. She muttered the answer my friend. TGD

(14) a. She whispered/shouted it to me. PD
b. *She whispered/shouted me it. DOC
c. She whispered/shouted it me. TGD

(Liverpool)

Finally, 'latinate'[8] verbs (*contribute*, *distribute*, *exhibit*, *reveal*, *conceal*, *clarify*, *compose*, *release*) are also typically judged better in Prepositional Dative structures

7. Some speakers (of both Liverpool and non-Liverpool British English) report the DOC examples in (11b) and (12b) as acceptable, in contrast to the judgments described in the main text. However, acceptability seems to be linked to a benefactive interpretation, 'on behalf of'. Crucially this is not the reading associated with the TGD, and for this reason I exclude this judgement. The status of such 'benefactives' could provide rich ground for future investigation. For example, Liverpool speakers permit passivisation of certain benefactive classes: 'The toy was bought the child' was accepted by all consultants; in contrast Haddican (2010) reports this structure is not accepted by Manchester English speakers. An anonymous reviewer also points out that some Northwestern dialect speakers permit Theme-beneficiary orders such as '*She baked/bought it me*'. This structure is also available in Liverpool English, as is the full NP Theme-beneficiary version: '*I bought the toy the child*' (cp. 11b, 12b). Other examples such as??'*I made the cake (for) Bill*', were possible for some speakers, but only where the Goal (*Bill*) was interpreted as possessing the cake. True benefactives of intransitives (*'*I danced Mary*') were ungrammatical.

These structures were not tested systematically in the present study, and from this limited data it is not clear that the analysis adopted here for prepositional datives (see Section 4) should be extended to this class. I leave full investigation to future research.

8. 'Latinate' is an insufficient etymological characterization of the class, as many verbs (such as *refuse*: REFUTARE or *deny*: *DE+NEGARE) are of latinate origin (Adam Ledgeway, p.c.), but, as discussed in the text, exhibit a distinct behaviour. I adopt 'latinate' for consistency with previous literature.

than in DOCs. Once again, TGDs pattern with Prepositional Datives among Liverpool speakers.

(15)	a.	She donated her loose change to the Alder Hey fund.	PD
	b.	*She donated the Alder Hey fund her loose change.	DOC
	c.	She donated her loose change the Alder Hey fund.	TGD
(16)	a.	She donated it to him.	PD
	b.	*She donated it him.	DOC
	c.	She donated it her.	TGD
	d.	She donated it it.	TGD
			(Liverpool)

Next, and crucially, speakers of Liverpool English reject TGDs with verbs that are generally rejected as Prepositional Datives. For example, 'prevention of possession verbs' (*refuse*, *cost, deny*) as well as verbs including *issue*, *ask*, and *envy*, are canonically accepted in DOCs but degraded in Prepositional Dative structures (Levin 1993; Bresnan and Nikitina 2009: 167). As predicted, Liverpool speakers do not accept these verb classes in TGDs. The data strongly suggest that Liverpool speakers treat TGDs as Prepositional Datives.

(17)	a.	*The car cost five grand to Beth.	PD
	b.	The car cost Beth five grand.	DOC
	c.	*The car cost five grand Beth.	TGD
(18)	a.	*She denied the ice cream to the child.	PD
	b.	She denied the child the ice cream.	DOC
	c.	*She denied the ice cream the child.	TGD
(19)	a.	*She envied the ice cream to the child.	PD
	b.	She envied the child the ice cream.	DOC
	c.	*She envied the ice cream the child.	TGD
(20)	a.	*She refused it to me.	PD
	b.	She refused me it.	DOC
	c.	*She refused it me.	TGD
			(Liverpool)

These data are unexpected if the Liverpool TGD derive from a DOC. If TGDs are Prepositional datives with a null preposition, it is plausible to conclude that the Theme passive derives from a Prepositional Dative that lacks an overt preposition.

(21)	a.	It was given [to_{NULL}] her.	*Theme passive*
	b.	I gave it [to_{NULL}] her.	*TGD/ Prepositional Dative*
			(Liverpool)

If Theme passives derive from TGDs, and TGDs themselves are Prepositional Datives, Theme passives should only be available with those verb classes

canonically associated with Prepositional Datives. This prediction appears to be true: in the Liverpool variety, Theme passivisation is possible with manner of communication verbs, verbs of continuous imparting force, and latinate verbs, but not with verbs of prevention of possession.

(22) a. Her shopping was hauled the front door by a kindly neighbour.
b. The code was whispered Mary before Sally knew what was happening.
c. The answer was muttered my friend, who passed it on to me.
d. The winnings from last week's draw were donated Alder Hey Hospital.

(23) a. It was whispered her before she knew what was happening.
b. It was donated the hospital last week.

(24) a. *Five grand was cost the car.
b. *The ice cream was denied the child.
c. *The ice cream was envied the child.
d. *It was refused her.

(Liverpool)

In short, the Liverpool variety exhibits the same patterns in the dative alternation observed in more familiar varieties of English, including in the availability of passives of ditransitives; this variety simply has a null preposition that is not available in 'standard' varieties.

4. Preposition-drop

4.1 The syntax of preposition-drop

This Section determines the syntax of [to_{NULL}], focusing on its capacity to license the Goal in both active and passive contexts.

The availability of [to_{NULL}] in Liverpool appears to derive from the availability of preposition-drop found across the region, of the following kind:

(25) a. I want to go (to) Chessington.
b. John came (to) the pub with me.

(Haddican and Holmberg 2012: 74; Myler 2013: 189)

This phenomenon has been reported in a number of varieties of Northwest British English, including Manchester (Haddican 2010), and South-West Lancashire and Merseyside (Myler 2011, 2013). In each variety, it is the preposition *to* that is variably null. As Myler (2013) observes, the optional use or non-use of the overt preposition triggers no difference in thematic or truth-conditional meaning, and speakers appear to be unconscious of the use or non-use of the overt form in discourse. Nonetheless its availability is highly systematic. For example, Myler (2011,

2013) observes that Ormskirk p-drop is restricted to a narrow class of verbs: verbs of motion (whose Goals can only be interpreted as directional) such as *go*, *run*, *drive*, *jog*, *pop*, and *nip* ('to go somewhere with the intention of returning quickly'); and the ditransitives *take* and *send* (Myler 2013: 190).

The Liverpool variety permits far more extensive preposition-drop than these neighbouring varieties.[9] First, Liverpool speakers accept preposition-drop in a range of allative *to* contexts, such as non-allative and manner-of-motion contexts:

(26) a. Swim the end and back. = 'Swim to the end and back.'
b. She ambled the shop. = 'She ambled to the shop.'
c. He's flying Germany tomorrow. = 'He's flying to Germany tomorrow.'
d. The USSR was the first to fly the moon. = '…to fly to the moon.'
e. He meandered his way the office. = 'He meandered his way to the office.'
f. Joe plodded the pub. = 'Joe plodded to the pub.'

In addition, and again in contrast to the Ormskirk variety (Myler p.c.), Liverpool speakers can leave stative *at* phonetically unrealised. This is possible with (at least) stative predicates, the copula, and unaccusative predicates.

(27) a. She's staying John's tonight. = 'She's staying at John's tonight.'
b. I'm working the library today. = 'I'm working at the library.'
c. He's his dad's this weekend. = 'He's at his dad's house this weekend.'
d. She'll be the office late tonight. = 'She'll be at the office late tonight.'
e. He just arrived the gym. = 'He just arrived at the gym.'

I re-label [to_{NULL}] as 'κ' as a neutral label to cover the distribution of the null form as interpretable as both directional *to* and stative *at*.

The availability of *at*-drop is the first clue that Liverpool null prepositions are significantly different from preposition-drop in the rest of the Northwest: (26) and (27) are ungrammatical in the Ormskirk variety (Myler p.c.), and preliminary investigation suggests preposition-drop in the rest of the Northwest region corresponds to the system Myler (2013) identifies for Ormskirk.

The distribution of κ is not completely free in Liverpool English, however: only *to* and *at* may be null; the source preposition *from*, containment *in*, and apparently all other prepositions must be overt.

(28) a. He started *(from) the station. *(source)*
b. This cheese comes *(from) Lanarkshire. *(provenance, origin)*
c. He put the beers *(in) the fridge. *(containment)*

9. Ormskirk is around 13 miles north of Liverpool.

d. The plane will shortly be */?(in) the air. *(surrounding)*
e. Can you finish *(in) three hours? *(duration)*
f. She's *(in) a coma. *(state)*
g. She went *(with) her friends. *(alongside)*
h. The bread was cut *(with) a knife. *(by means of)*
i. She'd lived ??/*(on) that street her whole life.[10]
j. I haven't got any money *(on) me.
k. He left everything *(on) the table for you.

(Liverpool)

The prepositions that may be dropped in Liverpool English – *to* and *at* – thus fit the typology proposed in Caponigro and Pearl (2008: fn.383), who suggest, 'across languages, only the unmarked stative and directional Ps *at* and *to*, not the marked source directional preposition *from*, can fail to be pronounced.'[11]

This restricted distribution offers a first diagnostic to relate the availability of κ to the availability of Theme passivisation in Liverpool English. If Liverpool English TGDs and Theme passives are Prepositional Datives with null κ, they should not be available with prepositions other than *to* and *at*. This prediction is borne out:

(29) a. Beth put the beers *(in) the cooler.
b. The beers were put *(in) the cooler.

(30) a. Beth exchanged notes *(with) Pete.
b. Notes were exchanged *(with) Pete.

(Liverpool)

Evidence from language change also supports a connection between κ and the availability of Theme passivisation in the dialect. The judgements reported so far are taken from a survey of nine native speakers of Liverpool English aged between 20–30 (cf. Section 2.2). The same survey was extended to six native speakers of Liverpool English over the age of 60. In contrast to the younger speakers, the older speakers restrict TGDs to pronominal themes, the pattern in the rest of the Northwest. Crucially, the older speakers also reject generalised

10. This example is more acceptable relative to the rest, but appears to be also available in varieties outside of the Northwest. For example, in the British English Bedfordshire variety, 'How long have you lived Bedford?' Michelle Sheehan (p.c.) is fully acceptable. An anonymous reviewer points out that Wolfram and Schilling-Estes (2006:69) similarly observe that missing *in* is possible in some varieties of American English, as in 'She lives Ø Coal City'.

11. In fact many of the languages with preposition-drop have a morphologically syncretic form for *to* and *at* (such as Greek *se* 'to, at'). The restriction is, however, observable in Standard English *home*, which requires an overt source preposition, as in *He came *(from) home*, but the null stative and directional, as in *He stayed/went home* (see Collins 2007).

preposition-drop (or rather, κ), and report the system of preposition-drop that seems to be available in the rest of the Northwest (the system described in Myler 2013). This suggests a correlative (and plausibly causative) relation between speakers' innovation of κ, and the availability of full noun phrase theme passivisation.

4.2 The syntax of κ: κ Case licenses Goals

The next step is to determine the role of κ in the grammar. κ appears to be a lexical item, present in the syntax. Initial evidence is the availability of *straight*-modification, a classic diagnostic of prepositions (Emonds 1985).[12] Liverpool speakers accept *straight*-modification without the overt preposition, suggesting that, despite the absence of overt material, the syntax treats the Goal as if it is marked by a preposition:

(31) a. I'm going straight the pub after this. = 'I'm going straight to the pub after this.'
b. He's heading straight the office. = 'He's heading straight to the office.'[13]

Past accounts of p-drop vary, but most take as their starting point den Dikken's (1995, 2010) suggestion that an inherently null functional head must incorporate (to the verb) to be licensed as null, and thus that 'PF-variability' is sensitive to syntactic environment.[14] This Section shows that Liverpool p-drop does not involve incorporation through comparison with Myler's (2013) account of Ormskirk English p-drop, which does involve incorporation.

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12. P-drop examples with *right*-modification, the other classic modification diagnostic of P, were not generally accepted by speakers. This may reflect a register issue, as it was also difficult to get speakers to accept *right*-modification examples with the overt preposition.

13. An anonymous reviewer suggests that the availability of *straight*-modification is problematic if (anticipating Section 4.3) κ bears only u[F], as apparently similar athematic case markers assumed to bear only u[F], such as *of* (*The destruction straight of the city) or *by* (*The book was written straight by John), do not permit *straight*-modification. I assume that *straight*-modification is category sensitive, restricted to modification of spatial *p*/P. It can therefore modify κ (category *p*) but not *of* (D) or *by* (Voice) (cf. Collins 2005) or *for* (Comp). Similarly, use of κ does not extend to substitute for *by* or *of* or *for* elsewhere because it is not of an appropriate category.

14. P-incorporation seems to be the most widespread strategy licensing p-drop cross-linguistically, as has been discussed for Greek dialects (Ioannidou and den Dikken 2009; Terzi 2010; Gehrke and Lekakou 2013), Veneto dialects (Longobardi 2001:289), Gungbe (Aboh 2010:229), and English *home* (Collins 2007).

Myler (2013) shows that in Ormskirk English, preposition-drop is syntactically restricted. Myler proposes that in Ormskirk English, in a structure like *John came the pub*, the Goal argument (which exhibits properties of both direct objects and PP objects) is the complement of a directional preposition (silent) TO, and that, following (den Dikken 1995, 2010), this inherently null functional head must incorporate (to the verb) to be licensed as null. Myler (2013) argues that in Ormskirk English, a null directional TO must incorporate to license its inherent null-ness. Myler argues that this incorporation is available in the context of unaccusative Voice. On standard assumptions, transitive *v* inherits φ from the phase head Voice (Chomsky 2008), licenses DP_{Theme}, and attracts DP_{Theme} to its specifier. In contrast, unaccusative Voice does not bear φ to 'pass down' to *v*, and unaccusative *v* does not license DP_{Theme}. Where null P incorporates, it raises to v, [15] so that TO ends up in the same complex head as *v*. Following Svenonius (2007) (a.o.), adpositions bear φ-features, which license the Goal argument; through movement of *p*, *v* inherits the φ-features of *p*, and the otherwise unaccusative *v* can φ-license a Goal. As *v* φ-licenses the Goal, the Goal raises to spec-*v*P. This gives rise to a range of syntactic effects, some of which we describe below. 'Preposition-drop' is thus only possible if an inherently null lexical item is licensed in a strictly defined of syntactic environment.

Myler's account (many details of which are omitted here) yields a rich array of empirical facts of preposition-drop in Ormskirk English. Crucially, though, these properties are not found for Liverpool English preposition-drop. Two points are sufficient to make the distinction clear.

First, Myler (2011, 2013) observes that Ormskirk p-drop is sensitive to a restricted class of verbs; it is this limited class of verbs that permits p-incorporation. The last Section showed that Liverpool p-drop does not exhibit such sensitivity.

A second consequence of the incorporation account is that in Ormskirk English, p-drop is licit only where the Goal is adjacent to the verb.[16] In contrast, the Liverpool variety permits preposition-drop in contexts in which the verb and Goal are non-adjacent.

First, in Liverpool English the unmarked Goal can be embedded in a nominal domain, non-adjacent to the verb:

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15. Myler's (2013) null preposition includes a lexical head P responsible for selecting a complement, which is contained by a functional layer *p* that is responsible for φ-licensing the complement of P (cf. Svenonius 2007).

16. Crucially for Myler (2013), 'adjacency' means that the Goal has moved to a position canonically associated with the direct object, rather than linear adjacency. For ease of exposition I simply refer to adjacency here; Liverpool English permits p-drop where a nominal is non-adjacent (either linearly or syntactically) to the verb.

(32) a. An errand the shops is called for.
b. He was on his way the library when…
c. A trip the pub is called for! (Based on Myler 2013: 198)

Next, in Liverpool English, an additional prepositional phrase may intervene between the verb and the Goal, such that the Goal is non-adjacent to the verb (33). (34) gives examples of ditransitives, where NP_{Theme} intervenes between the verb and the Goal.

(33) a. Come **with** me (to) the pub.
b. He took them **both** (to) the zoo.

(34) a. I took Joey the hospital.
b. He sent the package (back) his nan.

The Goal is possible not only in positions non-adjacent to the verb, but can undergo discourse-shift independently of the verb. (35) shows Liverpool speakers can topicalise the unmarked Goal, and (36) shows that the Goal is compatible with *it*-clefts.

(35) She said we'd go the pub, and the pub we went.

(36) a. It's the shops we're going, not the pub!
b. She said it's Chester they're moving.
c. It's the office he'll be working today.

The availability of clefting, has consequences elsewhere. In (37a), non-Liverpool English speakers report an ambiguity between a directional and a locational reading, but once clefted (37b), only the locational reading is available.

(37) a. Suarez ran on the pitch.
b. It was on the pitch that Suarez ran.
(Based on Stringer 2006: 64, cited in Cinque 2010: fn.12)

Although noting a preference for a non-directional reading in the cleft, Liverpool speakers volunteer that ambiguity also holds in the non-adjacent environment in (37b).[17]

17. Implementing this ambiguity is complex. One possibility is that might follow from the semantic and structural complexity of the adposition in question, here, *on*. The internal structure of PPs is usually argued to directly reflect its conceptual complexity, whether or not that structure is overtly realised (Jackendoff 1983, Svenonius 2010 i.a.). For example, a directional functional projection PathP (sometimes realised by e.g. *to*) is taken to always embed a stative functional projection PlaceP (sometimes realised by e.g. *at*) (Jackendoff 1983, Koopman 2000 i.a.), whether or not the stative is overt.

In (37), *on* may correspond only to PlaceP, or it may additionally include PathP; the two structural possibilities would give rise to ambiguity. We could then argue, in the spirit of

Together, these facts point to the independence of the morphologically unmarked Goal from the verb in Liverpool English.

In addition, the data show that the syntax of Liverpool preposition-drop is very different to that of preposition-drop in the rest of the Northwest, where p-drop is precisely restricted to those contexts in which the Goal is adjacent to the verb, consistent with an account where the Goal is licensed via p-incorporation (Myler 2013). All examples in this Section are ungrammatical in Ormskirk English (Myler 2013, Myler p.c.), as well as all the other Northwest dialects tested.[18]

Kayne (2004), that the directional functional projection is headed by the non-pronounced preposition TO, whose non-pronunciation is licensed by movement of overt material to a specifier (Kayne 2004; cf. Koopman and Szabolcsi 2000, Collins 2007). The overt material is, in turn, licensed through (syntactic) adjacency with the verb, making available the interpretation *Suarez ran TO on the pitch* in (37a). Where that overt material is not licensed, it cannot move to the specifier, and a directional reading requires the overt preposition (*It was onto(*TO) the pitch that Suarez ran*).

18. It has been suggested that, alternatively, Liverpool p-drop could be the kind of p-drop found with nouns such as *home* in (presumably all varieties of) English, as described in Collins (2007). It is well known that English exhibits obligatory and optional p-drop (depending on the syntactic environment) of *to* and *at* with a closed set of nouns: r-pronouns such as *there*, light nouns such as *place* or *someplace*, and (directional) *home*. Following Kishimoto (2000), Collins (2007) argues that these 'light' nominals obligatorily raise to the specifier of their embedding XP, locative TO/AT. Collins proposes that the raising of the light noun licenses the non-pronunciation of TO/AT, if something like Koopman and Szabolcsi's (2000:4) *Generalised Doubly Filled Comp Filter* holds, which states that no projection has both an overt specifier and an overt head at the end of a derivation.

As the examples throughout Section 4 show, p-drop in Liverpool English does not show a comparable sensitivity to nominal type. We could nonetheless extend Collins' analysis by stating that null TO/AT in Liverpool English triggers generalised movement of any nominal complement to SpecP. Leaving aside the question of what would trigger this generalised movement, a raising-to-spec analysis makes incorrect predictions with respect to word order. For example, following Collins, raising to Spec-P should mean that the nominal always precedes an adjective where a preposition is not overt. This analysis correctly predicts that both (1a) and (1c) should be fine, and (1b) excluded, in Standard English. However, (1b) is fine in Liverpool English. This suggests that raising-to-Spec is not the condition on non-pronunciation of the prepositions *to* and *at* in Liverpool English.

(1) a. They went someplace beautiful/mysterious.
b. They went some beautiful/mysterious place.
(*Standard English/^{OK}L'pool English)
c. They went to some beautiful/mysterious place.
(Collins 2007:11 (36), plus Liverpool judgement for (b))

The availability of the Liverpool type of null prepositions does not exclude Collins' analysis of r-pronouns in Northwest varieties. Rather we can distinguish at least three types of 'p-drop' that could co-exist in English: non-pronunciation as a product of raising-to-spec (Kayne

Sections 4.3 and 4.4 show that it is variation in the adpositional functional lexicon that results in variation in the availability of Theme passivisation across Northwest varieties.

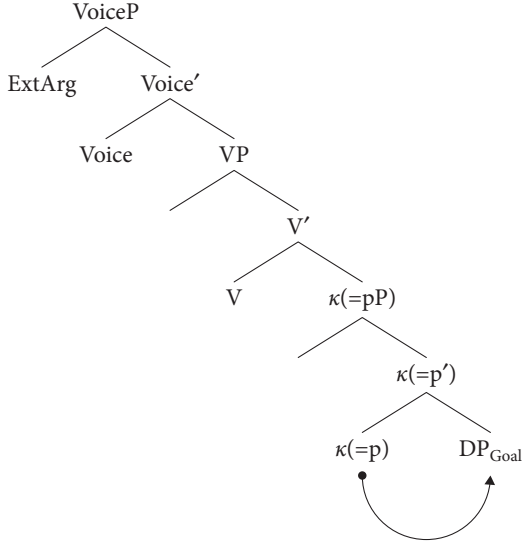
4.3 The structure of κ

The data in the previous Section pointed to the independence of the morphologically unmarked Goal from the verb in Liverpool English. If the unmarked Goal can occur in contexts non-adjacent to the predicate, the licensing of the Goal must be independent of the verb. I propose that the null element κ itself licenses the Goal.

If κ licenses Case, we need to establish by what mechanism. I propose that Liverpool κ corresponds to the functional head *p*, and that κ (*p*) licenses Case on NP_{Ground}. (I continue to label this item κ as the role of *p* is more usually identified as the introducer of the external argument of the adposition (Svenonius 2007, 2010), an issue that is not of direct concern here).

κ is equivalent to a functional category *p* that bears only u[F], but lacks a 'lexical' head P (reminiscent of Collins' (2005) 'dummy prepositions', where a dummy preposition is a functional head that bears only u[F]; Collins' (2005) dummy preposition is the passive *by* 'ByP', where *by* is the head of VoiceP).

(38) *κ in Liverpool English*



Following much previous work on adpositions, notably Rezac (2008), I assume that the u[F] borne by adpositions are φ-features, and that Case is valued

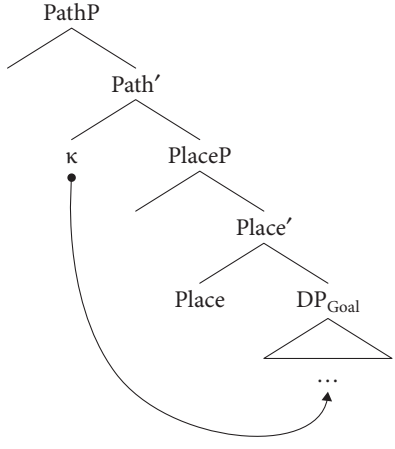
2004, Collins 2007) for *home*; p-drop as p-incorporation (den Dikken 2010, Myler 2013); and the availability of null, purely functional adpositional elements, such as κ.)

through Match and valuation of these features, as in standard Probe-Goal Agree (Chomsky 2000, 2001).

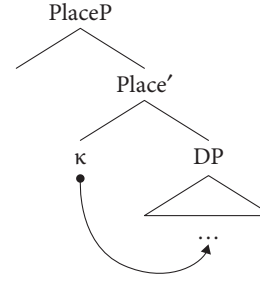
An alternative, that I will reject, is that κ corresponds to a lexical head that both introduces an argument (NP_{Ground}) as its complement, and is responsible for Case licensing. As noted in the previous Section, much research on adpositions has shown that there must be multiple lexical projections internal to the extended projection of P, which include PathP and PlaceP (Jackendoff 1990, Koopman 2010, Svenonius 2010, a.o). If κ corresponds to a lexical head, we expect there to be two null κ heads in English, one relating to directionality ('dropped' *to*), and one to stativity ('dropped' *at*).

(39) *κ as the lexical projections PathP/PlaceP*

a. κ as TO_{Null}



b. κ as AT_{Null}



Close examination of the distribution of κ suggests that Case licensing is the core function of κ (consistent with (38)), but that κ does not make a semantic contribution; this is suggested to correspond to a lack of any semantic-related internal projections at all (compare (38)–(39)).

Pseudo-passives contribute initial evidence that Case licensing, rather that a semantic contribution, is the core role of κ: Liverpool speakers do not permit κ in pseudo-passives, instead requiring the overt preposition.

(40) a. John was talked *(to).
b. The music was listened *(to) carefully.
c. After hours of discussion the contract was finally agreed *(to).[19]

19. As an anonymous reviewer points out, Liverpool English does not otherwise allow *agree* as a transitive verb without a PP, as in *'They agreed it'*, an option that is apparently available in many American dialects.

The syntactic structure of pseudo-passives, and especially their relation to their active counterparts, is controversial (see Hornstein and Weinberg (1981) and Baltin and Postal (1996) for discussion). The only point that is crucial here is that, as the object of the pseudo-passive is probed and Case licensed by T, the preposition of the pseudo-passive must not be a Case-licenser; the preposition still presumably supplies semantic information to the otherwise intransitive verb, however.[20] I propose that it is this semantic contribution that means κ is incompatible with the pseudo-passive.[21]

The contrast between the overt P and κ in terms of semantic contribution also gets us the distinction between the availability of κ in prepositional datives and pseudo-passives: prepositional dative verbs subcategorise for – but do not Case license – the Goal argument; in the pseudo-passive construction, T is responsible for Case licensing NP_{Theme}, but does not subcategorise for it, and nor does the intransitive pseudo-passive verb.

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20. Much previous work has shown that complex spatial concepts must be directly encoded in the internal structure of spatial adpositions (Jackendoff 1990, Koopman 2000, Svenonius 2010), that may or may not be realised. For example, in Italian the complex relation *under* might be taken to have the structure 'AT under (the sea)', as AT (in Italian, and, I think, marginally in English) can be realised in the environment of measure of phrases: *Si trova (**a**) due metri sotto il livello del mare* 'It is found (at) two meters under sea level' (Cinque 2010:6). I take the preposition in pseudo-passives such as (40) to be required to contribute a complex conceptual semantics; in the spirit of UNDER, I take the preposition in (40a) to have the structure, *John was talked WITH to*. Assume that κ corresponds to *p* without a lexical complement; without a lexical P complement, κ cannot denote WITH; the semantic bleached-ness of κ then excludes it from the pseudo-passive. In contrast, an overt preposition has a lexical layer, and this layer may realise (potentially multiple) lexical layer(s) P. The restricted semantics of κ/*p* means it is not freely interchangeable with any preposition, null or otherwise (cf. examples in (28); for discussion of the narrow semantic contribution of κ, see (ahead) fn. 23).

21. A reviewer likens the pseudo-passive facts to Collins (2007) observation that r-pronouns (such as *somewhere* and *nowhere*) are ungrammatical in pseudo-passives:

(1) a. We drove (*to) somewhere interesting.
b. Nowhere interesting can be driven (*to) in under 5 minutes.
(Collins 2007: (15))

A null preposition cannot be stranded, if, as Collins argues, non-pronunciation is sensitive to a Doubly Filled Comp Filter (fn. 18): fronting the nominal in the pseudo-passive obviates the filter. In Liverpool English p-drop is available without raising-to-spec (fn. 18), so we take this to be a separate phenomenon.

On a related topic: it is difficult to assess whether a total ban on null p-stranding holds in the Liverpool grammar. For example, Liverpool English allows A-bar extraction from prepositional complements with a null preposition (⟨*Who*⟩ *did she give it*? is fully acceptable), but in this environment is not clear whether the null preposition has simply undergone pied-piping.

(41) a. I talked *(to) John.
b. I muttered the answer (to) John.

There is further evidence for the semantic bleachedness of κ, and its non-equivalence to the overt preposition. For example, where *at* has a manner reading, κ is ungrammatical:

(42) a. She was singing *(at) the top of her lungs.
b. She's moving *(at) a snail's pace.

κ is impossible wherever the complement of *at* has a more semantically complex reading than location.

(43) a. What are you getting *(at)?
b. He hit *(at) the wasp with a newspaper, but that only made it more angry.
c. Keep *(at) your job and some good luck might turn up…
d. I don't know when I'm going to get *(to) that paper.

If κ were semantically equivalent to overt *at*, it should be available in this environment.[22] Again, this suggest that κ represents a subset of the semantic functions associated with its overt counterparts.

Finally, we have already seen that κ is available in contexts where the verb has an allative semantics. κ is impossible where the complement is an idiom, or where P has a more complex reading than allativity:

(44) a. You've got to pick a plan and stick *(to) it.
b. He looks up *(to) her.

If the distribution of κ were to follow from itself supplying an allative-type θ-role or selecting a strictly allative complement, its compatibility with ditransitive verbs such as *donate*, or manner of communication verbs such as *whisper*, *yell*, *bark*, *grumble*, *mutter* is unexpected. If, however, the ditransitive verb supplies the subcategorisation or selectional frame, highly plausible for ditransitive verbs, their compatibility with κ is unsurprising.

Together the distributional data show that the syntactic object κ can be formally distinguished from overt prepositions by the absence of thematic-related functional structure, such that it does not have a direct overt counterpart. This suggests we are not dealing with PF-variability.

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22. A reviewer questions how the interpretation of κ can be constrained. One point to emphasize is that as κ is realised in the functional layer *p*, it is expected to only denote spatial relations.

This would be comparable to the necessarily eventive interpretation of light verbs, or other functional projections in the vP shell, including German examples like, *Ich muss nach hause* (which, following van Riemsdijk (2002), contains a null featurally light motion verb $[e]_{GO}$).

Finally, this conclusion predicts an argument/ adjunct asymmetry with respect to κ. Adjuncts are not (usually) selected by the verb, and should therefore not be compatible with κ. In contrast, arguments of the verb are (usually) selected by the verb, and should therefore be compatible with κ. The following adjuncts are incompatible with κ, requiring an overt preposition:

(45) a. Let's meet *(at) six.
b. I'll find you *(at) last orders.
c. Sell it *(at) 180.
d. I'm offering it (to) them *(at) cost.

Further argument/ adjunct asymmetries can be seen with the noun *home*. *Home* is one of the few English nouns with which (all varieties of) English permit (and sometimes require) a null preposition (cf. Collins 2007).

(46) a. I'll stay/go (*at/*to) home.
b. I'll be (at) home tonight.

The preposition is even obligatorily null with ditransitives (again for all speakers). This is true regardless of whether NP_{Theme} is inanimate or animate.

(47) a. I'm sending this letter (*to) home.
b. I'm sending him (*to) home.

The only context in which a preposition is obligatorily overt with *home* nouns is in adjuncts.

(48) a. I'm cooking *(at) home tonight.
b. I'll work *(from) home tomorrow.

(Liverpool and Standard English)

Prepositions must likewise be overt in adjuncts in Liverpool English, indicating κ is not compatible with adjuncts.[23] This sensitivity holds both with the noun *home* (i.e. Liverpool judgements are the same as the judgements given in (47) and (48)), as well as with non-*home* nouns such as *gym*:

(49) a. She'll stay/go (at/to) the gym.
b. She'll be (at) the gym.
c. She's working out *(at) the gym tonight.

(Liverpool)

In short the restrictions on the distribution of κ suggest that κ can license arguments, but it otherwise lacks the functional projections that introduce complex semantic content in adpositions.

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23. With some exceptions: examples such as *Working (AT) the library* (27b) are judged licit, for reasons that are not clear.

4.4 Consequences of the analysis

The availability of Theme passivisation follows from the availability of κ to Case license the Goal, in limited semantic contexts.

First, we have seen that the Liverpool dialect only drops the prepositions *to* and *at*. If TGDs (Theme-Goal ditransitives) and Theme passivisation are really Prepositional Datives with null κ, then TGDs and Prepositional Datives should not be possible with prepositions such as *from* (Source) or *in* (Containment), regardless of the lexical frame of the verb. As predicted, TGDs and Theme passivisation are unavailable with these preposition classes:

(50) a. Beth put the beers *(in) the cooler.
b. The beers were put *(in) the cooler.

(51) a. Beth exchanged notes *(with) Pete.
b. Notes were exchanged *(with) Pete.

(Liverpool)

In addition, as Liverpool English κ is free wherever the verb provides an allative semantics (or stative semantics), TGDs and Theme passivisation should be available in any allative context.[24] Evidence that this is the case comes from verbs-of-motion with inanimate or non-recipient Goals. In both 'standard' and Liverpool English, verbs-of-motion are incompatible with the DOC; the combination is possible only if the inanimate or non-recipient Goal is marked by the preposition *to*:

(52) a. I sent the letter to France.
b. *I sent France the letter.

If Liverpool TGDs are available in any context where *to* has a default allative interpretation, Liverpool TGDs should be possible with the inanimate Goal, regardless of the thematic properties of the Goal. The judgements from Liverpool speakers show that this prediction is correct:

(53) a. He sent the letter to France.
b. *He sent France the letter.
c. He sent the letter France.

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24. An anonymous reviewer points out that Liverpool English should therefore be unlike Ormskirk English (as described in Myler 2013: 195) in allowing for p-drop with non-location goals with motion verbs. This prediction is partially borne out. In the following example, Ormskirk English does not permit p-drop. Liverpool English permits p-drop with the full DP but only allows the pronominal if the pronominal receives focal stress.

(1) He came (to) me / the man for help. *Ormskirk; ??/OKLiverpool (Myler 2013: 195)

I have not explored the interplay between stress and p-drop or TGDs, but such an investigation could be very revealing (especially given a second anonymous reviewer's judgments; see fn. 25).

(54) a. Betty sent Joe to the pub.
b. *Betty sent the pub Joe.
c. Betty sent Joe the pub.
(Liverpool)

Finally, Theme passivisation is also available with inanimate Goals of verbs-of-motion and with non-recipient Goals (55a, 56a). (55b, 56b) demonstrate that as in 'standard' varieties of English, Goal passivisation is not possible in this context:

(55) a. The letter was sent France.
b. *France was sent the letter.

(56) a. John was sent the pub.
b. *The pub was sent John.

In contrast to Liverpool English, Manchester English does not accept inanimate Goals with verbs of motion, either in TGDs or in Theme passives.

(57) a. I sent the letter to France.
b. *I sent France the letter.
c. *I sent the letter France.
(Manchester, Haddican 2010: 2430; Ormskirk, Myler p.c.)

(58) It was sent France. (*Manchester, *Ormskirk)

These latter contrasts follow if the Manchester TGD and Theme passive derive from a distinct underlying syntactic structure, namely the DOC, rather than the Prepositional Dative.

5. The systematic nature of regional variation: Evidence from Manchester English

Haddican (2010) and Haddican and Holmberg (2012) present convincing evidence that TGDs derive from a DOC in the Northwest, with the direct object (NP_{Theme}) undergoing local object movement to form the TGD.

(59) a. It was given her. *Theme passive* (^{OK}Manchester, ^{OK}Ormskirk)
b. I gave it her (~~it~~). *TGD/ DOC* (^{OK}Manchester, ^{OK}Ormskirk)

First, Manchester English speakers (and speakers of the other Northwest varieties) reject TGDs with verbs of continuous imparting force, manner of communication verbs, and latinate verbs:

(60) a. She pushed/hauled/lifted it to me. PD
b. *She pushed/hauled/lifted me it. DOC
c. *She pushed/hauled/lifted it me. TGD

(61) a. She whispered/shouted it to me. PD
b. *She whispered/shouted me it. DOC
c. *She whispered/shouted it me. TGD

(62) a. She donated/contributed it to me. PD
b. *She donated/contributed me it. DOC
c. *She donated/contributed it me. TGD

(Manchester, Haddican 2010: 2428; Ormskirk, Myler p.c.; Southport, own investigation)

Second, Manchester English speakers (and speakers of the other Northwest varieties) accept TGDs with verbs of prevention of possession (such as *refuse*, *deny*):

(63) a. *She refused it to me. PD
b. She refused me it. DOC
c. %She refused it me. TGD

(Manchester, Haddican 2010: 2428; own fieldwork)

This suggests that in the Northwest speakers treat TGDs as if they were DOCs. If there is a correlation between the availability of Theme passivisation and TGDs, only those verb classes compatible with TGDs should be compatible with Theme passivisation. Again this prediction is borne out: verbs of prevention of possession are compatible with Theme passivisation in Manchester English, but verbs of continuous imparting force, manner of communication verbs, or latinate verbs are not (a–c). I found that the former class is only marginally acceptable (d), but the trend is nonetheless clear.

(64) a. *It was pushed me.
b. *It was shouted me.
c. *It was donated me.
d. ?It was denied her. ('Northwest' varieties)

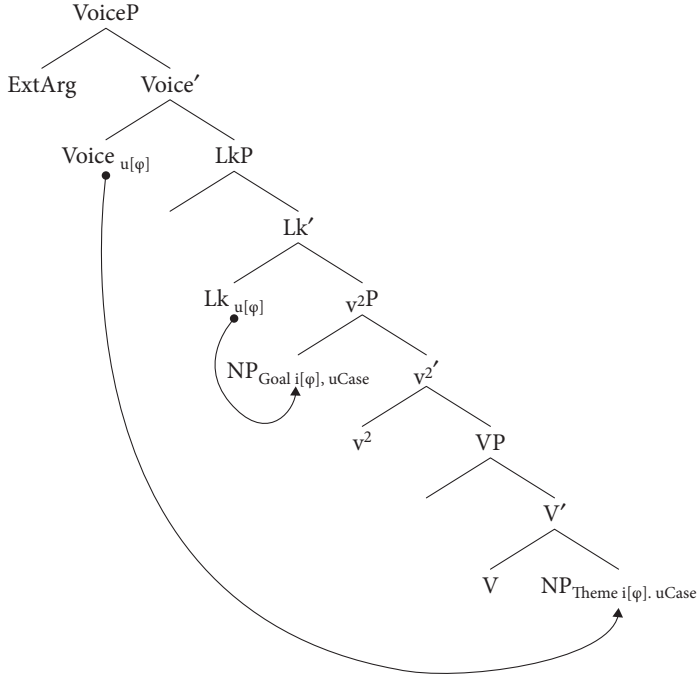
The theme passive might then taken to be a product of the availability of short direct object movement, if, say, speakers of Northwest varieties permit the Theme pronominal to undergo local object movement in a DOC as a reflex of an EPP feature on an Applicative projection introducing the indirect object (McGinnis (1998, 2001), Anagnostopoulou (2003) (a.o.)).

This 'pure locality' approach predicts that the availability of short object movement and Theme passivisation should be a bi-conditional, such that wherever TGDs are available, Theme passivisation should also be possible. However, there are many British dialects that permit TGDs that do not exhibit Theme passivisation (Haddican and Holmberg 2012; Gerwin (2013) on the Midlands). Haddican and Holmberg (2012) argue that it is also necessary to invoke Case and agreement features, and that these features have distinct distributions across the functional

structure of different dialects. This allows for a more fine-grained account of the possibility of local object movement.

Haddican & Holmberg (2012) propose that speakers of dialects that permit TGDs and theme passivisation derived from DOCs have innovated a LinkerP (in the sense of Baker and Collins 2006) that can merge between Voice and v^2 in DOCs, where v^2 is the applicative-like head proposed in Adger and Harbour (2007). LkP merges bearing uninterpretable [φ], such that a relation with it results in (structural) Case valuation. Crucially, still following Haddican & Holmberg (2012), [φ] may be merged with *either* LkP *or* v^2.

(65) *Manchester Double Object Constructions/ Theme-Goal Ditransitives*



LkP Probes for its most local Goal, which, here, is the Goal argument in Appl. Under Agree, LkP values the *u*[Case] on the Goal. This 'deactivation' of the Goal means it is no longer a possible intervener for Agree (Chomsky 2001 *i.a.*). Where LkP values the features of the Goal, the Theme is the most local argument to Voice. *u*[φ] on Voice thus probes the Theme, with which it Agrees under Match. It is the Agree relation between *v* and the pronominal Theme that results in the Theme>Goal word order.

Next we have to account for the restricted relationship between little *v* and the Theme. TGDs in Manchester English are mostly restricted to pronominal themes:

(66) a. She gave it him. pro > pro
b. She gave it the boy pro > DP
c. (?) She gave the ball him. DP > pro[25]
d. (??/*) She gave the ball the boy. DP > DP

(Haddican 2010: 2426)

Agree in the derivation in (65) therefore entails that NP_{Theme} is licensed, but not that it 'moves'. Haddican & Holmberg (2012) propose that pronominal Theme 'movement' in TGDs is actually incorporation, in the sense of Roberts (2010a).

Roberts' system takes as its starting point the familiar Agree relation, where features are copied onto the categories that Agree. Roberts (2010a) proposes that where an element α contains a proper subset of the features of a second element β, and α enters an Agree relation with β, the element α is a 'defective' goal. Roberts (2010a: 66) proposes that when a defective goal enters an Agree relation, copying the features of the goal exhausts the contents of the goal. Just as in Chain Reduction where all identical copies of a chain are deleted leaving only the highest (Nunes 2004), a defective goal will be realised in the structural position of its probe, and the goal itself 'deletes'. It is the realisation of the goal in the Probe's structural position that yields the appearance of incorporation.

For Roberts (2010b) and Haddican & Holmberg (2012), pronouns are φPs. In Roberts' (2010a) terms, then, pronouns (φPs) are proper subsets of the *u*[F] on little *v*, as little *v* also contains features such as the category and the thematic information of the external argument. In the context of a pronoun (a φP) undergoing valuation by Voice, all feature values of the φP are represented on the Probe Voice; as such, the φP is essentially a copy of the Probe, and thus, for Roberts (2010a), may 'incorporate' to Voice. Chain Reduction, as above, yields the overt ordering of the Theme preceding the Goal (a TGD).

Incorporation results in the nominal/ pronominal asymmetry in both TGDs and Theme passives. Under 'incorporation', only an XP bearing a subset of the features of the Probe is a potential Goal. It is for this reason that pronominal Themes (φPs), but not definite Themes (DPs), occur as TGDs in this dialect: Voice may probe a DP Theme, but as DP does not constitute a subset of the features on Voice, the DOC order is realized. It then follows that only incorporated φPs (pronominals) are sufficiently local to T to occur in the Theme passive.

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25. A reviewer with DOC-type TGDs finds example (c) acceptable with focal stress on the pronominal. It is possible that this type of stress is also required of Manchester speakers, but this was not tested in the survey carried out here. Interestingly, the same reviewer finds (d) acceptable. As this grammar is not captured by Haddican and Holmberg's (2012) incorporation analysis, variation is even more extensive than that reported here.

There are still further dialects (noted in Haddican and Holmberg 2012, and which an anonymous reviewer speaks) that permit DP TGDs, but not DP Theme passives. There may be an additional locus of variation that restricts the availability of Theme passives; I leave this to future investigation. For now the availability of short object movement in TGDs in the Manchester variety can be taken to follow from the distribution of φ-features across Voice, LkP, and v^2, in an Applicative configuration.

6. The locus of variation

The usual view in comparative syntax is that syntactic variation follows from variation in the inventory of syntactic features and their distribution across functional heads (in the spirit of Borer 1984); as such all variation is ultimately variation in the functional lexicon.

Alternatively, it has been suggested that all variation is PF-variation (Berwick & Chomsky 2008); PF-variation might include the pronunciation or not of a given syntactic object. Preposition-drop in Liverpool English might seem a highly plausible example of PF-variability, where, for example, κ might actually be the elided or non-phonetically realised versions of *to* or *at*. However, in the Liverpool case at least, preposition-drop also seems to be best represented at the level of the functional lexicon.

In particular, Section 3 proposed that in the Liverpool dialect, apparent Theme passives derive from Prepositional Datives with a null preposition. Section 4 showed that this null preposition has the same Case licensing capacity associated with overt prepositions, but lacks the semantically contentful projections of its overt counterparts. This suggests that κ is not (morpho-)syntactically equivalent to the overt prepositions *to* and *at*. The non-equivalency of κ to the overt prepositions *to* and *at* suggests preposition-drop is not an example of PF-variability. The distribution of the null form was taken to indicate that it has a distinct functional structure, so is a morpho-syntactically distinct functional item, whose realisation is inherently null.

In Section 5, following Haddican (2010) and Haddican and Holmberg (2012), Manchester English was shown to contrast with the neighboring Liverpool English dialect in deriving the active Theme-Goal order (and consequent Theme passive) via short object movement. This possibility was a product of Applicative(-like) functional projections.

Locating variation at the level of functional heads may have broader implications for work on the underlying structure of the dative alternation in English. There has been much debate over whether either the prepositional dative or the Double Object Construction is transformationally related to the other, so that both

have the same underlying structure (cf. Oehrle 1976, Larson 1988 *i.a.*). In particular, the restriction of the null preposition to the prepositional dative indirectly supports an analysis where the Prepositional Dative and Double Object Construction have distinct underlying structures. The present study suggests that at the very least speakers are able to finely distinguish the contribution of different licensing heads – identified here as prepositional licensers from Applicative-related licensers – even in the context of ambiguous strings.

Variation as variation in the distribution of a set of features on functional heads was shown here to be powerful, capturing the systematic syntactic restrictions on theme passivisation that differ across the Northwest region, including (a) the class of the ditransitive verb that can participate in theme passives (prepositional dative vs. double object construction dative) (b) restrictions on the compatibility of certain goal arguments with theme passivisation (goals marked by *in*; inanimate goals), and (c) the type of theme argument that may undergo passivisation (pronominal vs. nominal). This variation therefore seems a good candidate for a parameter, in the sense that it yields a range of syntactic properties traceable to a single point of variation. It is these 'microparameters', variation in the mental grammar, that give rise to micro-variation in the forms available in closely related linguistic varieties in Northwest varieties.

7. Summary

This paper has examined the availability of Theme passivisation in Manchester and Liverpool English. Investigation showed that the different Northwest varieties employ distinct strategies to license variants of the dative alternation. Liverpool English has a null preposition, so that Theme passives derive from Prepositional Datives with a null preposition. Manchester English uses an Applicative configuration that allows short object movement, which can feed Theme passives in a Double Object Construction (Haddican 2010). This corresponds to the regional differences in Table 1.

Table 1. Types of Theme Passive and Theme-Goal Ditransitive in Northwest varieties

	Full DP Theme	**Prepositional Dative**	**Inanimate Goal**
Liverpool	✓	✓	✓
Manchester	✗	✗	✗

I suggested the availability of κ in ditransitives extends from the increasing availability of p-drop in Liverpool English, where p-drop is available in a much wider

range of contexts than elsewhere in the Northwest, and specifically Ormskirk English (as described in Myler 2013). Table 2 summarises some of the differences found across the region.

Table 2. Environments in which preposition-drop is possible

	Directed motion	Location	Nominal non-adjacent to V
Liverpool	✓	✓	✓
Ormskirk	✓	✗	✗

Section 4 argued that the null preposition in the Liverpool dialect is an innovated null element κ. It was argued that κ is licenses Case on NP_{Goal}, but that κ (=*p*) lacks the semantic projections that are usually assumed to introduce conceptual content in spatial adpositions (Jackendoff 1983, Koopman 2000, Svenonius 2010). This accounted for the restrictions on its distribution. Variation in P reflects variation in the functional lexicon.

Comparison of these closely related varieties demonstrates that variation in the licensing properties of two functional heads can result in significant and systematically different constraints. This was described as parametric variation, in the sense that it yielded a range of syntactic properties traceable to a single alternation in the functional grammar.

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References

Aboh, Enoch. 2010. The P route. In Guglielmo Cinque & Luigi Rizzi (eds.), *Mapping spatial PPs,* 225–260. Oxford: Oxford University Press.

Adger, David & Daniel Harbour. 2007. Syntax and syncretisms of the Person Case Constraint. *Syntax* 10.1. 2–37.

Anagnostopoulou, Elena. 2003. *The syntax of ditransitives: evidence from clitics.* Berlin: Mouton de Gruyter.

Baltin, Mark & Paul M. Postal. 1996. More on reanalysis hypotheses. *Linguistic Inquiry* 27(1). 127–145.

Baker, Mark C. & Chris Collins. 2006. Linkers and the internal structure of vP. *Natural Language & Linguistic Theory* 24(2). 307–354.

Berwick, Robert & Noam Chomsky. 2008. 'Poverty of the stimulus' revisited: Recent challenges reconsidered. *Proceedings of the* 30th *annual conference of the cognitive science society*.

Borer, Hagit. 1984. *Parametric Syntax*. Foris, Dordrecht.

Bresnan, Joan & Marilyn Ford. 2010. Predicting syntax: Processing dative constructions in American and Australian varieties of English. *Language* 86(1). 168–213.

Bresnan, Joan & Tatiana Nikitina. 2009. The Gradience of the Dative Alternation. In Linda Uyechi & Lian Hee Wee (eds.), *Reality Exploration and discovery: Pattern interaction in language and life*, 161–184. Stanford: CSLI Publications.

Caponigro, Ivano & Lisa Pearl. 2008. Silent prepositions: evidence from free relatives. In Anna Asbury, Jakub Dotlacil, Berit Gehrke, & Rick Nouwen (eds.), *The syntax and semantics of spatial P*, 365–385. Amsterdam: John Benjamins. doi:10.1075/la.120.18cap

Chomsky, Noam. 2000. Minimalist inquiries: The framework. In Roger Martin, David Michaels, Juan Uriagereka, & Samuel Jay Keyser (eds.), *Step by step: Essays on Minimalist syntax in honor of Howard Lasnik*, 89–156. Cambridge, MA: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A life in language*, 1–52. Cambridge, MA: MIT Press.

Chomsky, Noam. 2008. On phases. In Robert Freidin, Carlos Peregrín Otero, & Maria Luisa Zubizarreta (eds.), *Foundational issues in linguistic theory*, 133–166. Cambridge, MA: MIT Press.

Cinque, Guglielmo. 2010. Mapping Spatial PPs: An introduction. In Guglielmo Cinque & Luigi Rizzi, (eds.), *Mapping Spatial PPs*, 3–25. Oxford: Oxford University Press.

Collins, Chris. 2005. A smuggling approach to the passive in English. *Syntax* 8. 81–120.

Collins, Chris. 2007. Home sweet home. *NYU Working Papers in Linguistics* 1. 1–27.

den Dikken, Marcel. 1995. *Particles: On the syntax of verb-particle, triadic and causative constructions*. Oxford: Oxford University Press.

Den Dikken, Marcel. 2010. Directions from the GET-GO. *Catalan Journal of Linguistics* 9. 23–53.

Emonds, Joseph. 1985. *A unified theory of syntactic categories*. Dordrect: Foris.

Gehrke, Berit & Marika Lekakou 2013. How to miss your preposition. *Studies in Greek Linguistics* 33. 92–106.

Gerwin, Joanna. 2013. Give it me!: pronominal ditransitives in English dialects. *English Language and Linguistics* 17(3). 445–463.

Gerwin, Joanna. 2014. *Ditransitives in British English Dialects*. Berlin: Walter de Gruyter.

Green, Georgia. 1974. *Semantics and syntax regularity.* Bloomington, IN: Indiana University Press.

Haddican, William. 2010. Theme-goal ditransitives and theme passivisation in British English dialects. *Lingua* 120. 2424–2443.

Haddican, William & Anders Holmberg. 2012. Object movement symmetries in British English dialects: Experimental evidence for a mixed case/locality approach. *The Journal of Comparative Germanic Linguistics* 15(3). 189–212.

Harley, Heidi. 2002. Possession and the double object construction. *Linguistic Variation Yearbook* 2. 31–70.

Hornstein, Norbert & Amy Weinberg. 1981. Case theory and preposition stranding. *Linguistic Inquiry* 12. 55–91.

Hughes, Arthur & Peter Trudgill. 1979. *English accents and dialects*: *An introduction to social and regional varieties of British English*. London: Edward Arnold.

Ioannidou, Alexandra & Marcel den Dikken. 2009. P-drop, D-drop, D-spread. In Claire Halpert, Jeremy Hartman, & David Hill (eds.), *Proceedings of the 2007 Workshop in Greek syntax and semantics at MIT*, 393–408. Cambridge, MA: MITWPL.

Jackendoff, Ray. 1983. *Semantics and cognition*. Cambridge, MA: MIT Press.

Jackendoff, Ray. 1990. *Semantic structures*. Cambridge, MA: MIT Press.

Jeong, Youngmi. 2007. *Applicatives: Structure and interpretation from a minimalist perspective*. Amsterdam: John Benjamins.

Kayne, Richard S. 2004. Here and there. In C. Leclère et al. (eds.), *Lexique Syntaxe, et Lexique-Grammaire/Syntax, Lexis and Lexicon Grammar*: *Papers in Honour of Maurice Gross*, 253–275. Amsterdam: John Benjamins. doi:10.1075/la.104

Kayne, Richard S. 2005. Kayne, Richard S. Some notes on comparative syntax, with special reference to English and French. In Guglielmo Cinque & Richard Kayne (eds.), *The Oxford handbook of comparative syntax,* 3–69. Oxford: Oxford University Press.

Kishimoto, Hideki. 2000. Indefinite pronouns and overt N-raising. *Linguistic Inquiry* 31. 557–566.

Koopman, Hilda. 2000/2010. Prepositions, postpositions, circumpositions, and particles. In Guglielmo Cinque & Luigi Rizzi (eds.), *Mapping spatial PPs,* 26–73. Oxford: Oxford University Press.

Koopman, Hilda & Anna Szabolcsi. 2000. *Verbal complexes*. Cambridge, MA: MIT Press.

Larson, Richard K. 1988. On the double object construction. *Linguistic Inquiry* 19(3). 335–391.

Levin, Beth. 1993. *English verb classes and alternations.* Cambridge, MA: MIT Press.

Longobardi, Giuseppe. 2001. Formal Syntax, Diachronic Minimalism, and Etymology: The History of French Chez. *Linguistic Inquiry* 32(2). 275–302.

McGinnis, Martha. 1998. Locality in A-movement. Ph.D. dissertation, MIT.

McGinnis, Martha. 2001. Variation in the phase structure of applicatives. *Linguistic Variation Yearbook* 1. 105–146.

Myler, Neil. 2011. Come the pub with me: silent TO in a dialect of British English. *NYU Working Papers in Linguistics* 3. 120–135.

Myler, Neil. 2013. On coming the pub in the North West of England: accusative unaccusatives, dependent case and preposition incorporation. *The Journal of Comparative Germanic Linguistics* 16(2–3). 189–207.

Nunes, Jairo. 2004. *Linearization of chains and sideward movement*. Cambridge, MA: MIT Press.

Oehrle, Richard T. 1976. The grammatical status of the English dative alternation. Ph.D. Dissertation, MIT.

Pesetsky, David. 1995. *Zero syntax.* Cambridge, MA: MIT Press.

Pinker, Steven. 1989. *Learnability and cognition: The acquisition of argument structure*. Cambridge, MA: MIT Press.

Rezac, Milan. 2008. φ-Agree and Theta-related Case. In Daniel Harbour, David Adger, & Susana Béjar (eds.), *φ theory: φ-features across interfaces and modules*. Oxford: Oxford University Press.

van Riemsdijk, Henk. 2002. The unbearable lightness of GOing. *Journal of Comparative Germanic Linguistics* 5. 143–196.

Roberts, Ian. 2010a. *Agreement and head movement: Clitics, incorporation and defective goals*. Cambridge, MA: MIT Press.

Roberts, Ian. 2010b. A deletion analysis of null subjects. In Theresa Biberauer, Anders Holmberg, Ian Roberts, & Michelle Sheehan (eds.), *Parametric variation: Null subjects in minimalist theory*, 58–87. Cambridge: Cambridge University Press.

Siewierska, Anna & Willem Hollmann. 2007. Ditransitive clauses in English with special reference to Lancashire dialect. In Mike Hannay & Gerard J. Steen (eds.), *Structural-functional studies in English grammar: in honour of Lachlan Mackenzie*, 83–102. Amsterdam: John Benjamins. doi:10.1075/slcs.83.06sie

Svenonius, Peter. 2007. Adpositions, particles, and the arguments they introduce. In Eric Reuland, Tanmoy Bhattacharya, & Giorgos Spathas (eds.), *Argument structure,* 71–110. Amsterdam: John Benjamins. doi:10.1075/la.108.08sve

Svenonius, Peter. 2010. Spatial prepositions in English. In Guglielmo Cinque & Luigi Rizzi (eds.), *Mapping spatial PPs*, 127–160. Oxford: Oxford University Press.

Terzi, Arhonto. 2010. Locative prepositions and Place. In Guglielmo Cinque & Luigi Rizzi (eds.), *Mapping spatial PPs*, 196–224. Oxford: Oxford University Press.

Ura, Hiroyuki. 2000. *Checking theory and grammatical functions in Universal Grammar*. Oxford: Oxford University Press.

Wolfram, Walt and Natalie Schilling-Estes. 2006. *American English,* 2nd edn. Oxford: Blackwell.

Woolford, Ellen. 1993. Symmetric and asymmetric passives. *Natural Language and Linguistic Theory* 11(4). 679–728.

An extension of the comparative sociolinguistics approach for sociosyntax

Comparing a single linguistic constraint across multiple sociolinguistic variables

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This paper integrates aspects of both generative theory and variationist sociolinguistics. To compare the structure of two varieties of French (Acadian French and Laurentian French), I adapt the comparative sociolinguistics approach to compare the syntactic structure of these varieties. Specifically, I focus on the effects of *a single linguistic constraint* across multiple sociolinguistic variables. I argue that such a comparison provides insights into the underlying grammatical structures of the varieties under comparison, differences that may have remained hidden otherwise. To illustrate the approach, I focus on a single constraint, sentential polarity, and I analyze its effects on two sociolinguistic variables, yes/no questions and future temporal reference. Results show that the polarity constraint is operative in Laurentian French for both variables, but inoperative in Acadian French. To account for this difference, I argue that Laurentian French negative structures involve a negative head above the tense phrase while Acadian French does not.

Keywords: sociosyntax, French, variation, comparative sociolinguistics, future temporal reference, yes/no question, negation, polarity, Acadian French, Laurentian French

1. Introduction

This paper presents a methodological approach which integrates aspects of both comparative sociolinguistics and generative theory in order to compare the structural differences between two varieties of French spoken in Canada, Acadian French and Laurentian French. Laurentian French, spoken in the province of Quebec with related varieties spoken in Ontario and in western Canada, is distinct in

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many ways from Acadian French, primarily spoken in Canada's Atlantic Provinces (i.e. New Brunswick, Newfoundland and Labrador, Nova Scotia, and Prince Edward Island) and in parts of eastern Quebec. While there are some similarities between the two, there are nevertheless notable linguistic differences (Martineau 2005; King 2013a).

The methodology adopted here involves an extension of the comparative sociolinguistics approach (Tagliamonte 2002; King 2013a) in that the focus of the comparison is not the sociolinguistic variable per se, but rather the effects of *a single linguistic constraint* on multiple sociolinguistic variables. I argue that such a comparative framework can provide insight into structural differences between varieties and thus contributes to work which seeks to integrate both variationist and formal theoretical approaches to the study of grammatical variation. To illustrate this approach, I compare the effect of the *sentential polarity* linguistic constraint (i.e. whether an utterance is affirmative or negative) on two sociolinguistic variables: yes/no questions and the expression of future temporal reference. The results show that both variables are conditioned by the polarity constraint in Laurentian French, but that this constraint is inoperative in Acadian French for these two variables. To account for this difference, I propose a formal theoretical analysis which argues that the basis for the different effects of this constraint can be explained by a structural difference between the varieties.

The paper is organized as follows. Following an overview of the theoretical frameworks, I provide an outline of the methodology adopted in this paper. I then discuss the varieties of French under comparison before presenting the analyses of the two sociolinguistic variables, yes/no questions and the expression of future temporal reference. Quantitative and formal analyses are provided for both variables. Finally, I summarize the methodological contributions of this paper as well as suggest potential avenues for future research.

2. Theoretical frameworks

The theoretical approach taken in this paper integrates aspects of both variation theory (Labov 1963, 1969, 1972) and generative theories of grammar (Chomsky 1995, 2000a, 2001), which is in line with other work which seeks to account for grammatical variation within a formal theoretical framework (e.g. Cornips & Corrigan 2005; Adger 2006; King 2013a, 2013b). In addition, I adopt the methodological tools made available by comparative sociolinguistics, but I propose an extension of the approach for the purpose of uncovering structural differences between varieties, outlined in Section 2.2.

2.1 Formal theories and comparative sociolinguistics

Labov's earliest research (1963, 1969, 1972) sought to model grammatical competence in a way which accounted for grammatical variability (e.g. his 1969 work on copula deletion), although this was not widely accepted by generativists (Chomsky 1965). Labov's foundational works presented the central component of variation theory, the linguistic variable, which is often defined as "two ways of saying the same thing" (cf. Bayley 2013). In their 1968 paper, Weinreich, Labov and Herzog (1968:100) argue that we should regard "language […] as an object possessing orderly heterogeneity." They argue that an understanding of this structured heterogeneity is necessary not only to fully understand language, but it is also crucial for understanding the mechanisms of language change. Despite their efforts, language-internal variation has remained largely excluded from generative theories. In fact, Chomsky (2000b:120) states that "[t]here is reason to believe that the computational system is invariant, virtually." Thus, from its inception, variation theory was at odds with generative theories on the relevance of structured heterogeneity in the study of language. Despite this longstanding difference, there have been some attempts to reconcile the two theories.

In an overview of formal accounts of morphosyntactic variation, King (2013b) identifies two main approaches which have been proposed in the literature to build variation within a formal theoretical framework. The first, based on Kroch's (1989, 1994) work, proposes that linguistic variation is the result of multiple grammars which are in competition. In this model, grammar-internal optionality is ruled out and linguistic variation is explained by the competition between grammars. While this model has been used to account for a number of morphosyntactic variables, including the loss of verb second in English (Kroch, Taylor & Ringe 2000), it has also been criticized on a number of points. For example, King states that some criticisms deal with the lack of sociohistorical documentation to support the model, although she (2013b:451) comments that such gaps in the data "apply to diachronic studies in general, not just to the Competing Grammars model."

The second main approach to building variation within a formal framework involves mechanisms made available by generative theories of grammar (King 2013b). These approaches differ from the grammar competition model in that they consider various points within the grammar where variability could occur. In some studies (e.g. Adger & Smith 2005), variability arises due to choice between lexical items (bundles of morphosyntactic features) prior to their entering the syntax. The differing featural composition of these lexical items will engender variability rather than there being two entirely separate grammars in competition. In a later paper, Adger and Smith (2010) also advance a similar analysis in that the locus of variation is the lexicon of functional categories. In a similar vein, some

studies (e.g. King 2005; Parrott 2007) make use of the mechanisms made available by the theory of Distributed Morphology (Halle & Marantz 1993; Embick & Noyer 2007) to account for grammatical variation in a formal theory. However, aside from the precise locus of variation, other studies focus on different aspects of variation within a formal framework, such as whether we can model the rates of variants as observed in sociolinguistic corpora. Adger's (2006) Combinatorial Variability approach proposes an algorithm which fairly accurately predicts the observed rates of the variants as reported for sociolinguistic corpora. Despite the number of studies over the past decade, a number of topics remain the subject of debate, ranging from the precise locus of variation to how we should integrate psycholinguistic factors within a formal framework to whether we can model the rates of variants as observed in corpora. In contributing to this second main approach, I present an analysis which integrates aspects of formal theories of grammar (which is in line with work on syntactic microvariation, cf. Kayne 2000) and comparative sociolinguistics to shed light on differences of syntactic structures across varieties and which accounts for variable linguistic phenomena.

Poplack and Tagliamonte (2001) propose a variationist methodology for comparative sociolinguistics in order to determine whether there is a genetic relationship between varieties of African American English and English-based creoles. Their analysis contributes to a longstanding debate on the origins of African American English as to whether it has predominantly British or Caribbean Creole origins. The methodology focuses on a comparison of the linguistic conditioning factors at play for different varieties. The comparison relies on three lines of evidence garnered from separate main effects regression analyses of the same variable in different varieties: (1) the *statistical significance* of a particular constraint, (2) the *relative strength* of a factor group, and (3) the *constraint hierarchies* of factors within a factor group. The first line of evidence, *statistical significance*, involves whether a potential constraint is statistically significant in terms of conditioning variant choice. The mere presence of a statistically significant factor group is not enough to determine whether two varieties are related. Poplack and Tagliamonte (2001) argue that additional evidence (i.e. the other two lines of evidence) is necessary to determine whether the varieties are (closely) related. The second line of evidence is the *strength* of a factor group as measured by the range between the highest and lowest factor weight within each factor group. Finally, the *constraint hierarchy* involves the particular order of the factors within a factor group. Comparisons among constraint hierarchies across varieties are taken to be indicative of a link (or lack thereof) among varieties. Taken together, these three lines of evidence can be used to determine whether two varieties of a language share a common ancestor. However, Tagliamonte (2002) points out that care must be taken to ensure that historical developments of the varieties under comparison are also taken into consideration, especially in the case of a synchronic

analysis. For instance, a consideration of the history of the language can help determine whether a change in progress in some varieties is the result of a separate innovation or if they result from a single change. The methodology adopted in this paper integrates aspects of both formal theory and comparative sociolinguistics in order to compare the structure of different varieties of the same language.

2.2 The comparative-constraint approach to grammatical variation

While the comparative sociolinguistics approach detailed in Section 2.1 focuses on the three lines of evidence (i.e. statistical significance, relative strength, and constraint hierarchies) when comparing results of a sociolinguistic variable, I propose a different focus: *comparing a single linguistic constraint (or factor group) across multiple variables*. The focus on a single linguistic constraint across multiple variables will enable us to discern its patterning across varieties, thereby uncovering aspects of the structure of the varieties in question. I will illustrate the utility of such an approach in the comparison of the effect of the linguistic constraint of *sentential polarity* (i.e. affirmative vs. negative contexts) on two linguistic variables: the expression of future temporal reference, shown in (1), and yes/no questions, shown in (2).

(1) a. *Moi, je **travaillerai** sur l'autre bord.* (Dianne, GC-21)[1]
'I will work on the other side.'
b. *Denise, ièlle, **va** point **travailler** pour les next cinq ans.*[2] (Carole, GC-6)
'Denise is not going to work for the next five years.'

The future temporal reference variable involves variation between the inflected future (1a) and the periphrastic future (1b).

(2) a. *Tu aimerais mieux d'aller à la Tavern **?*** (Carole, GC-6)
'You would rather go to the Tavern?'
b. *As-**tu** été aux moules ?* (Carole, GC-18)
'Did you go picking mussels?'
c. *La bus arrête-**ti** point à la Casse-croûte itou ?* (Zabeth, GC-12)
'Doesn't the bus also stop at the Casse-croûte?' [a local restaurant]

The yes/no questions variable involves alternation between the rising intonation variant (2a), pronominal inversion (2b), and the *-ti* or *-tu* particle (2c).

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1. Codes in parentheses refer to the consultant's pseudonym, the corpus (Grosses Coques), and the interview number.

2. *Point* 'not' is the general marker of negation in some varieties of Acadian French, such as the Baie Sainte-Marie variety (cf. Comeau, 2007; Flikeid, 1994).

By comparing the effect of a single constraint (sentential polarity) on these two sociolinguistic variables across Acadian and Laurentian French, I argue that we can uncover structural differences between the varieties. To account for these structural differences, I adopt a formal generative approach.

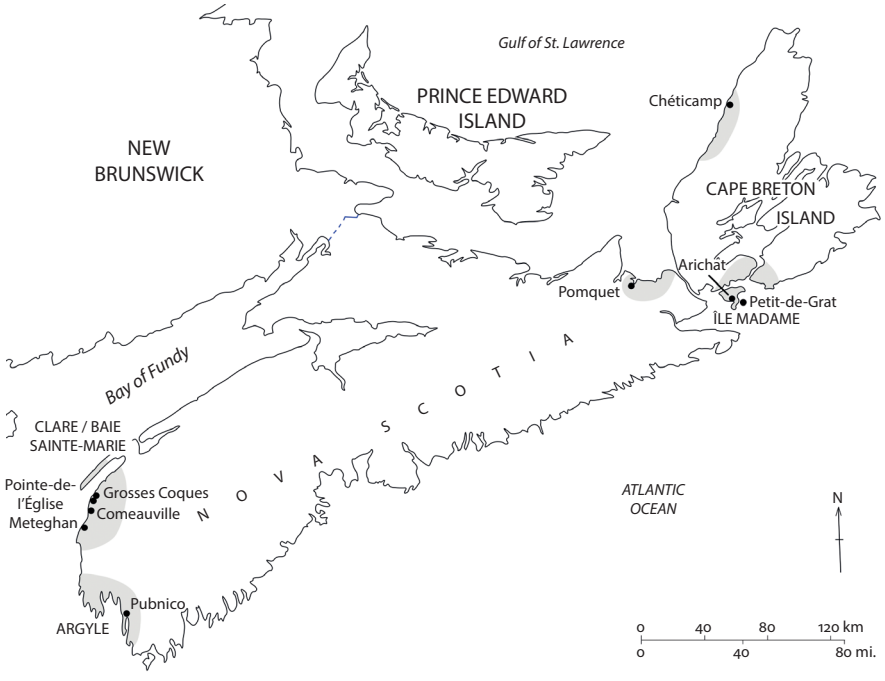
3. French in Canada: Acadian and Laurentian varieties

The linguistic differences between Acadian and Laurentian varieties have often been attributed to the different point of origin of the settlers in France: Laurentian settlers came from a greater area of France, mainly north of the Loire Valley and the settlers were of a range of social classes while Acadians originated mainly in the *centre-ouest* of France and were predominantly lower-class (King 2013a). In addition, the relative isolation in which the Acadian communities found themselves may have also contributed to the preservation of features lost in other spoken varieties of French, including Laurentian varieties. For instance, the simple past tense (Gesner 1979; Comeau et al. 2012), the imperfect subjunctive (Gesner 1979; Comeau 2011), and the *je … -ons* first person plural conjugation (King et al. 2004) are all features argued to have long been absent from spoken, informal French in most North American and European varieties, but they are still found in some varieties of Acadian French today. None of these features have been found in Laurentian French since the 19th century, if not earlier. Thus conservative varieties of Acadian French are distinguished from Laurentian varieties in terms of their greater linguistic conservatism.[3] In the analyses which follow, I shed light on another type of distinguishing feature between the two varieties, the structure of negation and its effects on two grammatical variables, yes/no questions and the expression of future temporal reference.

3.1 The Baie Sainte-Marie community

The data for the present study come from one of the most conservative varieties of Acadian French, that spoken in Baie Sainte-Marie located in the southwest region of the Canadian province of Nova Scotia, shown in Map 1.

3. However, not all varieties of Acadian French display the level of linguistic conservatism observed for the Baie Sainte-Marie variety. For instance, the *je … -ons* first person plural marker is all but lost in spoken New Brunswick Acadian French (cf. Beaulieu & Cichocki 2008) as are other traditional features (e.g. the simple past, the imperfect subjunctive, etc.).



Map 1. Acadian Regions of Nova Scotia

Baie Sainte-Marie, or the Municipality of Clare, is a predominantly French-speaking Acadian region according to the 1991 Canada Census where 67% of the Baie Sainte-Marie residents report French or French and English as a mother tongue (Statistics Canada 1991).[4] The data are drawn from the Butler Sociolinguistic Corpus collected in 1989–1990 by community residents in the village of Grosses Coques. Interviews were conducted with 31 consultants of both sexes and for a wide age range (15–84). The interviews, which follow no strict sociolinguistic questionnaire, were focused on the elicitation of narratives (including narratives of personal experience along with community narratives) and conversational data. The data from the Grosses Coques corpus were analyzed for the two variables under investigation, yes/no questions and the expression of future temporal reference, presented in Sections 4 and 5 respectively. In each section, the variationist analysis precedes the formal analysis. Comparisons are also made with the literature on Laurentian varieties of French for both variables.

4. I use the results from the 1991 Canada Census since this best reflects the community at the time of data collection.

4. Yes/No questions

Yes/no questions present a rich area of variability across varieties of French, as evidenced by the numerous studies on this variable (Foulet 1921; Pohl 1965; Terry 1970; Kayne 1972; Ashby 1977; Söll 1983; Fox 1989; Dewaele 1999; Coveney 2002; Elsig & Poplack 2006; Elsig 2009; Thomas 2010; Martineau 2011). These studies reveal that spoken French makes use of a number of variants to express yes/no questions, although the same variants are not used in all of the varieties. For instance, Coveney (2002:96) reports that the particle *-ti* is not productive in Picard French (though it does occur in Picard) while Elsig (2009) reports that the related variant *-tu* is one of the main variants in Laurentian French.[5] In addition to different distribution of the variants across varieties, some variants have taken on stylistic values in particular varieties. For instance, *est-ce que* is considered formal in Laurentian French (Elsig 2009: 100), but in European varieties it is considered neutral (Coveney 2002: 98). Since the focus of the present paper is a comparison of the Acadian French system (specifically the Baie Sainte-Marie variety) with the Laurentian French system, I draw on Elsig's (2009) results from his study of interrogation in the Hull data from the Ottawa-Hull Corpus (20th century sociolinguistic interviews) and in the *Récits du français québécois d'autrefois* data (audio recordings representative of 19th century Laurentian French).[6]

4.1 The envelope of variation for French yes/no questions

In contrast to the range of yes/no questions variants that exists across spoken varieties of French, only three variants are found in the Baie Sainte-Marie data: rising intonation as in (3), pronominal inversion as in (4), and use of the particle *-ti* in (5).

(3) *Tu aimerais mieux d'aller à la Tavern* ***?*** (Carole, GC-6)
'You would rather go to the Tavern?'

(4) *As-**tu** été aux moules ?* (Carole, GC-18)
'Did you go picking mussels?'

(5) *C'est-**ti** lui qu'était au restaurant ?* (Richard, GC-29)
'Is it him who was at the restaurant?'

Based on the descriptions provided by Auger (1996) and Elsig (2009), the Laurentian French system differs slightly from that of Acadian French. Two variants,

5. See Foulet (1921) on the history of the French interrogative particle *-ti* and Morin (1985) for the development of *-tu*, a Laurentian French innovation from *-ti*.

6. See Poplack (1989) for a description of the Ottawa-Hull corpus and Poplack and St-Amand (2007) for a description of the *Récits du français québécois d'autrefois* data.

rising intonation and pronominal inversion, are the same in both Laurentian and Acadian French and both varieties make use of an interrogative particle, however these are not identical. While Acadian French makes use of the interrogative particle *-ti*, Laurentian French uses the particle *-tu* as well, as shown in (6). While Elsig did find tokens of *-ti*, he found a greater number of *-tu* and so he combines the two.

(6) *Il dit faut-**tu*** (TU) *je garde ma-, ma vieille il dit ?*
'He says, is it necessary that I keep my old one?
(RFQ.021.2064, Elsig 2009: 43, my emphasis)

Elsig also found tokens of the *est-ce que* variant, as shown in (7), a variant which does not occur in the Baie Sainte-Marie corpus.

(7) ***Est-ce que** tu travaillerais toi dans un sewer de…*
'Would you work in a sewer of…'
(OH.114.2081, Elsig 2009: 42, my emphasis)

Interestingly, Elsig reports that the *est-ce que* variant is extremely rare in the 19th century *Récits* data (0.5%) and is a minor variant in the contemporary Ottawa-Hull corpus (7.9%). While the variants used in both Acadian and Laurentian varieties of French are not identical, there is considerable overlap between the two, which allows for a comparison of the two systems.

To circumscribe the variable context in the Baie Sainte-Marie corpus, all yes/no questions tokens were extracted if they unambiguously expressed a question that could be answered by 'yes' or 'no'. Following standard sociolinguistic practice, tokens which fell outside the variable context were excluded from further analyses, as outlined below:

- echo questions, since the token repeats another speaker's preceding declarative statement;

(8) Carole: *J'aime du riz !*
'I like rice!'
Marie: ***Tu aimes du riz ?*** (GC-11)
'You like rice?'

- tag questions, since these are invariant;

(9) *Puis là faudrait je retourne […]* ***tu sais ?*** (Hector, GC-13)
'And then I'll have to come back […] you know?'

- reported speech of others;

(10) *Elle dit : « Viens-tu au bingo ? »* (Denise, GC-21)
'She said, "Are you you coming to bingo?"'

- invariant fixed expressions;

(11) *On dirait-ti ?* (Evelyn, GC-12)
'You don't say?'

- hesitations, truncated utterances, and other incomplete utterances.

(12) ***La connai**-, tu la connaissais though ?* (Nicole, GC-19)
'Did you kn-, you knew her though?'

Once these tokens were excluded from the Baie Sainte-Marie data set, 641 tokens were retained for analysis.

4.2 Negation and yes/no questions in French

Studies of yes/no questions in French have revealed a number of potential conditioning factors, which were operationalized in the present study based on hypotheses from the extant literature on French yes/no questions.

Elsig's (2009) study serves as the main source of comparison with the results for Baie Sainte-Marie Acadian French. In his analysis of the Ottawa-Hull corpus (but only the data for Hull, Quebec) and in the *Récits du français québécois d'autrefois* data, Elsig considered a number of potential influencing linguistic and social factors.[7] He found a striking pattern in that negative contexts highly constrain variant choice for both corpora with negative contexts highly favouring the rising intonation variant. For the Ottawa-Hull corpus, Elsig (2009:43) found that out of the 88 negated tokens, the intonation variant was used at a rate of 91%. For the *Récits* corpus, he found an even higher rate of intonation in negative contexts: 98% of the 170 negated tokens occur with rising intonation (Elsig 2009: 46). Due to the near-categoricality of the rising intonation variant in these contexts, he excluded negative interrogatives from further analysis (i.e. he analyzed only the affirmative tokens). In addition to the Hull and *Récits* data, Elsig examined European data predating North American settlement. These data, involving a number of literary genres (e.g. plays, prose, farce, etc.) ranging from the 15th to the 17th century, add a further diachronic dimension to his study. His findings (Elsig 2009: 127) with regard to polarity in these older data contrast with what he found in his more contemporary Laurentian data: polarity does *not* influence variant choice in this early data set. The differences between the European and Laurentian data with regard to the polarity constraint lead Elsig (2009:127) to suggest that this constraint is an innovation of Quebec French. However, in a study of *ne*-absence in negative interrogatives in

7. Elsig (2009: 40–41) considers only the Hull data from the Ottawa-Hull corpus for better comparability with the *Récits* data, since both are from the province of Quebec.

plays, *mazarinades* (pamphlets), parodic texts, and personal letters for Continental and North American varieties of French, Martineau (2011:194) shows that use of the rising intonation variant rose dramatically in negative interrogatives from the 17th century to the 19th century from 26% to 63% (total N=794). Thus, Martineau's study points to a fairly recent change with regard to the status of the rising intonation variant in negative contexts. Furthermore, her study suggests that the polarity constraint observed by Elsig in Laurentian French is likely not a Laurentian innovation since it is also attested in varieties of French spoken in France.

LeBlanc (2013) analyzes yes/no questions in the variety of French spoken in the Magdalen Islands, an archipelago of islands in the Gulf of Saint Lawrence. Although part of the province of Quebec, the islands were largely settled by Acadians during a period beginning at end of the 18th century until the middle of the 19th century. LeBlanc's results show that polarity is the only significant linguistic factor group, with negative contexts favouring rising intonation, the same pattern reported for Laurentian French. Historically, the settlement of the Magdalen Islands was prolonged and marked with contact with both external varieties of French as well as other varieties of Acadian French, much unlike the situation described for Baie Sainte-Marie which was settled by a fairly homogeneous Acadian population and did not have prolonged contact with other varieties. This extensive contact may have resulted in the Magdalen Islands variety of French to lose certain traditional linguistic features, such as the *je … -ons* feature or the simple past tense (Comeau et al. 2014). In addition, it may be that this contact resulted in the adoption of the polarity constraint. While the polarity constraint in the Magdalen Islands variety may be due to contact with Laurentian French or perhaps an independent innovation, I will take the Baie Sainte-Marie variety as the baseline in terms of conservative Acadian varieties since it retains many features lost in other varieties of Acadian French, including the Magdalen Islands variety.

4.3 *Potential conditioning factors*

To determine whether polarity constrains variant choice with regard to yes/no questions in Baie Sainte-Marie Acadian French, a number of hypotheses from the literature were operationalized into testable factor groups.

4.3.1 *Grammatical person*

The effect of the grammatical person of the subject is widely reported in studies of yes/no questions in French, especially in relation to the inversion variant. In Laurentian French, both Auger (1996) and Elsig (2009) show that inversion can only occur in the second person in Laurentian French. The Baie Sainte-Marie data were coded for grammatical person, which involves three factors: 1st person, as in (13), 2nd person, as in (14), and 3rd person, as in (15).

(13) Ça *fait que j'en boivons encore ?* (Hector, GC-13)
'So, we still drink?' [i.e. alcohol]

(14) *As-**tu** des chats ?* (Carole, GC-6)
'Do you have cats?'

(15) ***Ils** avont-ti toujours* été *tight de même ?* (Nicole, GC-19)
'Have they always been so tight?' [i.e. with their money]

If the Baie Sainte-Marie variety patterns like other varieties of French, we would expect second person subjects to favour the inversion variant.

4.3.2 *Syllable length*

Another potential conditioning factor is that of the length of the syllable. Coveney (2002:296) reports that the length of the verb, measured in terms of syllables, conditions variant choice. Specifically, he found that multisyllabic verbs (i.e. two syllables or more) disfavour inversion. In contrast, Elsig (2009) found that in Laurentian French, monosyllabic verbs favour the particle *-tu* while multisyllabic verbs favour both inversion and *est-ce que*. The Baie Sainte-Marie data were coded for syllable length, specifically, whether the verb is monosyllabic, as in (16), or multisyllabic, as in (17).

(16) ***Crois**-tu* ça *?* (Aimée, GC-11)
'Do you believe that?'

(17) *Elle **grouillait**-ti ?* (Carole, GC-35)
'Was she moving?'

Given the conflicting results obtained independently in the previous studies, it is unclear how syllable length might condition variant choice in the Baie Sainte-Marie data.

4.3.3 *Sentential polarity*

Due to the fact that the focus of this paper is a comparison of polarity across Canadian varieties of French, each token was coded for polarity, that is, whether the token is found in an affirmative context, as in (18), or a negative context, as in (19).

(18) *Elle attrape toute ?* (Zabeth, GC-12)
'She catches everything?'

(19) *La bus arrête-ti **point** à la Casse-croûte itou ?* (Zabeth, GC-12)
'Doesn't the bus also stop at the Casse-croûte?' [a local restaurant]

Negative contexts are widely reported in the literature as having an effect on French yes/no questions. For example, for European French, Terry (1970:92) reports that negative interrogatives disfavour inversion in a study of contemporary French plays while Coveney's (2002) study of Picardy French found the same

polarity constraint. In Laurentian French, Elsig (2009) reports that negative contexts almost categorically favour the rising intonation variant.

4.4 Results

Once the data were coded for the linguistic factors presented in Section 4.3, the data were submitted to main effects multivariate analysis using the software Goldvarb X (Sankoff et al. 2005). A first step in the quantitative analysis involved establishing the overall distribution of the variants followed by a crosstabulation for each linguistic factor group. The particular pattern that emerged when grammatical person was considered resulted in a further refining of the variable context, as we shall see in Section 4.4.1.

4.4.1 *Overall distribution*

Table 1 shows the distribution of the variants of the yes/no questions variable for the Baie Sainte-Marie data.

Table 1. Distribution of the yes/no questions variants in Baie Sainte-Marie Acadian French

	N=	Rate
Rising intonation	265	41%
–ti	212	33%
Pronominal inversion	164	26%
Total	641	

While Table 1 presents the overall distribution of the variants in Baie Sainte-Marie Acadian French, this display masks an important distinction in the linguistic system at play. Once the data were coded for the effect of potential linguistic factors, a pattern emerged with regard to the grammatical person factor group. Table 2 shows the variants organized by grammatical person.

Table 2. Distribution of the yes/no questions variants based on grammatical person

	Rising Intonation	Pronominal Inversion	*–ti*
Grammatical Person	N=	N=	N=
1	6	0	8
2	109	163	0
3	150	1	204
Total	265	164	212

As Table 2 shows, the three variants pattern differently depending on the grammatical person. In the Baie Sainte-Marie Acadian French system, pronominal inversion occurs nearly categorically with a second person subject (singular or plural). There is one token of inversion with a third person subject, possibly a data fluctuation. Recall that this finding for grammatical person had previously been noted for Laurentian French (Auger 1996; Elsig 2009). With regard to the particle *-ti*, this variant only occurs with non-second person subjects (i.e. with first and third person subjects). This pattern contrasts with what has been reported for Laurentian French, that is, in those varieties, the interrogative *-tu* can be found with first and third person subjects, but also with second person subjects, as shown in (20).[8]

(20) *Il dit, tu es-tu après tomber sur la tête?*
'He says, are you just talking nonsense?' (OH.088.426, Elsig 2009: 74)

In contrast, in Baie Sainte-Marie Acadian French the use of the particle *-ti* with a second person subject results in an ungrammatical utterance.[9] Due to the distribution of the variants based on grammatical person shown in Table 2, I refined the analysis by replacing the yes/no questions variable as a single ternary variable with two binary variables, each analyzed independently. The first variable, presented in the left of Figure 1, involves tokens with a second person subject: there are two variants in this context, rising intonation and pronominal inversion. The second variable, presented in the right of Figure 1, involves first and third person subjects with two variants: rising intonation and the particle *-ti*. The redistribution from a single ternary variable into two binary variables is shown in Figure 1.

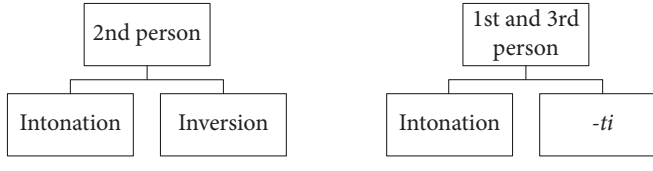


Figure 1. Yes/no questions in Baie Sainte-Marie Acadian French as two binary variables

8. It also contrasts with *-ti* use in a number of other Acadian varieties, where *-ti* or variation between *-ti* and *-tu* appear throughout the paradigm (King 2013a: 68).

9. Grammaticality judgments with native speakers of the Baie Sainte-Marie variety (other than myself) confirm this.

Once the variable context was refined to two binary variables, both were each subjected to separate multivariate analysis. The results for the second person data are first presented followed by the results for first and third person data.

4.4.2 *Second person data: Quantitative results*

The second person data were submitted to statistical analyses to determine which linguistic factors condition variant choice. Table 3 shows the results of the multivariate analysis on the factors influencing the choice of rising intonation.

Table 3. Linguistic factors conditioning rising intonation in second person subject contexts

Corrected mean: .268
Log. likelihood: −125.208
Significance: .000

Syllable length	**Factor Weight**	**% Intonation**	**N=**
multisyllabic	**.70**	46%	69
monosyllabic	.41	20%	155
Range	*29*		
n.s.: Polarity			

As Table 3 shows, the only significant factor group which influences variant choice with a second person subject is syllable length. Multisyllabic verbs favour the rising intonation variant with a factor weight of.70 while monosyllabic verbs favour pronominal inversion with a factor weight of.59.[10] This finding is in line with Coveney's (2002) results for Picardy French, but contrasts with Elsig's (2009) findings for Laurentian French.

However, for the broader comparative analysis presented in this paper, the relevant finding is that polarity does not constrain variant choice in Baie Sainte-Marie Acadian French. That is, negative contexts admit both rising intonation and pronominal inversion in this variety, a finding that contrasts with what has been reported for Laurentian French (Elsig 2009).

4.4.3 *First and third person data: Quantitative results*

The multivariate analysis of the remaining data (i.e. for first and third person subjects) reveals a similar pattern, as shown in Table 4.

10. To calculate the factor weights for pronominal inversion, subtract the factor weight of the rising intonation from 1.0.

Table 4. Linguistic factors conditioning rising intonation in first and third person subject contexts

Corrected mean: .350 **Log. likelihood: −210.02** **Significance: .016**			
Syllable length	**Factor Weights**	**% Intonation**	**N=**
multisyllabic	**.60**	44%	108
Monosyllabic	.45	31%	221
Range	*15*		
n.s.: Polarity, Grammatical Person.			

The results for first and third person subjects, presented in Table 4, pattern similarly to the results for second person subjects, presented in Table 3. Taken together, Tables 3 and 4 show that regardless of the grammatical person of the subject, syllable length is the only significant factor group that constrains variant choice. However, the most important finding in both analyses is that the polarity constraint, which was the greatest predictor of variant choice in Laurentian French, does not influence variant choice in Baie Sainte-Marie Acadian French. Unlike in Laurentian French, all variants can occur in negative contexts in Baie Sainte-Marie Acadian French. To explain the absence of the polarity constraint in Acadian French, I argue that the difference results from a structural difference between the varieties. Section 4.5 provides a formal account of this difference.

4.5 Formal analysis of polarity and yes/no questions in Canadian varieties of French

The quantitative results presented in Section 4.4 showed that polarity does not constrain variant choice in the Baie Sainte-Marie variety of Acadian French, in contrast with what has been reported for Laurentian French (cf. Elsig 2009). I argue that the different quantitative results can be accounted for if we consider the syntactic structure of negation of each variety.

There have been a number of generative studies of particular forms of yes/no questions in Laurentian French. For instance, Auger (1996) provides a morphological analysis to explain the fact that subject pronominal inversion is restricted to the second person in Laurentian French. In her analysis, she accounts for the fact that second person subjects can occur in inversion constructions since the second person pronouns bear an [interrogative] feature, which is not the case with first and third person subjects. Vinet (2000a, 2000b) analyses the incompatibility

of the *-tu* particle and *pas* in Laurentian French negative interrogatives. She (2000a: 407–08) proposes that "*–tu* represents a mophophonological spell-out of stress at PF and it is identified as an *in situ* wh Force operator checked at LF in an unselected C." According to Vinet, the only context that allows for both *-tu* and *pas* are those in which *pas* is checked in a higher position than it would be in negative contexts and that this gives us an exclamative/evaluative reading, as shown in (21).

(21) *Le voilà-tu pas qui arrive*
'Well, here he is just coming' (28c in Vinet 2000a: 398)

She accounts for this interpretation by arguing that when *pas* scopes over *-tu*, a Force operator, it provides us with a non-negative reading.

As in Laurentian French, Baie Sainte-Marie Acadian French also uses the interrogative particle in negative contexts with non-interrogative readings, as in (22).[11]

(22) *Mais, ils sont-ti point simples cette année !* (Evelyn, GC-12)
'Well, they are silly this year!'

However, what distinguishes the Baie Sainte-Marie variety with Laurentian French is that the use of the particle or pronominal inversion variants in negative contexts does not result in an ungrammatical utterance in Acadian French, shown in (23), as it does in Laurentian French, shown in (24).[12]

(23) *Il a-ti point fishdraggué avec Elzé icitte là ?* (Evelyn, GC-13)
'Didn't he drag fish with Elzé here?'

(24) **Ta mère est-tu pas là?* (6 taken from Vinet 2000b: 138)
'Isn't your mother there?'

As these two examples show, the two varieties are distinct in terms of whether or not they allow negative interrogatives with particular variants.

Martineau and Vinet (2005) consider the relationship between inversion and whether a variety has a single negative marker (i.e. *pas* 'not') or if the *ne* preverbal marker is present as well. They provide a diachronic account of why cases of subject pronominal inversion in contemporary French varieties require the presence of *ne* while its absence renders the utterance ungrammatical in the case of a yes/no question, shown in (25a-b).[13]

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11. Tokens such as 22 were excluded from the data set since it has a non-interrogative reading.

12. Utterances such as (24) are grammatical in Baie Sainte-Marie Acadian French as confirmed by native speakers' grammaticality judgments.

13. According to Martineau and Vinet, negative sentences with inversion like (25b) are grammatical if they are rhetorical questions (i.e. they are not real interrogatives).

(25) a. *N'est-elle pas belle ?*
'Isn't she pretty?'

b. **Est-elle pas belle ?*
'Isn't she pretty?' (13 in Martineau and Vinet 2005: 202)

In contrast with (25a-b), negative interrogatives without inversion (such as with rising intonation) allow both presence and absence of *ne*. Martineau and Vinet (2005:202) link the fact that contemporary French requires *ne* in cases of negated inversion to some parameter change involving "verb movement and rise of SV word order in interrogatives." While many spoken varieties of French lack a productive *ne* marker, the period in which it was lost has been the subject of much debate. In an empirical study of the loss of *ne* in Canadian and European varieties of French, Martineau and Mougeon (2003) date the rapid decline of *ne* to the 19th century on both sides of the Atlantic. However, the presence of *ne* cannot be used to distinguish the structure of negation in either Acadian or Laurentian French since both lack a productive *ne* marker. Comparative analysis of the structure of negation in each variety must be based on other cues, such as those from quantitative analyses of yes/no questions, presented in Section 4.4.

The polarity effect on yes/no questions extends beyond French, as shown by Zanuttini's (1997) work on Paduan, a variety of Veneto. The Paduan facts closely mirror those of Laurentian French. In Paduan, yes/no questions can be expressed using pronominal inversion, as shown in (26).

(26) *Vien-lo?*
'Is he coming?' (17a in Zanuttini 1997: 221)

However, the polarity constraint appears to be operative in Paduan as well since negative contexts do not allow for pronominal inversion, as shown in (27).

(27) **No vien-lo?*
'Isn't he coming?' (17b in Zanuttini 1997: 221)

Zanuttini argues that negative interrogatives in Paduan must be expressed with rising intonation, as shown in (28), a variant that clearly does not involve a movement.

(28) *No* (*e*)*l vien?*
'He isn't coming?' (19a in Zanuttini 1997: 221)

The finding that Paduan patterns closely with Laurentian French suggests a potential similarity in their negation systems. In both varieties, a negated interrogative is expressed by rising intonation, a variant that does not affect the syntactic structure. Zanuttini's account of the polarity effect is based on the structural property of negation in Paduan that relates to the left periphery (the Complementizer Phrase

or CP). She argues that either verb movement (in the case of inversion) or the preverbal negative marker *no* can satisfy a requirement of C to be filled in cases of interrogatives. In the case of affirmative interrogatives, the verb moves to C while in negated interrogatives, the presence of the negative marker *no* already fills this property of C and so verb movement is not required. In fact, she argues that due to reasons of economy, verb movement in negated interrogatives yield an ungrammatical utterance.[14] What is relevant for the present paper is that negation interferes with variants involving movement in Laurentian French, but not in Acadian French, despite the fact that both varieties of French share similar surface facts (i.e. little to no *ne* usage and postverbal negative markers). I argue that the pattern for Paduan mirrors the polarity constraint in Laurentian French, that is, negated interrogatives require a non-movement expression of interrogation such as rising intonation. We must still, however, account for the apparent differences in surface realizations of negation in Laurentian French and in Paduan. Negation in Laurentian French is largely expressed by a single postverbal *pas* while Paduan has the single preverbal negative marker *no*. Despite the apparent different surface realizations between Laurentian French and Paduan in terms of the expression of negation, I argue that they are structurally similar in that they both have a preverbal negative head (Neg) higher than the Tense Phrase (TP) domain. The difference is that Neg in Paduan is spelled out as *no* while in Laurentian French it is almost never phonologically realized (represented with [Ø] in Figure 2).

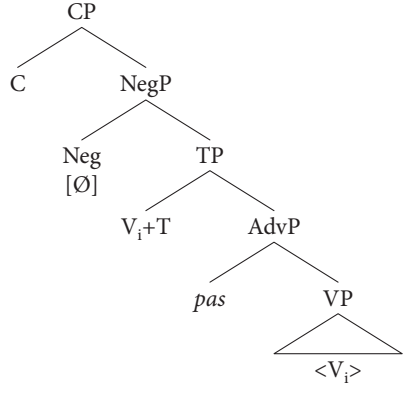

Figure 2. The structural representation of negation in Laurentian French

14. Other work has sought to account for this seeming 'blocking phenomena.' For instance, Travis' (1984) Head Movement Constraint or Rizzi's (1990) relativized minimality put forth principles to account for this observed phenomenon.

This structure is similar to the Paduan structure argued for by Zanuttini with the exception of the spelling out of the negative head in Paduan and the addition of *pas* as a postverbal negative marker in Laurentian French. In fact, the argument that there is a negative head above the TP in Laurentian French is not novel, as others have argued for this structure: Di Sciullo and Tremblay (1993) argue that there is a negative head higher than the TP (which can spell out as *ne*) and that this head is distinct from the negative marker *pas*, which they analyse as an adverbial situated below the TP.[15] Their arguments rely on a number of facts, such as negative imperatives. Unlike Standard French, which permits *ne* presence in a negative imperative as in (29), Laurentian French does not allow *ne* presence in a negative imperative, as shown in (30).

(29) (ne) le mange pas !
'Don't eat it!' (29a in Di Sciullo and Tremblay 1993: 82)

(30) (*ne) mange-le pas !
'Don't eat it!' (29b in Di Sciullo and Tremblay 1993: 82)

The fact that *ne* is disallowed in Laurentian French negative imperatives is taken as evidence that the Neg head blocks the verb movement to the left periphery (CP) and so the Neg head does not occur in negative imperatives in Laurentian French. However, the fact that it does not block the movement of the verb to TP in declarative sentences suggests that it is generated above the TP rather than below it. Thus, the fact that Laurentian French has a negative head above TP accounts for the observed polarity effect in yes/no questions in the same way Zanuttini accounted for the Paduan data: the presence of this head prevents the movement of the verb in the case of inversion.

The 'blocking' analysis accounts for the infrequency of the pronominal inversion variant in negative contexts, but what about the case of the particle *-tu*? With regard to this variant, I maintain that *-tu* likewise requires a movement to the left periphery (cf. Morin 2008). Thus, both pronominal inversion and the *-tu* particle involve movement to the CP and, as such, rarely occur in negative contexts due to the presence of the Neg head above the TP. Alternatively, the rising intonation variant, which does not require syntactic movement, is the majority variant in negative contexts in Laurentian French.

With regard to Acadian French, I argue that the quantitative results presented in Section 4.4 suggest that the structure of negation in Acadian French is different.

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15. Clearly, there are instances where *ne* is not spelled out (cf. Sankoff & Vincent 1977 which shows the infrequency of *ne* in Montreal French). An analysis of why this Neg head is rarely spelled out is beyond the scope of the present paper.

If presence of a negative head higher than the TP prevents movement of the verb (and T) to the CP domain in Laurentian French, then I argue that there is no negative head above TP in Acadian French and that this difference accounts for the different patterns observed in relation to polarity and yes/no questions. The structure of negation in Acadian French is shown in Figure 3.

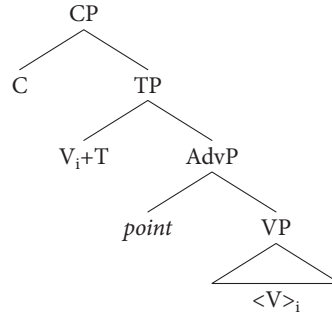

Figure 3. The structural representation of negation in Acadian French

I suggest that negation is expressed in Acadian French by the negative adverb, *point* 'not', independently of a negative head. The proposal that negation is expressed lexically via an adverb without a negative head is not novel, as a number of other languages have been argued to have such a structure (Zeijlstra 2004).

Despite the relative strength of the polarity constraint in Laurentian French yes/no questions, we still need to account for the few tokens where we have a non-intonation negative yes/no questions variant in Laurentian French (i.e. variability). Recall that Elsig (2009:43) reported that out of the 88 negated tokens in the Ottawa-Hull corpus, the intonation variant was used at a rate of 91%. Likewise, he reported that in the *Récits* data, 98% of the 170 negated tokens are with the intonation variant. This means that the Laurentian speakers are allowing the other variants (variants which involve movement across the Neg head) at rates of 9% and 2% in each corpus. Despite the fact that formal accounts present non-intonation negative yes/no questions as ungrammatical (cf. Vinet 2000a, 2000b), we still should account for the few cases where we find pronominal inversion and the *-tu* particle in negative contexts. In Section 2.1, I outlined some theoretical possibilities to account for grammatical variation. To account for these few tokens of negative yes/no questions with pronominal inversion or the *-tu* particle, we could posit that Laurentian French speakers are alternating between two grammars (i.e. one grammar which has a Neg head above TP and one grammar without) or it could be related to the featural properties of the lexical items involved. For instance, it may be that there are two competing *pas* lexical items which differ in terms of

their selectional properties. In this line of thought, we could argue that one *pas* is similar to Acadian *point* in that it requires no overt Neg head (this *pas* would occur infrequently) while the other *pas* requires the presence of a Neg head. Thus, variation would fall out from the initial selection of lexical items rather than being situated in the grammar proper.

The difference in patterns observed for yes/no questions in terms of polarity results from the fact that the syntactic structure of negation in Acadian French is not the same as it is in Laurentian French. In both varieties, a negative adverb is generated in a *v*P adjunct position. However, the presence of a negative head above the TP in Laurentian French accounts for the verb movement blocking phenomena while its absence in Acadian French accounts for the possibility of negated interrogatives with the inversion or particle variants. However, the patterns observed with yes/no questions are but one effect of this different structure of negation. Section 5 provides further evidence of a structural difference between Acadian and Laurentian varieties of French with regard to negation.

5. The expression of future temporal reference in French

The results presented in Section 4 show that Acadian and Laurentian French pattern differently in terms of yes/no questions and I argue that they are the result of different syntactic structures of negation. Section 5 provides further evidence in support of this analysis by showing that this difference is involved in another part of the grammar, the expression of future temporal reference.

5.1 Previous studies of the future in French

In most spoken varieties of French, there are two main ways of expressing future temporal reference, the inflected future, shown in (29), which involves a suffix on the verb, or the periphrastic future, shown in (30), which involves use of semi-auxiliary *aller* 'to go' followed by the lexical verb in its infinitival form.[16]

(29) *Il y* ***aura*** *rien là.* (Hector, GC-12)
'There will be nothing there.'

(30) *Je* ***vas avoir*** *soixante-et-deux.* (Hilaire, GC-35)
'I'm going to be sixty-two.'

16. A third variant, the futurate present, was infrequent in the data and, in keeping with most variationist studies of future temporal reference in French, I limit the analysis to the two main variants.

Historically, grammarians attempted to account for variation between the forms of the future based on the particular functions of the variants. Poplack and Dion (2009) provide an overview of the range of purported grammatical functions attributed to the variants in grammarian commentary ranging from 1530 to the present.[17] They report that grammarians assign a wide range of functions to the variants that are sometimes contradictory. However, the most agreed-upon function (59% of grammarians consulted) is the use of the periphrastic future to denote proximate events thus giving rise to its label as the *futur proche* 'near future.' Despite a longstanding history of attributing the proximate reading to the periphrastic future, recent studies of spoken varieties of French have shown a discrepancy between grammarian commentary and actual usage. Studies of the future variable in Laurentian French have proliferated since the 1980s (Deshaies & Laforge 1981; Emirkanian & D. Sankoff 1985; Zimmer 1994; Poplack & Turpin 1999; Blondeau 2006; Poplack & Dion 2009; G. Sankoff, Wagner & Jensen 2012).[18] These studies consistently report that a single constraint, sentential polarity, conditions variant choice in all Laurentian varieties studied to date and that it is the strongest factor group uncovered in quantitative analyses. In all of these varieties, negative contexts favour almost categorically the inflected future while affirmative contexts favour the periphrastic future, but also allow for the presence of the inflected future. In contrast to the overwhelming polarity effect in Laurentian French, studies of Acadian French (King & Nadasdi 2003; Comeau 2015) report different results. For example, King and Nadasdi analyze the expression of future temporal reference in the Acadian spoken in the two Canadian provinces of Newfoundland and Labrador and Prince Edward Island. Their study shows that the polarity effect is not operative in these varieties of Acadian French.[19] Rather, the strongest factor group in conservative varieties of Acadian French is that of temporal distance, the constraint most agreed-upon by grammarians and commentators, according to Poplack and Dion's (2009) survey of grammarian commentary. With regard to temporal distance, events anticipated to

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17. It should be noted, however, that most of the sources they consider are from the 19th century and later.

18. Seutin (1975) notes the polarity constraint in effect in the French spoken in L'Isle-aux-Coudres, an island in the Saint Lawrence River northeast of Quebec City. While he reports that the inflected future occurs in affirmative clauses, he found only one token of a negated periphrastic future (N=569). I thank Rick Grimm (p.c.) for pointing this out.

19. An exception to trend is found in New Brunswick varieties of Acadian French (e.g. Chevalier 1996; Chiasson-Léger 2014) where polarity is shown to constrain variant choice. This suggests that some New Brunswick Acadian varieties pattern more like Laurentian French than the more conservative Acadian French (i.e. spoken in other Atlantic Provinces) for certain linguistic features.

occur in proximity to the moment of speech favour the periphrastic future while more distant events favour the inflected future. Thus, once again polarity appears to constrain a variable in Laurentian French, but not in conservative Acadian French.

5.2 The variable context

To circumscribe the envelope of variation, all tokens of the future variants that unambiguously express a future eventuality were extracted from the Butler Grosses Coques Sociolinguistic Corpus. However, future forms that have other functions were subsequently excluded from further analysis. These excluded tokens are as follows:

- tokens which express habitual aspect;

(31) *Des temps là, j'**allons dîner** là.* (Marie, GC-6)
'Sometimes, we go eat there.'

- use of *aller* as a verb of movement;

(32) *Je **vas aller** le fermer.* (Michelle, GC-29)
'I'm going to go close it.'

- reported speech of others;

(33) *Elle a dit: « Oh, je **vas** me **larguer** su le couch. »* (Marie, GC-6)
'She said, "Oh, I'm going to let myself unwind on the couch."'

- fixed expressions (such as leavetakings);

(34) *Bien, tu **reviendras**, Patrick !* (Evelyn, GC-18)
'Well, come again, Patrick!'

- hesitations, false starts, and other incomplete utterances.

(35) *Parce que […] ils **allont patiner** de, de quoi/* (Evelyn, GC-13)
'Because […] they are going skating some, some thing/'

Once such tokens were removed, the remaining 559 tokens formed the data set that was then submitted to statistical analyses.

5.3 *Potential conditioning factors*

A number of potential linguistic conditioning factors were operationalized based on the literature on the expression of future temporal reference in French.

5.3.1 *Temporal distance*

Since the most widely attributed function by grammarians to the future forms is that of temporal distance, each token was coded based on whether the anticipated

event would occur in less than an hour, as shown in (36), more than an hour, as shown in (37), more than a day, as shown in (38), more than a week, as shown in (39), and more than a year, as shown in (40).

(36) *Well, je **vas changer** la tape de bord.* (Carole, GC-6)
'Well, I'm going to change the cassette to the other side.'

(37) *Je **vas jouer** ça de soir, voir quoi ce-que c'est.* (Carole, GC-6)
'I'm going to play that tonight, to see what it is.'

(38) À la fin de la semaine, *je **pourrai** mettre mes pipes là.* (Éric, GC-23)
'At the end of the week, I'll be able to put my pipes there.'

(39) *J'**aurai** peut-être un autre job après Noël.* (Carole, GC-21)
'I'll maybe have another job after Christmas.'

(40) *J'allons rester là quatre, cinq ans, puis là j'**allons venir** back par icitte.*
'We're going to stay there four, five years, and then we're going to come back here.' (Carole, GC-23)

While Poplack and Turpin's (1999) study of Ottawa-Hull reports a weak effect for temporal distance, other studies of Laurentian varieties have found that temporal distance does not condition variant choice (e.g. Blondeau 2006; Grimm 2010; Grimm & Nadasdi 2011). As noted above, King and Nadasdi's study of Newfoundland and Prince Edward Island varieties of Acadian French found temporal distance to be the strongest factor group. More precisely, they found that proximate events (events within an hour from the moment of speech) favour the periphrastic future. They also found a linear correlation between temporal distance and use of the variants in that the further removed the anticipated event is from the speech time, the more the inflected future is favoured.

5.3.2 *Certainty/imminence*

Studies have also considered whether a future event's certainty or its imminence has an effect on variant choice. Poplack and Turpin (1999:152), drawing on the work of Vet (1993), operationalized this constraint that entails "a state at which the eventuality is impending." Departing somewhat from Poplack and Turpin, King and Nadasdi (2003:330) focus more on the certainty aspect of the constraint since, they argue, "temporal distinctions are already taken into account by the independent variable referred to as *temporal distance*." They coded each token based on whether the token seemed certain or not to occur based on the speaker's evaluation. To code for this factor group, I relied on contextual cues as much as possible (such as adverbials) to determine whether the speaker is certain, as in (41), or not, as in (42), that the future event will occur.

(41) *Il **va avoir** deux ans dans mars.* (Hilaire, GC-35)
'It's going to be two years in March.' [since the speaker's wife's death]

(42) *Puis bientôt, elle **larguera**, peut-être.* (Denise, GC-21)
'And later, she will let go, maybe.'

In the absence of overt contextual cues (e.g. *pour sûr* 'for sure' or *peut-être* 'maybe'), I adopted King and Nadasdi's approach whereby if the addition of *sans aucun doute* 'without a doubt' renders the token more certain, then it was coded as uncertain. Conversely, if the addition of *sans aucun doute* did not increase the certainty of the token, then it was coded as certain.

5.3.3 *Adverbial specification*

The factor group adverbial specification, that is, the presence or absence of specific or nonspecific temporal adverbials, has also been shown to influence variant choice, albeit with mixed results. For instance, Poplack and Turpin (1999) report that nonspecific adverbials favour use of the inflected future while the futurate present is favoured with specific time adverbials. Other studies found no effect of this factor group (King & Nadasdi 2003; Blondeau 2006; Grimm & Nadasdi 2011; Wagner & Sankoff 2011). The Baie Sainte-Marie data were coded based on the presence of specific adverbials, as in (43), the presence of nonspecific adverbials, as in (44), or the absence of adverbial specification, as in (45).

(43) *Je **vas** point te **voir** demain.* (Aimée, GC-11)
'I'm not going to see you tomorrow.'

(44) *Bien, je vous **verrons** à la Club bientôt.* (Nicole, GC-19)
'Well, we will see you at the Club soon.'

(45) *Si ça vient pesant, tu **verras** des lumps sur son plancher.* (Hector, GC-13)
'If it gets heavy, you will see lumps on his ceiling.'

5.3.4 *Sentential polarity*

Since the focus of this paper is the comparison between Laurentian and Acadian French on the basis of sentential polarity, I considered the effect of sentential polarity on variant choice, that is, whether the token was in an affirmative context, as in (46), or a negative context, as in (47).

(46) *Moi, je **travaillerai** sur l'autre bord.* (Dianne, GC-21)
'I will work on the other side.'

(47) *Denise, ièlle, **va** point **travailler** pour les next cinq ans.* (Carole, GC-6)
'Denise is not going to work for the next five years.'

As noted in Section 5.1, studies of Laurentian French overwhelmingly report a strong effect of sentential polarity on variant choice in the expression of future temporal

reference. In Laurentian French, negative contexts highly favour the inflected future. By contrast, King and Nadasdi's (2003) study of Acadian French showed that sentential polarity plays no effect on variant choice. Despite the overwhelming effect of the polarity constraint in the expression of future temporal reference in Laurentian varieties, there is no adequate explanation in the literature to account for its mechanism, although some suggestions have been put forward. For instance, some studies (Deshaies & Laforge 1981; Jeanjean 1988) have proposed that the association of negative contexts with the inflected future is a result of the inflected future's semantics, specifically its use is due to the hypothetical nature of the event. Laurendeau (2000) argues that the association is due to the nonassertion of the future eventuality, that is, both negative contexts and the inflected future entail a nonassertion of the realization of the future event. However, Poplack and Dion (2009) reject this explanation due to the fact that it does not account for the absence of the inflected future in other contexts of nonassertion nor does it explain why the periphrastic future is largely absent from negative contexts. While Wagner and Sankoff (2011) do not agree with Laurendeau's claim that the inflected future expresses a particular, inherent meaning, they argue that there is a link between negative contexts and contingency, perhaps due to the irrealis modality expressed by both.

Other possible explanations have been put forward in the literature. To account for the near-absence of the periphrastic future in negative contexts, Poplack and Dion (2009) cite an earlier study by Jarmasz (2007) who sought a possible structural explanation. This is based on the premise that the semi-auxiliary *aller* and the lexical verb cannot have any intervening material, including the negative marker *pas*. In the case of the inflected future, the negative marker follows the inflected verb and so there is no intervening matter. Jarmasz considers the possible effect of other intervening material, such as object clitics, both direct and indirect, adverbs, and the negative marker *pas*. However, she found that the periphrastic future is favoured with all types of intervening material with the exception of negative markers. Thus, Poplack and Dion conclude that the association of negative contexts with the inflected future cannot have a structural explanation. However, I argue in the present study that the association between the inflected future and negation is, in fact, due to the particular structure of negation in Laurentian French. The comparison with Acadian French allows us to see how a structural property of the negation system of Laurentian French can account for the polarity effect, a constraint for which a sufficient explanation has eluded us thus far.

5.4 Quantitative results

The overall distribution of the variants in the Baie Sainte-Marie Acadian French data is presented in Table 5. As the results show, the periphrastic future is used at higher rates than the inflected variant.

Table 5. Overall distribution of the future temporal reference variants in Baie Sainte-Marie Acadian French

	N=	Rate
Periphrastic Future	337	60%
Inflected Future	222	40%
Total	559	100%

Beyond the overall rates of occurrence, a detailed statistical analysis of the potential conditioning factors provides a better understanding of the linguistic system. The 559 tokens were analyzed in various combinations using Goldvarb X (Sankoff, Tagliamonte & Smith 2005) to determine the best model of the variation, shown in Table 6.

Table 6. Linguistic factors constraining choice of the periphrastic future in Acadian French

Input: .615
Log-likelihood: −361.955
Significance: 0.036

Temporal Distance	**Factor Weight**	**% Periphrastic Future**	**N=**
Within the hour	**.67**	77.9%	77
Longer than a year	**.53**	63.2%	38
Longer than a week	.46	55.4%	56
Within the day	.42	50%	44
Within the week	.32	38.8%	49
Range	35		
Adverbial Specification			
Absent	**.52**	64.7%	419
Present	.41	47.1%	140
Range	11		
Not selected as significant: Certainty, Polarity.			

As Table 6 shows, two factor groups are statistically significant for Baie Sainte-Marie Acadian French, temporal distance and adverbial specification.[20] However,

20. For a detailed discussion of the effects of temporal distance and adverbial specification in Baie Sainte-Marie Acadian French, see Comeau 2015.

what is relevant for the present paper is that sentential polarity does not condition variant choice in this variety of French. This result is in line with King and Nadasdi's (2003) findings for the Newfoundland and Prince Edward Island varieties and it further confirms a difference between conservative varieties of Acadian French and Laurentian French in terms of the polarity constraint. Section 5.5 provides a formal account of this difference.

5.5 Formal analysis of polarity and the future temporal reference variable in Canadian varieties of French

The quantitative results for Baie Sainte-Marie Acadian French show that, along with the yes/no questions variable, the polarity constraint does not influence variant choice for the future variable either, despite its overwhelming effect in Laurentian French. Although there have been numerous attempts to account for the polarity constraint, there remains to be a satisfactory explanation of its effect on the future temporal reference variable. The methodological approach proposed in this paper is that the comparison of a single constraint across multiple sociolinguistic variables allows us to uncover structural differences between related varieties. Again, I argue that the particular pattern of polarity (i.e. operative in Laurentian French for two variables, but not operative in Acadian French) results from a single structural difference between the two varieties.

In Laurentian French, the periphrastic future is almost non-existent in negative contexts while the inflected future varies with the periphrastic future in affirmative contexts. This unequal distribution of the variants has led some researchers, such as Wagner and Sankoff (2011) and Sankoff, Wagner and Jensen (2012) to exclude negative tokens entirely from their analysis, instead choosing to focus on the affirmative contexts. Thus, what needs to be accounted for is the disfavouring of the periphrastic future in negative contexts in Laurentian French, but not in Baie Sainte-Marie Acadian French.

Some generative work on the French periphrastic future (e.g. Rowlett 2007) has argued for a biclausal analysis of the periphrastic future with *aller* as a subject-raising verb, as shown in Figure 4. According to this analysis, *aller* is in the higher clause (higher TP) and the lexical verb is in the lower clause (lower TP). In subject-to-subject raising constructions, we assume the subject of the embedded clause raises to the matrix clause in order to occupy the structural subject position despite the fact that it received its thematic role from the embedded clause verb. This analysis is reflected in the structure in Figure 4 in which *Jean* raises from the lower TP (Spec, *v*P) to occupy the subject position in the higher TP (Spec, TP).

As Figure 4 shows, the biclausal analysis of the French periphrastic future entails two separate TPs; the higher one hosts *aller* while the lower one is an infinitive clause with the lexical verb, in this case *manger* 'to eat'.

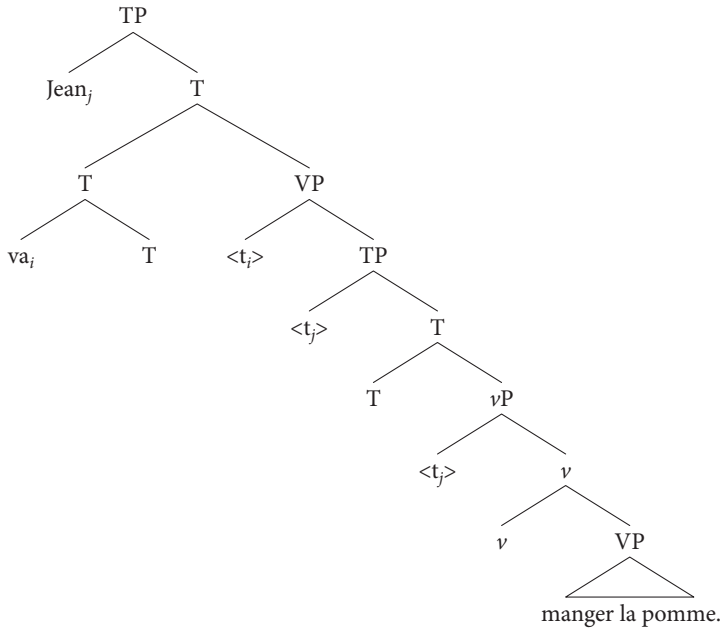

Figure 4. A biclausal structural representation of the French periphrastic future

Evidence for the biclausal structure of the periphrastic future can be found in the distribution of object clitics. The position of object clitics with a periphrastic future construction provides evidence that they are located in a lower position than *aller*, which suggests that they are attached to the lower clause T, as shown in (48) and represented in Figure 5.

(48) *Je **vais** le **manger**.*
'I am going to eat it.'

Examples like (48) show that the object clitic attaches to something lower than the matrix clause T since a sentence with the object clitic attached to the matrix clause T results in an ungrammatical sentence, as shown in (49).

(49) **Je le **vais manger**.*

Since object clitics point to the presence of an embedded clause T, this suggests that the French periphrastic future is biclausal rather than monoclausal.

If we consider the other future variant, the inflected future, I argue that the structure is monoclausal, as evidenced by the example in (50).

(50) *Je le **mangerai**.*

With the inflected future, there is one T and object clitics surface in a position to the left of the lexical verb, which suggest that they cliticize onto the T that also hosts the lexical verb inflected for the future tense.

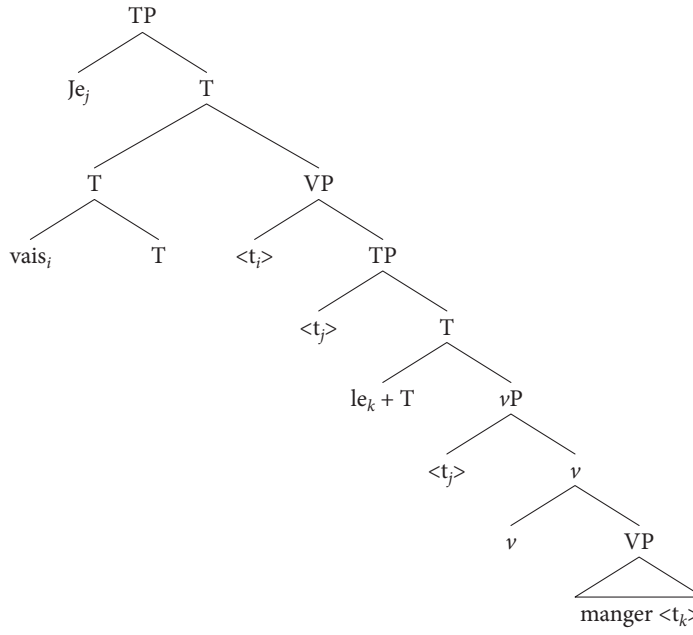

Figure 5. A biclausal structural representation of the French periphrastic future with an object clitic

Now that I have established that the periphrastic future construction involves a biclausal structure while the inflected future involves a monoclausal structure, we can examine how this affects the interaction of negation with the expression of future temporal reference. The differences between the Acadian and Laurentian negative structures have different consequences in terms of what can attach to the matrix clause verb *aller*. I argue that the matrix clause *aller*, in both Laurentian French and Acadian French, selects a TP as a complement and that this results in a biclausal structure. In terms of checking theory, we could posit that *aller* bears an uninterpretable feature specified for T which must be satisfied (i.e. the featural specification of *aller* would look like [V, *u*T, …]). In order to satisfy this [uT] feature on *aller*, it must merge with a TP clause. However, recall that Laurentian French negative structures have a negative head above the TP, a head that is often not spelled out (shown in Figure 2). I argue that the presence of this head interferes with the checking relation between the T head of the embedded clause and the matrix clause *aller*. Thus, the presence of the negative head above TP in Laurentian French results in an ungrammatical structure. In contrast, there is no negative head above the TP of the embedded clause in Acadian French (as shown in Figure 3) so *aller* can successfully merge with the embedded clause.

As was the case with the yes/no questions variable, we should also be able to account for the presence of the periphrastic future in negative contexts. As was

the case with the yes/no questions variable, there are relatively few periphrastic future tokens in negative contexts: Poplack and Dion (2009:573) report a rate of 3.2% of periphrastic futures in negative contexts in the Ottawa-Hull corpus and 1.3% in the *Récits* data.[21] Again, I maintain that we could account for the variability by positing that negative structures in Laurentian French involve alternation between a *pas* lexical item which requires a negative head above the TP and one which does not (with the former being selected at least 90% of the time in most Laurentian varieties). The fact that negation in Laurentian French is overwhelmingly expressed with a negative head is thus reflected by the strength of the polarity constraint operating on the two grammatical variables, yes/no questions and the expression of future temporal reference.

If the presence of the negative head interferes with the checking operation between *aller* and the embedded clause TP in Laurentian French, why is it that other intervening material does not? As noted in Section 5.3, Poplack and Dion cite Jarmasz's work as to whether it is the fact that negation intervenes between *aller* and the lexical verb causes a problem. However, they consider the presence of object clitics and adverbs. With regard to those two types of intervening material, I argue that they do not cause a problem with regards to the selection of the embedded clause TP since, in the case of object clitics, these are attached to the embedded clause TP and so are not considered an intervening head for checking. With regard to the presence of adverbials, again, I argue that these are non-argumental materials that do not interfere with the selection of the embedded clause TP. As such, it is not the fact that there is intervening material, but precisely because there is an intervening negative head that the negative periphrastic future structure in Laurentian French crashes. This analysis captures the fact that it is specifically the negative head that causes a problem in terms of the structure of the periphrastic future in Laurentian French, but that other intervening material do not. With regard to Acadian French, the lack of a polarity effect results from the fact that negation is structurally different from the Laurentian French negative structure. This structural difference, I argue, is at the root of the multiple polarity effects observed across variables.

6. Conclusion

The analysis presented in this paper integrates aspects of both formal generative theory and comparative sociolinguistics. Specifically, I argue that the comparison

21. Studies of other varieties of Laurentian French (Blondeau 2006; Wagner and Sankoff 2011) report similar rates, with the exception of Grimm (2010:88) who reports 26% of negative tokens to be of the periphrastic future, which he interprets as a recent change.

of a single constraint, rather than a single variable, can shed light on structural differences between varieties. While this paper contributes to the comparative sociolinguistics approach, it also contributes to the field of sociosyntax, that is, efforts to integrate formal theories of grammar with variationist sociolinguistics. While numerous studies point to various mechanisms that might account for variability, the analysis presented in this paper shows that by extending the comparative sociolinguistics approach, we can uncover aspects of the syntactic structure of the varieties under investigation. Thus, the present paper's methodology provides an empirical basis for understanding structural differences between varieties of the same language or of potentially different languages as well.

Furthermore, this paper contributes to work on French sociolinguistics more generally in that it seeks to provide a description of the syntax of negation for two varieties of French. While both yes/no questions and the expression of future temporal reference are widely studied variables in French, there has been a lacuna in terms of adequately explaining the effect of polarity for these two sociolinguistic variables. The analysis presented in this paper argues that the polarity effects result from differences in the syntax of negation.

With regard to potential future avenues for this approach, we might consider what other grammatical variables might show the effect of the structural difference between varieties. In addition, studies of other varieties of French would provide an important testing ground for the approach presented in this paper. If the analysis proves correct, we would expect other varieties of French to pattern similarly for both yes/no questions and future variables (i.e. either the polarity effect is operative for both variables or it is not). Another potential avenue for further research is the diachronic study of both variables in French to see whether the polarity constraint becomes 'online' for the two variables at the same point in time. While the comparative-constraint approach proposed in this paper warrants further testing, I argue for the importance of data-driven formal accounts in the analysis of grammatical variation.

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References

Adger, David. 2006. Combinatorial variability. *Journal of Linguistics* 42(3). 503–530. doi:10.1017/S002222670600418X

Adger, David & Jennifer Smith. 2005. Variation and the minimalist program. In Leonie Cornips & Karen P. Corrigan (eds.), *Syntax and variation: Reconciling the biological and the social*, 149–178. Philadelphia, PA: John Benjamins. doi:10.1075/cilt.265.10adg

Adger, David & Jennifer Smith. 2010. Variation in agreement: A lexical feature-based approach. *Lingua* 120(5). 1109–1134. doi:10.1016/j.lingua.2008.05.007

Ashby, William J. 1977. Interrogative forms in Parisian French. *Semasia* 4. 35–52.

Auger, Julie. 1996. Subject-clitic inversion in Romance: A morphological analysis. In Claudia Parodi, Carlos Quicoli, Mario Saltarelli, & Maria Luisa Zubizarretta (eds.), *Aspects of romance linguistics: Selected papers from the Linguistic Symposium on Romance Languages XXIV (March 10–13 1994)*, 23–40. Washington, DC: Georgetown University Press.

Bayley, Robert. 2013. Variationist sociolinguistics. In Robert Bayley, Richard Cameron, & Ceil Lucas (eds.), *The Oxford handbook of sociolinguistics*, 11–30. New York, NY: Oxford University Press. doi:10.1093/oxfordhb/9780199744084.013.0001

Beaulieu, Louise & Wladyslaw Cichocki. 2008. La flexion postverbale *-ont* en français acadien: une analyse sociolinguistique. *Canadian Journal of Linguistics* 53(1). 35–62. doi:10.1353/cjl.0.0005

Blondeau, Hélène. 2006. La trajectoire de l'emploi du futur chez une cohorte de Montréalais francophones entre 1971 et 1995. *Canadian Journal of Applied Linguistics/Revue de l'Université de Moncton* 9(2). 73–98.

Chevalier, Gisèle. 1996. L'emploi des formes du futur dans le parler acadien du sud-est du Nouveau-Brunswick. In Annette Boudreau & Lise Dubois (eds.), *Les Acadiens et leur(s) langue(s): quand le français est minoritaire*, 75–89. Moncton, NB: Éditions d'Acadie.

Chiasson-Léger, Mélissa. 2014. Future temporal reference in New Brunswick Acadian French. Paper presented at the 43rd New Ways of Analyzing Variation conference. Chicago, IL: University of Illinois at Urbana-Champaign and University of Illinois at Chicago.

Chomsky, Noam. 1965. *Aspects of the theory of syntax*. Cambridge, MA: The MIT Press.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: The MIT Press.

Chomsky, Noam. 2000a. Minimalist inquiries: The framework. In Roger Martin, David Michaels, & Juan Uriagereka (eds.), *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, 89–156. Cambridge, MA: The MIT Press.

Chomsky, Noam. 2000b. *New horizons in the study of language and the mind*. Cambridge, MA: Cambridge University Press. doi:10.1017/CBO9780511811937

Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A Life in Language*, 1–52. Cambridge, MA: The MIT Press.

Comeau, Philip. 2007. *Pas* vs. *point*: Variation in Baie Sainte-Marie Acadian French. Paper presented at the 36th New Ways of Analyzing Variation conference. Philadelphia, PA: University of Pennsylvania.

Comeau, Philip. 2011. *A window on the past, a move toward the future: Sociolinguistic and formal perspectives on variation in Acadian French*. Toronto, ON: York University doctoral dissertation.

Comeau, Philip. 2015. Vestiges from the grammaticalization path: The expression of future temporal reference in Acadian French. *Journal of French Language Studies*, by Cambridge University Press (4 January, 2015.), 25(3), 339–365. doi:10.1017/S0959269514000301

Comeau, Philip, Ruth King & Gary R. Butler. 2012. New insignts on an old rivalry: The *passé simple* and the *passé composé* in spoken Acadian French. *Journal of French Language Studies* 22(3). 315–343. doi:10.1017/S0959269511000524

Comeau, Philip, Ruth King & Carmen LeBlanc. 2014. Dialect contact and the sociolinguistic history of Acadian French. Paper presented at the Methods in Dialectology XV Conference. Groningen, The Netherlands: University of Groningen.

Cornips, Leonie & Karen P. Corrigan (eds.). 2005. *Syntax and variation: Reconciling the biological and the social*. Philadelphia, PA: John Benjamins. doi:10.1075/cilt.265

Coveney, Aidan. 2002. *Variability in spoken French: A sociolinguistic study of interrogation and negation*. Bristol, UK: Intellect Books.

Deshaies, Denise & Ève Laforge. 1981. Le futur simple et le futur proche dans le français parlé dans la ville de Québec. *Langues et linguistique* 7. 21–37.

Dewaele, Jean-Marc. 1999. Word order variation in interrogative structures of native and non-native French. *ITL – International Journal of Applied Linguistics* 123–124. 161–180.

Di Sciullo, Anne-Marie & Mireille Tremblay. 1993. Négation et interfaces. *Toronto Working Papers in Linguistics* 12(1). 75–89.

Elsig, Martin. 2009. *Grammatical variation across space and time: The French interrogative system*. Philadelphia, PA: John Benjamins. doi:10.1075/silv.3

Elsig, Martin & Shana Poplack. 2006. Transplanted dialects and language change: Question formation in Québec. *University of Pennsylvania Working Papers in Linguistics: Papers from NWAV* [*New Ways of Analyzing Variation*] *34* 12(2). 77–90.

Embick, David & Rolf Noyer. 2007. Distributed morphology and the syntax–morphology interface. In Gillian Ramchand & Charles Reiss (eds.), *The Oxford handbook of linguistic interfaces*, 289–324. New York, NY: Oxford University Press. doi:10.1093/oxfordhb/9780199247455.013.0010

Emirkanian, Louisette & David Sankoff. 1985. Le futur simple et le futur périphrastique. In Monique Lemieux, Henrietta J. Cedergren, & Fernande Dupuis (eds.), *Les tendances dynamiques du français parlé à Montréal*, 189–204. Montreal, QC: Office de la langue française.

Flikeid, Karin. 1994. Origines et évolution du français acadien à la lumière de la diversité contemporaine. In Raymond Mougeon & Édouard Beniak (eds.), *Les origines du français québécois*, 275–326. Sainte-Foy, QC: Les Presses de l'Université Laval.

Foulet, Lucien. 1921. Comment ont évolué les formes de l'interrogation. *Romania* 47. 243–348. doi:10.3406/roma.1921.4437

Fox, Cynthia A. 1989. *Syntactic variation and interrogative structures in Québécois*. Bloomington, IN: Indiana University doctoral dissertation.

Gesner, B. Edward. 1979. É*tude morphosyntaxique du parler acadien de la Baie Sainte-Marie, Nouvelle-Écosse, Canada*. Québec, QC: International Center for Research on Bilingualism.

Grimm, D. Rick. 2010. A real-time study of future temporal reference in spoken Ontarian French. *University of Pennsylvania Working Papers in Linguistics: Selected Papers from NWAV* [New Ways of Analyzing Variation] *38* 16(2). 83–92.

Grimm, Rick & Terry Nadasdi. 2011. The future of Ontario French. *Journal of French Language Studies* 21(2). 173–189. doi:10.1017/S0959269510000335

Halle, Morris & Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In Kenneth Hale & Samuel Jay Keyser (eds.), *The view from building 20: Essays in linguistics in honor of Sylvain Bromberger*, 111–176. Cambridge, MA: The MIT Press.

Jarmasz, Lidia-Gabriela. 2007. The future and negation in Canadian French. Toronto, ON: University of Toronto unpublished manuscript.

Jeanjean, Colette. 1988. Le futur simple et le futur périphrastique en français parlé: étude distributionnelle. In Claire Blanche-Benveniste & André Chervel (eds.), *Grammaire et histoire de la grammaire: hommage à la mémoire de Jean Stéfanini*, 235–257. Marseille, France: Université de Provence.

Kayne, Richard S. 1972. Subject inversion in French interrogatives. In Jean Casagrande & Bohdan Saciuk (eds.), *Generative Studies in Romance Languages*, 70–126. Cambridge, MA: Newbury House.

Kayne, Richard S. 2000. *Parameters and universals*. New York, NY: Oxford University Press.

King, Ruth. 2005. Morphosyntactic variation and theory: Subject-verb agreement in Acadian French. In Leonie Cornips & Karen P. Corrigan (eds.), *Syntax and variation: Reconciling the biological and the social*, 199–229. Philadelphia, PA: John Benjamins. doi:10.1075/cilt.265.12kin

King, Ruth. 2013a. *Acadian French in time and space: A study in morphosyntax and comparative sociolinguistics*. Durham, NC: Duke University Press.

King, Ruth. 2013b. Morphosyntactic variation. In Robert Bayley, Richard Cameron, & Ceil Lucas (eds.), *The Oxford handbook of sociolinguistics*, 445–463. New York, NY: Oxford University Press. doi:10.1093/oxfordhb/9780199744084.013.0022

King, Ruth & Terry Nadasdi. 2003. Back to the future in Acadian French. *Journal of French Language Studies* 13(3). 323–337. doi:10.1017/S0959269503001157

King, Ruth, Terry Nadasdi & Gary R. Butler. 2004. First-person plural in Prince Edward Island Acadian French: The fate of the vernacular variant *je…ons*. *Language Variation and Change* 16(3). 237–455. doi:10.1017/S0954394504163035

Kroch, Anthony S. 1989. Reflexes of grammar in patterns of language change. *Language Variation and Change* 1(3). 199–244. doi:10.1017/S0954394500000168

Kroch, Anthony S. 1994. Morphosyntactic variation. In Katharine Beals (ed.), *Papers from the* 30th *regional meeting of the Chicago Linguistic Society: Parasession on variation and linguistic theory*, 180–201. Chicago, IL: Chicago Linguistic Society.

Kroch, Anthony, Ann Taylor & Donald Ringe. 2000. The Middle English verb-second constraint: A case study in language contact and language change. In Susan C. Herring, Pieter van Reenen, & Lene Schøsler (eds.), *Textual parameters in older language*, 353–391. Philadelphia, PA: John Benjamins. doi:10.1075/cilt.195.17kro

Labov, William. 1963. The social motivation of a sound change. *Word* 19. 273–309. doi:10.1080/00437956.1963.11659799

Labov, William. 1969. Contraction, deletion, and inherent variability of the English copula. *Language* 45(4). 715–762. doi:10.2307/412333

Labov, William. 1972. *Sociolinguistic patterns*. Philadelphia, PA: University of Pennsylvania Press.

Laurendeau, Paul. 2000. L'alternance futur simple/futur périphrastique: une hypothèse modale. *Verbum* 22(3). 277–292.

LeBlanc, Carmen. 2013. Les interrogatives totales en français madelinot: Continuité dans la filiation. In Alena Barysevich, Alexandra D'Arcy, & David Heap (eds.), *Proceedings of Methods*

XIV: Papers from the fourteenth International Conference on Methods in Dialectology, 2011, 90–101. New York, NY: Peter Lang.

Martineau, France. 2005. Perspectives sur le changement linguistique: aux sources du français canadien. *Canadian Journal of Linguistics* 50(1/2/3/4). 173–213.

Martineau, France. 2011. *Ne*-absence in declarative and *yes*/*no* interrogative contexts: Some patterns of change. In Pierre Larrivée & Richard P. Inghan (eds.), *The evolution of negation: Beyond the Jespersen cycle*, 179–207. Boston, MA: De Gruyter Mouton.

Martineau, France & Raymond Mougeon. 2003. A sociolinguistic study of the origins of *ne* deletion in European and Quebec French. *Language* 79(1). 118–152. doi:10.1353/lan.2003.0090

Martineau, France & Marie-Thérèse Vinet. 2005. Microvariation in French negation markers: A historical perspective. In Montserrat Batllori, Mari-Lluïsa Hernanz, Carme Picallo, & Francesc Roca (eds.), *Grammaticalization and parametric variation*, 194–205. New York, NY: Oxford University Press. doi:10.1093/acprof:oso/9780199272129.003.0012

Morin, Annick. 2008. The Quebec French interrogative particle *tu*: A question of definiteness. Toronto, ON: University of Toronto unpublished manuscript.

Morin, Yves-Charles. 1985. On the two French subjectless verbs *voici* and *voilà*. *Language* 61(4). 777–820. doi:10.2307/414490

Parott, Jeffrey K. 2007. *Distributed morphological mechanisms of labovian variation in morphosyntax*. Washington, DC: Georgetown University dissertation.

Pohl, Jacques. 1965. Observations sur les formes d'interrogation dans la langue parlée et dans la langue écrite non-littéraire. In Georges Straka (ed.), *Linguistique et philologie romanes. Actes du Xe Congrès international de linguistique et de philologie romanes*, 501–513. Paris, France: Klincksieck.

Poplack, Shana. 1989. The care and handling of a mega-corpus: The Ottawa-Hull French Project. In Ralph W. Fasold & Deborah Schiffrin (eds.), *Language change and variation*, 411–451. Philadelphia, PA: John Benjamins. doi:10.1075/cilt.52.25pop

Poplack, Shana & Nathalie Dion. 2009. Prescription vs. praxis: The evolution of future temporal reference in French. *Language* 85(3). 557–587. doi:10.1353/lan.0.0149

Poplack, Shana & Anne St-Amand. 2007. A real-time window on 19th century vernacular French: The *Récits du français québécois d'autrefois*. *Language in Society* 36(5). 707–734. doi:10.1017/S0047404507070662

Poplack, Shana & Sali A. Tagliamonte. 2001. *African American English in the diaspora*. Malden, MA: Wiley-Blackwell Publishers.

Poplack, Shana & Danielle Turpin. 1999. Does the *Futur* have a future in (Canadian) French? *Probus* 11(1). 133–164. doi:10.1515/prbs.1999.11.1.133

Rizzi, Luigi. 1990. *Relativized minimality*. Cambridge, MA: The MIT Press.

Rowlett, Paul. 2007. *The syntax of French*. New York, NY: Cambridge University Press. doi:10.1017/CBO9780511618642

Sankoff, David, Sali A. Tagliamontre & Eric Smith. 2005. Goldvarb X: A variable rule application for Macintosh and Windows. Toronto, ON: Department of Linguistics, University of Toronto.

Sankoff, Gillian & Diane Vincent. 1977. L'emploi productif du *ne* dans le français parlé à Montréal. *Le français moderne* 45(3). 243–256.

Sankoff, Gillian, Suzanne Evans Wagner & Laura Jensen. 2012. The long tail of language change: Québécois French futures in real time. *University of Pennsylvania Working Papers in Linguistics: Selected Papers from NWAV* [New Ways of Analyzing Variation] *40* 18(2). 107–116.

Seutin, Émile. 1975. *Description grammaticale du parler de l'Île-aux-Coudres*. Montreal, QC: Les Presses de l'Université de Montréal.

Söll, Ludwig. 1983. L'interrogation directe dans un corpus de langage enfantin. In Franz Josef Hausmann (ed.), *Études de grammaire française descriptive*, 45–54. Heidelberg, Germany: Groos.

Statistics Canada. 1991. 2A Profile, 1991 – NS – Southern Nova Scotia (21 areas) (table), 1991 (2A) basic questionnaire, Provinces to Municipalities (database), Using E- STAT (distributor). http://estat.statcan.gc.ca/cgi280win/cnsmcgi.exe?Lang=E&EST-Fi=EStat\English\SC_RR-eng.htm. (Accessed September 25, 2011)

Tagliamonte, Sali. 2002. Comparative sociolinguistics. In J. K. Chambers, Peter Trudgill, & Natalie Schilling-Estes (eds.), *The handbook of language variation and change*, 729–763. Malden, MA: Blackwell Publishing.

Terry, Robert M. 1970. *Contemporary French interrogative structures*. Montreal, QC: Éditions Cosmos.

Thomas, Dominike. 2010. Étude *sociolinguistique historique du système interrogatif*: *les interrogatives dans le Journal de Jean Héroard*. Ottawa, ON: University of Ottawa MA thesis.

Travis, Lisa. 1984. *Parameters and effects of word order variation*. Cambridge, MA: MIT dissertation.

Vet, Co. 1993. Conditions d'emploi et interprétation des temps futurs du français. *Verbum* 4. 71–84.

Vinet, Marie-Thérèse. 2000a. Feature representation and *-tu (pas)* in Quebec French. *Studia Linguistica* 54(3). 381–411. doi:10.1111/1467-9582.00071

Vinet, Marie-Thérèse. 2000b. La polarité pos/nég, *-tu (pas)* et les questions oui/non. *Revue québécoise de linguistique théorique et appliquée* 28(1). 137–149.

Weinreich, Uriel, William Labov & Marvin I. Herzog. 1968. Empirical foundations for a theory of language change. In Winfred P. Lehmann & Yakov Malkiel (eds.), *Directions for historical linguistics*, 95–195. Austin, TX: The University of Texas Press.

Wagner, Suzanne Evans & Gillian Sankoff. 2011. Age grading in the Montréal French inflected future. *Language Variation and Change* 23(3). 275–313. doi:10.1017/S0954394511000111

Zanuttini, Raffaella. 1997. Negation and verb movement. In Lilian Haegeman (ed.), *The new comparative syntax*, 214–245. New York, NY: Longman.

Zeijlstra, Hedzer Hugo. 2004. *Sentential negation and negative concord*. Amsterdam, The Netherlands: University of Amsterdam dissertation.

Zimmer, Dagmar. 1994. « Ça va tu marcher, ça marchera tu pas, je le sais pas » (71: 15): le futur simple et le futur périphrastique dans le français parlé à Montréal. *Langues et linguistique* 20. 213–226.

Variant-centered variation and the *like* conspiracy

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The conventional methodology of variationist linguistics foregrounds the variable as the object of study: each variant is situated in the envelope of variation against the other variants it competes with. This paper argues that it is necessary to look beyond the context of the alternations a variant participates in in order to get a full picture of the factors affecting variation. The multi-functional variant *like* is used as a case study to illustrate the value of a variant-centered analysis: the fact that several distinct variables are all simultaneously changing toward the variant *like* suggests that a variant can be targeted for change across multiple variables, parallelling Campbell-Kibler (2011)'s model of the variant as the carrier of sociolinguistic meaning. It is conjectured that the set of changes toward *like* can be explained as a top-down discursive change targeting *like* as an indicator of vague literality, a function it retains in multiple distinct variable contexts.

Keywords: *like*, locus of linguistic variation, conspiracy, variationist theory, sociolinguistic change, discursive practice, envelope of variation

1. Variables and variants in variationist theory

The central object of study in variationist linguistics is traditionally the linguistic variable – a fact that is less tautological than it sounds. The concept of the variable was formalized by Labov (1966:13) as "a class of variants which are ordered along a continuous dimension and whose position is determined by an independent linguistic or extra-linguistic variable", but articulated much more loosely in its most general formulation by Chambers & Trudgill (1980: 50) as "socially different but linguistically equivalent ways of doing or saying the same thing". Implicit in both of these definitions is a model of how linguistic variation is produced: the speaker begins with some "thing" that they wish to linguistically do or say; and various social, stylistic, and internal factors probabilistically influence their choice between the several possible variants that constitute the "equivalent ways" of doing so. The fundamental methodological principle that defines the

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study of the variable is the principle of accountability (Labov 1972): in order to study the factors that condition variation, we must enumerate not only all tokens of the *variant* of interest, but also all tokens of the other variants with which it competes, in order to accountably calculate how frequently speakers use one variant when they *could* have used a different one, and thus what factors influence the choice between variants. As Campbell-Kibler (2011) notes, this principle "places the paradigmatic relationship of the variable at the heart of the variationist enterprise." Language change, in the variationist tradition, is conceptualized as a change in the frequency of one variant or another as a percentage of instances of a given variable – i.e., as a change among *which* of the "equivalent ways" are to be used for "saying the same thing".

It is widely noted (e.g., Lavandera 1978, Dines 1980, Buchstaller 2009, Pichler 2010) that the principle of accountability is more challenging to apply to variation in discourse-pragmatic elements than to low-level phonological or morphological variation, chiefly because it is more difficult to delimit the set of alternative variants that the variant of interest competes with. While alternate phonological realizations of a single morpheme, or phonetic realizations of a single phoneme, can be regarded fairly concretely as multiple ways of saying the same thing, a discourse element may have a wide spectrum of semantic, pragmatic, and grammatical functions; two discourse elements may overlap in some of those functions but not in others, making it difficult to determine to what extent or in what contexts they instatiate ways of "doing or saying the same thing". However, accountability of some sort is still necessary for a variationist analysis of discourse-pragmatic elements, quantitatively reckoning the frequency of use of some variant in comparison to the set of instances in which it could have been used but wasn't. Pichler (2010) outlines various ways this has been undertaken in different studies: for example, two elements or constructions may be identified as representing the same variable if they just share the same semantic or pragmatic function, or they may also be required to conform to a common structural template. When it is not feasible to "close the set" of variants in this way, researchers may simply calculate the frequency of a variant of interest per, for example, thousand words of speech; but this is recognized as a substitute for variable-based accountability.

A recurring theme in variationist linguistics is the exploration of what the nature of the choice between variants is – where in the grammar (or outside of it) such choices are situated, and how they relate to each other. Wallenberg (2013) spells out the object of study in this research program very concisely: "at some point in the derivation, the speaker reaches a decision-point"; research on this topic focuses on establishing when in the derivation this takes place, and exactly what the nature is of the options that the speaker is choosing between. For example, Rickford et al. (1991) explored the empirical and methodological bases for

the hypotheses that deletion, contraction, and retention of the copula in African-American Vernacular English are three variants of a single variable – i.e., a single choice made between three variants at a single point in the grammatical derivation – or two variable processes that feed or bleed each other in one order or another; Guy (1991) conceptualized (TD)-deletion as a phonological process that operates at specific points in the phonological derivation. More recently, Tamminga (2014a) has explored whether (TD) or (ing) variation in monomorphemic words is structurally the same variable as it is when (TD) or (ing) constitutes an affix; MacKenzie (2013) argues that auxiliary contraction is a conflation of two distinct variable processes; and Wallenberg (2013) contends that different types of morphosyntactic variation are instantiated by the same type of grammatical mechanism. What all of these studies have in common is a focus on examining variables that have sociolinguistic meaning of some kind and establishing what processes in the grammar create the variability they exhibit.

Wolfram (1991:29), however, argued "that the formal display of linguistic processes and the display of social and linguistic covariation are not inherently tied together in the most revealing sociolinguistic description" – i.e., that explaining the grammatical processes that produce sociolinguistically-conditioned variation, theoretically enlightening though it might be, is not necessarily relevant to the social meaning the variable exhibits or the social conditioning on its variation.[1] The linguistic variable as a sociolinguistic entity, Wolfram argued, is better conceptualized as "a convenient, largely heuristic construct" for describing how variants are correlated with social factors, and the social meanings associated with variants may be independent of the structure of the grammatical processes that produce them: "this revealing sociolinguistic profile is free to cross different… phonological processes". Thus from this perspective, the variable per se cannot simultaneously be defined as a "decision-point", in Wallenberg (2013)'s terms, and be characterized as an entity that is potentially subject to sociolinguistic evaluation; there is no guarantee that those two descriptions apply to the same things.

Labov (1993) makes a related point with his "Interface Principle": "Members of the speech community evaluate the surface forms of language but not more abstract structural features"[2] such as "phonemic contrasts, rule ordering, or the

1. Wolfram was discussing specifically the theoretical paradigm of variable generative-style rules, which is now out of fashion; but his basic argument extends beyond that paradigm to accounts of the grammatical structure of variation in general.

2. Meyerhoff (2001) and Buchstaller & Levon (2014) interpret this as meaning that morphosyntactic variables such as subject-verb agreement cannot be subject to sociolinguistic evaluation; under this interpretation the Interface Principle is clearly false. However, the more

direction or order of variable constraints." In other words, although dialects, speakers, or utterances may differ from one another in terms of what abstract structures and grammatical rules are employed, those structures and rules themselves are not subject to sociolinguistic evaluation – only the surface-level visible features of the utterances they produce are evaluated.[3] For example, although the phonetic implementation of the vowel phoneme in the word *caught* may be subject to evaluation and have social meaning attached to it, the fact of whether or not the phonemic inventory contrasts the phoneme in words like *caught* with that in words like *cot* is not itself directly sociolinguistically evaluated. This echoes Wolfram's concern that the formal production-based model of the sociolinguistic variable does not capture the entity that undergoes sociolinguistic evaluation: though a speaker might employ a phonological process to replace *-ing* with *-in'* in some words, and a morphological process in other words, what is subject to sociolinguistic evaluation (according to this argument) is whether *-in'* is actually produced, not whether the morphological process is employed or whether the phonological process is employed. Thus the actual variable grammar itself plays the role of the "more abstract structural features" alluded to by Labov (1993).

Campbell-Kibler (2011) goes a step farther than this with her finding that the social meanings associated with competing variants such as *-in'* and *-ing* need not even be complementary to each other. She compares listeners' sociolinguistic judgment responses to three matched guises: one using *-ing*, one using *-in'*, and a null guise in which it was impossible for the listener to tell whether *-in'* or *-ing* was used. She finds that the difference between listeners' judgments of the *-in'* guise and the null guise is *not* simply the inverse of that between the *-ing* guise and the null guise; for example, the use of *-ing* made a speaker sound more intelligent and articulate than the null guise, but the use of *-in'* did not make the speaker sound *less* intelligent. In other words, the social meaning a listener extracts from hearing *-ing* is not simply the opposite of the social meaning extracted from hearing *-in'*. The two variants are found to have social meanings that are formally independent of each other, even though the speaker produces them strictly as alternatives to one another.

What this means, essentially, is that sociolinguistic *perception* does not respect the principle of accountability in the way that sociolinguistic *research* does. In order

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generous interpretation I use here, where the division is between surface-visible features on the one hand (which may be phonological, syntactic, lexical, etc.) and on the other hand the underlying abstract rules, contrasts, and constraints which produce them, I believe has value.

3. A similar principle probably applies to determine what features can be the subject of dialect diffusion; cf. Labov (2007).

to conduct an accountable variationist analysis, we must situate each variant in comparison to the other variants with which it competes, and it is in the context of such a comparison that we *as researchers* generally try to evaluate the social meaning of one variant versus another. But apparently the listener does not do that – i.e., it seems that the listener does not determine the social meaning of *-in'* on the basis of its status as an alternative to *-ing*, but rather as a form on its own terms that has its own social meaning. Thus, in Campbell-Kibler's analysis, the variant, not the variable, is the entity to which social meaning is attached. This conclusion is in a sense just a more developed form of Labov's Interface Principle: if the object of sociolinguistic evaluation is "the surface forms of language but not more abstract structural features," as Labov puts it, we can construe the very fact that *-in'* exists in covariation with *-ing* to be one of those abstract structural features. The surface form is simply *-in'*, not the choice of *-in'* over *-ing*, and it is the surface form that carries social meaning. This also echoes an observation by Dines (1980) that discourse variants can sociolinguistically index characteristics like class and style, even though (as discussed above) it is not always possible to establish exactly what other variants a given variant is competing with. If a variant can have clear social meaning even when its role as an exponent of a specific variable is obscure, this supports the hypothesis that the variant, not the variable, is where sociolinguistic meaning is situated.

The discussion above invites the following question: what happens when a single apparent surface form acts as a variant of *multiple* distinct variables?[4] If it is in the variant itself that sociolinguistic meaning is situated, rather than the variable's contrast with covariants, that would seem to predict that a single surface variant should have the same social meaning regardless of what variable it instantiates. This prediction does not hold, as Labov (1993) notes, at least in the case of phonetic and allophonic variation. Labov observes that the social meaning of a sound depends on what phoneme it instantiates: for example, although the diphthong [iə] in the word *mad* may be negatively evaluated in New York City, the same sound in the word *idea* is not. Thus the "surface form" subject to evaluation in such cases is "the realization of a particular sound in a given position in a general class of words: in other words, allophones." In other words, at least in a case where the same surface variant is an exponent of two phonological variables with different underlying

4. This question itself has two different interpretations, depending on whether the variable is construed in terms of Wallenberg (2013)'s "decision-point" or Wolfram (1991)'s "heuristic construct". If Tamminga (2014a) is correct that *-in'* in *walkin'* and *-in'* in *mornin'* represent two different variable processes in the grammar, we could ask whether it's possible for those two *-in'*s to have different social meanings even though they represent examples of a single variable from the heuristic-construct point of view. For the sake of simplicity, we shall focus on variables in the Wolfram sense for this discussion.

representations,[5] we expect the social meaning of the variant to be contingent on the fact that the variant is instantiating a particular variable. So what is subject to social evaluation in this case is the surface variant considered in relation to the underlying structure it represents (even if, according to Campbell-Kibler 2011, not the comparison between that variant and its covariants).

For discourse variation, however, the question seems thornier. It may be the case that a variant's social meaning can depend upon its status as an exponent of a specific variable; but discourse variants may be highly multi-functional, so that it is not always possible to compactly define what variable they instantiate. In these cases, does the social meaning the listener extracts derive from the variant's status as an exponent of a specific, if nebulous, linguistic variable? Or does the social meaning attach merely to the variant itself – and, if so, does that extend into contexts in which variable exponence is more well-defined? These questions, inspired by Campbell-Kibler (2011)'s result, illustrate the kind of questions that are raised by treating variants, rather than variables, as the object of sociolinguistic analysis.

Thus the goal of this paper is to synthesize several strands of thought on the relationship between sociolinguistic variables and their variants, in order to argue that analysis centered on variants rather than variables may have a greater role to play in sociolinguistics. As a case study to explore what variant-centered analysis may be able to contribute, we will focus on a particular surface variant that can instantiate several different variables, including discourse variables: the word *like*.

2. The many functions of like

The word *like* has a wide variety of lexical, grammatical, and discourse functions in contemporary English, many of which are involved in variation and/or change. Although there is an enormous amount of variationist research on some of *like*'s functions, the relationships between these functions have implications for the general theory of linguistic variation and the nature of the variable in ways that have not necessarily been fully explored.

D'Arcy (2007) catalogues the various functions of *like*, with the aim of rebutting what she describes as a popular "language myth" that "*like* is just *like*; that is, there

5. *Mad* vs. *idea* is not an example of this, since the [iə] in *idea* does not itself represent a variable. However, an example of this type of situation can be found in Boston, where the long monophthong [a:] is a variant of both the broad-*a* variable (in which it covaries with [æ] in words of the BATH class) and the rhoticity variable (in which it covaries with [aɪ] in words of the START class).

is one *like* that is recycled repeatedly" (p.388). She divides *like* into five "grammatical" (i.e., standard and "largely unremarkable") functions, listed in (1a–e) below, and four "vernacular" functions that "are largely restricted to informal discourse", shown in (1f–i).

(1) a. verb: *I don't really like her that much.*
b. noun: *the likes of all great fighters*
c. adverb:[6] *It looks like a snail.*
d. conjunction: *It felt like everything had dropped away*.
e. suffix: *something stroke-like*
f. quotative complementizer: *He was like, "That's an upside."*
g. approximative adverb: *to go like thirty miles*
h. discourse marker: *Like she's a space cadet.*
i. discourse particle: *They had like scraped her.* (D'Arcy 2007)

D'Arcy categorizes the functions of *like* chiefly in terms of the syntactic roles they play; for example, the difference between discourse markers (1h) and discourse particles (1i) is diagnosed by whether the *like* in question appears clause-initially or clause-medially.[7] Blondeau & Nagy (2008) decompose the "conjunction" (1d) category into two distinct syntactic classes, as shown in (2): they classify the function in (2a), in which *like* covaries with *as*, as syntactically a conjunction, but the function in (2b), in which *like* covaries with *as if* and *as though*, as a complementizer. Brook (2014) uses the term "comparative complementizer" for function (2b).

(2) a. conjunction: *Winston tastes good, like a cigarette should.*
b. complementizer: *She feels like her friend deserves the job more.*
(Blondeau & Nagy 2008)

López-Couso & Méndez-Naya (2012) draw a further distinction, between *like*'s function of introducing adverbial clauses of Similarity, as in (2a), and a distinct function introducing clauses of Comparison demonstrated in (3). Although (3) might belong to the same syntactic category as (2a), it has not only a different semantic function but a distinct set of covariants: in (2a), *like* competes with *as*, whereas in (3) it competes with *as if* and *as though* (as it does in 2b).

(3) conjunction: *They look at me like I'm dirt.*
(López-Couso & Méndez-Naya 2012)

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6. Although D'Arcy labels this function of *like* as an "adverb", it looks like a preposition to me.

7. There is also a somewhat older clause-final discourse *like* of British origin, as in *You'd hit the mud on the bottom, like* (D'Arcy 2005: 4, 66, and passim; Romaine & Lange 1991). D'Arcy describes this use of *like* as obsolescent, though it apparently remains robust in at least Irish English (Kallen 2013: 191).

In any event, it is clear that the word *like* has a broad range of standard and vernacular functions. In those functions that are variable, it possesses different sets of covariants: for example, the approximative *like* (1g) covaries with *about*; the quotative *be like* (1f) covaries with other quotatives such as *say*; the discourse marker (1h) arguably covaries with other discourse markers such as *I mean* and *you know*;[8] and so on.

With the exception of the verb (1a), all of these functions of *like* have a common etymological source and continue to share a "semantic core" (Jucker & Smith 1998:184), as will be discussed in more detail below. The presence of a synchronic semantic relationship is a frequent criterion for judging two senses of the same surface word-form to represent a single polysemous lexical item, rather than two lexically distinct words that are only coincidentally homophonous (Panman 1982, Blank 2003). This seems to justify regarding all but (1a) as diverse functions of a single versatile function word *like* (contra Drager 2011 and Tamminga 2014b, who seemingly presuppose them to be coincidental homophones). Labov (1993) identifies the lexical item, as a class, as one of the types of variant to which social meaning can be attached. This lexical item *like* therefore appears to be a prime example of a single variant that instantiates multiple *distinct* linguistic variables, whether "variable" is defined from the top-down perspective of Wolfram (1991) or the bottom-up perspective of Wallenberg (2013); and thus the myth that "*like* is just *like*" is rebutted.

The fact that the different functions of *like* participate in different variable systems means that standard variationist methodology requires treating them separately. For instance, Ferrara & Bell (1995) state, in discussing the quotative *like*, that the discourse particle *like* belongs to "an altogether different variable" and therefore "is *not* the subject of this study" (emphasis theirs); D'Arcy (2005:29), in discussing the discourse particle, states that "quotative *be like* forms no part of this investigation". A typical variationist study of *like* is thus careful to circumscribe the variable context at issue, establish if possible which other variants compete with *like* in this particular variable context, and dismiss the other potential functions of *like* as not directly relevant to the constraints on variation affecting the *like* under discussion.

8. According to D'Arcy (2007:394), these alternate discourse markers "can often be felicitously substituted for *like* without affecting the epistemic stance of the utterance". However, in her own analysis, D'Arcy (2005) applies the principle of accountability merely by comparing the presence of the discourse marker and particle *like* against its absence (in various syntactic frames), rather than against specific competing variants.

Although the different incarnations of *like* are functionally different and participate in distinct systems of variation, it is well known that many of them are connected both synchronically and diachronically. D'Arcy (2005:ch.3) argues that the discourse marker *like* originated from grammaticalization of the preposition and conjunction functions of *like*;[9] and she shows (2005:ch.8, 2008) via an apparent-time analysis how the sentence-medial discourse particle originated as a syntactic generalization of the discourse marker, and has penetrated further and further into the structure of the sentence over the course of the past several decades. Romaine & Lange (1991) argue that quotative *like* originated as a specialized function of the discourse particle, and that "the meanings of 'approximative' and 'similarity'" associated with standard functions of *like* such as (1c) "have contributed to both the discourse uses of *like*" (p.245). Buchstaller (2013:17ff) shows that *be like* serves as a template for creating additional novel quotatives based on different discourse particles, such as *be kinda*, indicating that *like*'s status as a discourse particle remains synchronically relevant to its use as a quotative. And although D'Arcy (2006) argues convincingly (contra Andersen 2001: 260 and others) that the approximative function of *like* is synchronically syntactically distinct from the discourse particle, it is nevertheless possible for an individual token of *like* to be ambiguous between the two readings, since both the approximative and the discourse particle can appear in NP-initial position; these two functions can thus fade into each other.

However, what D'Arcy (2007) refers to as the "*like* is just *like*" myth is not these synchronic and diachronic linguistic connections between the different functions of *like*, but rather what she perceives in the media as "a tendency to talk of *like* as a single, monolithic entity." Examples of this tendency are not hard to find on the Internet. Shepherd (2011), in a blog post entitled "You, Like, Need to Stop Using the Word 'Like'", conflates quotative *like* with "randomly inserting the word 'like' where it doesn't belong" and describes it as untranslatable (instead of correctly perceiving it as roughly synonymous with *say*). Tracy (2013), writing for *The New Republic*, in critiquing Metcalf (2013)'s defense of quotative *like*, segues from the

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9. Jespersen (1942:417–18) argues that the old-fashioned clause-final discourse *like* (see Note 7 above) originates from the suffix *-like* exemplified in (1e). D'Arcy (2005:64) disputes this analysis, in part on the grounds that it "contradicts the hypothesis of unidirectionality" in grammaticalization. However, I note in passing that the origin Jespersen ascribes to clause-final *like* is exactly equivalent to the undisputed origin of the clause-final discourse element *ish*, as in *Tomorrow's an easy day, ish* (cf. Diertani 2011§5.2.5, who uses *ish* as part of an argument *against* the unidirectionality hypothesis). The case of *ish* suggests that the hypothesis of an adjectival suffix becoming a sentence-final adverbial discourse marker is not quite as implausible as D'Arcy suggests.

quotative to the discourse functions of *like* in order to condemn the former by association with the latter. Wasko (2011) cites a taxonomy of *like* functions by Balistreri (2003) in which discourse, quotative, and approximative functions of *like* are jumbled together under some of the same headings. And of course Frank and Moon Zappa's 1982 song "Valley Girl", which often appears in discussions of *like* and stereotypes associated with it, uses *like* in both its discourse and quotative functions. D'Arcy (2007) demonstrates that, although quotative *like* may have originated as a "Valley Girl" innovation, the other vernacular functions of *like* have a much longer history – and thus stereotyping them all as originating with the Valley Girls is itself another example of conflating multiple functions of *like* and associating them with a single social evaluation.

Thus, although the vernacular functions of *like* belong to different variable contexts and have different covariants, general commentary on *like* by non-linguists indicates that, in overt evaluation, the different vernacular *likes* are not distinguished from each other, and share sociolinguistic evaluation. In other words, the very existence of the "*like* is just *like*" myth that D'Arcy (2007) attacks is evidence for the hypothesis suggested above on the basis of Campbell-Kibler (2011) and Labov (1993) – that it is the variant, not its relationship to other variants of the same variable, that attracts sociolinguistic evaluation, and if a discourse variant participates in multiple alternations in multiple different variable contexts, it can still be treated as a single sociolinguistic object. Thus to dismiss "*like* is just *like*" as a myth, although correct from the variable-centered perspective, arguably overlooks an important sociolinguistic fact.

There is another significant generalization that is missed by a variable-centered, rather than variant-centered, approach: that each vernacular function of *like* is increasing in apparent time at the apparent expense of its respective covariants. D'Arcy (2007; see also D'Arcy 2005, 2006, 2008; Tagliamonte & D'Arcy 2007) demonstrates this using data from Toronto[10] for each of the functions (1f–i) – the quotative, the approximative, the discourse marker, and the discourse particle – but does not really comment on or analyze this seeming coincidence. Moreover, although D'Arcy classifies the comparative complementizer (2b) as one of the standard functions of *like* that are "largely unremarkable" and "have long been features

10. Apparent- and real-time change toward quotative *like* in speech communities and regions other than Toronto has been documented in a great many studies, including Macaulay (2001) in Glasgow, Dailey-O'Cain (2000) in southeastern Michigan, Ferrara & Bell (1995) in Texas, D'Arcy (2012) in New Zealand, and many others. Dailey-O'Cain (2000) also demonstrates apparent-time change toward *like* as a discourse particle and/or marker, as do Kastronic (2011) among Québec English speakers and Cheshire et al. (2005) in northeastern England. I am not aware of other variationist studies on approximator *like*.

of both written and spoken English", unlike the vernacular functions she discusses in detail, López-Couso & Méndez-Naya (2012, 2015) and Brook (2014) find that this function of *like* is in fact also a relatively recent innovation both compared to most of the other "standard" functions of *like* and compared to its covariants such as *as if* and *that*, and that it is increasing in apparent time at the expense of those covariants. Thus at least four or five distinct linguistic variables are all undergoing a change toward the very same variant.[11]

Variable-centered variationist analysis apparently has no explanation for this apparent coincidence. If the variable is the basic unit of linguistic variation and change, there is no particular reason to expect different variables' direction of change to be correlated with each other – the fact that *like* is gaining an advantage over *say* and *go* in the variable context of quotatives has no reason to have any relationship with whether *like* is defeating *as if* for the role of comparative complementizer or *about* for the role of approximative adverb. D'Arcy (2006) even goes to some lengths to argue that the different changes affecting *like* may not even be the same *kind* of linguistic change – *like* is increasing its frequency as an approximative adverb through simple lexical replacement of *about*, but as a discourse particle as a result of an ongoing process of grammaticalization. Why then should five seemingly independent variable contexts – fulfilling different grammatical functions, with different sets of covariants, undergoing structurally different types of changes – all be changing toward the same variant at roughly the same time? In order to truly explain what's going on with *like*, it is necessary to link up the various functions of *like* as all playing a role in the same larger change, rather than looking at each individual variable context in isolation.

3. Change beyond the envelope of variation

Aaron (2010) provides a model for looking beyond the envelope of variation to explain the change taking place within it. In particular, she discusses a change in the marking of future temporal reference in Spanish from the synthetic future tense to a periphrastic construction using forms of the verb *ir* 'go'. Aaron explains

11. Regarding function (2a) of *like*, the conjunction of similarity covarying with *as*, to the best of my knowledge there are no studies demonstrating a parallel change in this variable. However, D'Arcy (2007) and Romaine & Lange (2001) note that this *like* was regarded as nonstandard in the mid–20th century, and a high-profile use of *like* in the advertising slogan *Winston tastes good like a cigarette should* attracted widespread prescriptivist condemnation. Romaine & Lange observe, however, that unlike most of the "vernacular" functions, this use of *like* has been in existence for centuries, and "colloquial speech possibly always favored *like*."

the motivation for this change by examining the functions of one of the two competing variants *outside* the variable context in which the change is taking place. As she puts it (p.14f), following "the standard variationist practice of excluding tokens which do not form part of the variable context" (a quotation from Poplack & Turpin 1999: 160) would "discard a tremendous amount of explanatory power [because] the *elsewhere* is deeply connected to the *here*." In particular, in Aaron's analysis, the change of future temporal reference from synthetic to periphrastic marking is intimately connected to a rise in the use of synthetic future morphology to indicate epistemic modality. Essentially, as the synthetic future morpheme adopts this new non-future function, its old function – future temporal reference – begins to be taken over by an alternative variant; the change in future temporal marking is connected to the fact that the old synthetic future variant is in the process of changing its meaning. Epistemic modality is outside the variable context in which the synthetic and periphrastic future variants compete, but the reason for the change within the variable context, in Aaron's analysis, can only be understood by looking at the function of the synthetic variant outside that variable context.[12]

In this analysis, the set of changes involving the synthetic future morpheme has the structure of what we would call a chain shift, if it were a phonetic rather than a morphosyntactic change.[13] In a phonetic chain shift, we find one phoneme undergoing some phonetic change and another phoneme moving to occupy the region of phonetic space the previous phoneme is vacating. For example, in the Northern Cities Shift of the Inland North region of the United States, the TRAP vowel is raised, and the LOT vowel fronts toward the previous phonetic value of TRAP.[14] The relationship between future temporal reference and epistemic modality in Spanish is structurally the same as that between TRAP and LOT: as the synthetic future morpheme changes from denoting future temporal reference to denoting epistemic modality, another morpheme, the periphrastic future in *ir*, moves in to take over the function that the synthetic future is abandoning.

This analysis is obviously not directly analogous to the question of *like*. In the Spanish future chain shift, the key variant (the synthetic future) is *decreasing* its

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12. Lavandera (1978:179) makes the similar observation that a variant's functions outside the envelope of variation can be relevant for explaining its social meaning within the envelope of variation: the fact that *wiped out* 'exhausted' is a "more colloquial form" than *exhausted* may be related to the fact that *wiped out* also means 'demolished', and its use to mean 'exhausted' is more metaphorical.

13. See Gordon (2011) for a review of the theory of phonetic chain shifting.

14. For the purposes of this discussion, I am agnostic as to whether this is a push chain (the movement in LOT causing the movement in TRAP) or a pull chain (vice versa). Aaron (2010:14) seems similarly agnostic as to the order of causation of the changes at issue in her study.

rate of use for one function (future temporal reference) while increasing its rate of use in another (epistemic modality). The case of *like*, in which multiple different variables are changing toward the *same* variant, is clearly not a chain shift. However, what Aaron (2010) provides us is a demonstration that the functions a variant performs outside a given variable context can be relevant for explaining a change taking place inside that variable context. This is our goal for *like* – relating the changes affecting *like* in multiple variable contexts to each other.

In the study of phonetic change, it is commonplace for changes affecting two or more distinct variables, such as the vowels in TRAP and LOT, to in fact be reflections of a single broader phenomenon with a single underlying cause; chain shifts are merely one of several such types of phenomena. Thus it is perhaps not that surprising that Aaron's analysis, based on looking outside the envelope of variation to explain a morphosyntactic change, prompts a simple analogy with a well-known type of phonetic change. It may therefore be desirable to look for a phonetic analogue to the family of changes involving *like*; the way an analogous family of phonetic changes is analyzed and explained could shed light on the best way to analyze and explain *like*.

The most obvious candidate for a phonetic analogue to a change in which multiple distinct variables change to the same variant is phonemic merger. However, while a merger is a change in the relationship between two phonemes (becoming one phoneme), it does not necessarily involve two phonemes both undergoing change themselves – mergers can and often do take place as a result of one phoneme remaining phonetically stable while another changes to converge with it. Thus merger is more a *result* of phonetic change than a *type* of phonetic change;[15] and phonemic merger in general is unlikely to give insight into the motivation for changes taking place in multiple variables simultaneously given that merger itself need not involve more than one variable actually undergoing change.

Another possible phonetic analogue for a multiplicity of variables all undergoing the same change at the same time is the phenomenon of parallel shifting: multiple phonemes all changing in the same phonetic direction at the same time, such as when the front short vowels of TRAP, DRESS, and KIT all undergo simultaneous backing in Montréal English (Boberg 2005) or when the back upgliding diphthongs of GOOSE, GOAT, and MOUTH all undergo simultaneous fronting in Philadelphia and other communities of the Midland and Southern United States (Labov et al. 2006). However, Fruehwald (2013:154) argues that the motivation for the parallelism of these phonetic changes is that the phonemes that undergo

15. Herold (1990) discusses the variety of different types of phonetic and phonological change that can all lead to merger; cf. also Maguire et al. (2013) for a review.

them share a phonological feature, and it is that feature that is actually undergoing the change – for instance, TRAP, DRESS, and KIT all share the feature of being short front vowels, and the entity that's changing is the phonetic implementation of the feature [–back]. It seems hard to analogize this to the case of *like* – it seems unlikely that there is some abstract grammatical feature that the discourse *functions* of quotation, approximation, discourse marking, etc. all share in such a way that changing that feature in a parallel way for all of these discourse functions would converge on the single lexical item *like* even though they were instantiated by different lexical items in the initial condition.

Instead, I suggest that the best phonetic analogue for the set of changes toward *like* is the phonological "conspiracy" – defined by Hock (1991:159) as "modifications of the phonological pattern… implemented not by a single change, but by a number of phonologically quite different processes." In other words, a conspiracy is a situation in which a set of disjoint phonetic and phonological changes take place that seem to have no direct phonetic causal connection to each other, united only by the fact that they all serve to bring about some phonologically-defined target state of the language. A well-known example discussed by Hock (1991:161) is the so-called Slavic Open Syllable Conspiracy: a number of distinct sound changes that are reconstructed between Proto–Balto-Slavic and Proto-Slavic, few of which seem directly causally connected to each other, all of which contributed in various ways to creating a Proto-Slavic language with no syllable codas. Crist (2001) discusses the Slavic Open Syllable Conspiracy in detail, as well as two other conspiracies: the elimination of Proto-Germanic **z* from Proto–West Germanic, and the elimination of the Proto–Indo-European semivowel **j* from syllable onsets in Greek. A few of the sound changes listed by Crist (2001:34ff) as contributing to the Greek conspiracy are shown in (4).

(4) a. metathesis: **anj* > *ain*
b. fortition: **j* > **dz* > *zd* / #__
c. fortition: **pj* > *pt*
d. deletion: **j* > Ø / V__V
e. affrication: **tj* > **ts* > *s* / #__

These changes, affecting different environments in which **j* could appear, have little in common phonetically, *except* that they all lead to a state of affairs in which the semivowel /j/ is absent from syllable onsets. The type of phonetic pressures that would lead /j/ to be strengthened to /t/ when preceded by /p/ seem to be quite different from those that would lead /j/ to be deleted intervocalically, or to metathesize with a preceding /n/. Thus there seems to be no *a priori* reason to expect all of these phonetic pressures to operate in the same language; there is certainly no chain-shift pressure or parallel-shift generalization by which they can

be jointly explained. In a simple model of a notional form of pre-Greek in which these changes were ongoing, we might suppose there existed a variable in one variable context in which /j/ covaried with /t/,[16] a distinct variable in a different context in which /j/ covaried with zero, and so on, and all of these variables happened to be involved in change in progress in the direction of the non-/j/ variant.

This model seems quite parallel to the situation that obtains with *like* in modern English: several distinct variables, which occur in different contexts and in which *like* alternates with different covariants, all happen to be undergoing change in such a way as to bring about a common target condition of the language. In this case, instead of all changing *away* from the single variant shared by all these variables, the language is changing *toward* it. So the apparent teleological end state toward which multiple variables appear to be conspiring, rather than eliminating a phoneme like /j/ from the language, in this case seems to be merely a high frequency of use of the word *like*.

Crist accounts for phonological conspiracies through the lens of Optimality Theory: the reason multiple distinct sound changes all conspire to eliminate /j/, for example, is that the real nature of the change occurring in the language was an increase in the strength of an OT constraint forbidding the segment /j/ from syllable onsets. As the constraint rose in the ranking, the different phonological environments in which /j/ existed compensated by eliminating /j/ in whatever way happened to be most compatible with whichever other highly-ranked constraints were relevant in that environment. It is unlikely that there is any Optimality Theory constraint specifically favoring the use of the word *like* whose rank in the constraint hierarchy is in the process of being promoted in English. However, the general point underlying the OT analysis is that linguistic change can be driven by a top-down change in what surface-level outputs are preferred, and such a change can reach across multiple variable contexts and affect them all as a single causal process; independently examining each of the variables undergoing change can miss the broader generalization. In the case of phonological conspiracies, the top-down change is a change in the phonological grammar. It appears likely that the variant *like* is being targeted by a top-down change, but not one affecting grammatical constraints; in the following section, I will suggest that the change promoting *like* may be situated in the realm of discursive practice. This is a different character of change than a

16. Obviously it is more likely that these changes took place through gradual phonetic movement rather than discrete alternation between the starting and ending states of the change. Indeed, the starting and ending states – e.g., /j/ and /t/ – might not have been both within the range of variation that existed at a single point in time. This oversimplified discrete model is similar enough to the probable gradient reality to get the point across here, though.

conspiracy *sensu stricto*; but the analogy with phonological conspiracy serves to remind us that what may look like multiple changes affecting multiple variables can be reflections of a single phenomenon, and thus that it can be valuable to look beyond the envelope of variation of a single variable.

The inference that a particular variant can be targeted for linguistic change, irrespective of the variable alternation it participates in, seems like a natural extension of Campbell-Kibler (2011)'s thesis that the locus of sociolinguistic evaluation is the variant, rather than the choice between competing variants within a particular envelope of variation. If the variant can be the entity that bears social meaning (as the persistence of the folk perception that "*like* is just *like*" suggests is the case for this variant), then we might expect that the variant could also be the entity targeted for linguistic or sociolinguistic change.

4. Like as a change in discursive practice

Coupland (2014) propounds a distinction between linguistic change proper and *sociolinguistic* change – the former simply including "changes over time in the distribution of formal features of speech", while the latter encompasses changes in the relationship between linguistic behavior and social structure and indexicality. For example, if a vernacular variant increases its overall frequency of use from one point in time to another, that may be a linguistic change whereby the variant spreads from vernacular to standard registers and appears more frequently in the vernacular register than it used to, without a change in the roles these registers play in community speech practices as a whole; or it may be the result of a sociolinguistic change whereby vernacular speech styles come to be used in more situations than before (while the internal makeup of standard and vernacular speech styles remains the same); or both. As Coupland notes, traditional variationist methodology is ill-equipped for distinguishing between the two situations. Although the current discussion is firmly situated within the domain of linguistic change, this distinction between sociolinguistic change and linguistic change parallels the distinction that was the focus of the previous section, inasmuch as it distinguishes changes targeting linguistic variables directly from changes in the broader structural matrix (whether linguistic or social) in which those linguistic variables are embedded. Of the five dimensions of sociolinguistic change Coupland identifies, the most relevant to this discussion is that of change in *discursive practice*, the dimension most tightly linked to the "formal makeup and distribution of speech styles".

D'Arcy (2012) has already profitably analyzed some of the prehistory of the quotative function of *like* through the lens of broader changes in discursive

practices. She investigates the diachronic development of quotation over a series of corpora of New Zealand English covering 125 years of apparent time, and finds that not only has the set of variants used to indicate quotation changed over that time (from nearly exclusively *say* in the oldest corpus to robust variation between *say*, *go*, *be like*, etc. in the most recent data), but the discourse functions with which quotation is associated have changed a great deal as well. In the earliest corpus, quotation is used virtually exclusively to directly report actual speech. Over the course of the 20th century, however, the range of pragmatic functions for which quotation is employed diversifies markedly, to include quotation of thoughts and emotional states, hypothetical speech, non-speech sounds, and others; and it is with this diversification in functions that there arises the diversity of forms which is so characteristic of modern variationist research on quotation. Thus the well-known changes in variant choice for quotation are in part explained by broader changes in the *discursive function* of quotation.[17] Tagliamonte & D'Arcy (2007) report a similar pattern in Toronto English, whereby the percentage of quotations that represent internal monologue rises from 8% to almost 30% over the course of the 20th century in apparent time, and *be like* rises to fill that niche.

Can we explain the *like* conspiracy through a notion of discourse function shared across the many different roles of *like* in the multiple variable contexts it appears in? Let's begin with the function of *like* as a discourse particle. There appear to be two main schools of thought on its discourse function: that it serves as a marker of non-contrastive focus (e.g., Underhill 1988, Miller & Weinert 1995); and that it functions as a hedge, or indicator of inexact or non-literal speech (Sharifian & Malcolm 2003, James 1983, Schourup 1985: 141, Jucker & Smith 1998, Andersen 2001). Although Miller & Weinert portray these two hypotheses as mutually incompatible, Fuller (2003) convincingly argues that both hedging and focus are within the range of functions the discourse particle *like* can be used for, and that those functions overlap in some utterances; she suggests that the hedge, broadly construed, is likely to have been *like*'s original discourse-particle function. As will be seen below, it is the hedging function that bears the closest connection to the other uses of *like*, so it is on this function that I will focus here.

Andersen (2001:256) characterizes this role of *like* in particularly clear terms as marking "non-identical relationship between utterance and thought", with

17. As a very simple example, the rate of use of the variant *think* increases substantially from 1% of verbs of quotation to 6% between the first and second corpora. But clearly this change in variant distribution is an epiphenomenon of the change in discursive practice toward more frequent use of quotation to report thought, rather than direct competition between the verbs *say* and *think* as "ways of saying the same thing".

glosses such as "'this is a term which may not be the most appropriate for me to use or which is unusual for me to utter'" and "'I have something on my mind, but I don't know (exactly) how to put it.'" Note the very hesitancy of these glosses; they do not license the listener to infer that the speaker is deliberately speaking non-literally, but only that the choice of words *may* be inexact. Thus it seems that discourse particle *like* performs, as at least one of its functions, the job of rendering the phrase it is attached to epistemically vague – it is detached slightly from commitment to a literal reading without specifically implying that a non-literal reading is to be preferred.[18] We can refer to this function as "vague literality". Nor has this fact about the discourse function of *like* escaped folk metalinguistic commentary: an article on *Jezebel* (Ryan 2011) characterizes *like* as serving to "make us [sound] a little less sure of ourselves"; and poet Taylor Mali (2002) includes *like* (along with such features as uptalk and other discourse markers such as *you know*) in a poem-rant about discourse techniques that express "uncertainty" and lack of "conviction".

Much of the discourse-pragmatic literature on *like* lumps together under the label of "discourse marker" several of the vernacular functions that D'Arcy (2006, 2007) makes a point of distinguishing between on variationist and syntactic grounds, because they share aspects of this pragmatic force of epistemic vagueness or semi-detachment from literal interpretation. Jucker & Smith (1998:191), for example, say that the approximative is one example of how the various functions of *like* "can be subsumed under its core function of flagging linguistic expressions… as less than literal"; Andersen (2001:260) makes a similar point. This is true of all approximatives, of course: i.e., to indicate that a stated quantity is approximate is the same as to indicate that the quantity is not to be taken entirely literally. However, there is some evidence that *like* embodies vague literality in a more specific way than do traditional approximators such as *about* and *approximately*. Siegel (2002) contends that (5b) is infelicitous as a contradiction to (5a), while this is not the case for (6), although, again, D'Arcy (2006) disputes that judgment:

(5) a. *He has like six sisters.*
b. #*No, he has <u>exactly</u> six.*

18. Although D'Arcy (2005, 2007) in general does not attempt to gloss the contemporary discourse-particle function of *like*, she does give a gloss for the clause-final discourse *like* (see Note 7 above), which she considers essential to the diachronic development of the present-day discourse *like*. She describes clause-final *like* as "signaling to the listener that the proposition only resembles or approximates reported events; it is not meant to be taken literally or verbatim" (2005:68), which is very similar to Andersen's gloss of the contemporary discourse particle.

(6) a. *He has about six sisters.*
b. *No, he has exactly six.* (Siegel 2002)

If the judgments presented by Siegel are correct – i.e., if it is more felicitous to regard *exactly* as contradicting *about* than contradicting *like* – then the approximative function of *like* appears to be pragmatically compatible both with the quantity stated being exact and with it being approximate, and the listener is not licensed to conclude that approximation is being asserted.[19] In other words, it is ambiguous with regard to whether approximation is even taking place.

Similarly, it is a well-known fact about quotative *like* that it can be freely used to introduce both direct quotations of actual speech and paraphrases of internal monologue and emotional state (e.g., Romaine & Lange 1991, Buchstaller 2013, and many others). So for example, a sentence like (7a) is entirely ambiguous with regard to whether or not the speaker actually spoke anything aloud, whereas (7b) explicitly describes speech and (7c) explicitly describes internal monologue. Thus quotative *like* differs from more traditional quotatives such as *say* and *think* in that it does *not* make any direct assertion as to whether the quotation being stated was something that was literally said.

(7) a. *I was like, "Gross."*
b. *I said, "Gross."*
c. *I thought, "Gross."*

Like the approximative, the quotative is sometimes described in the discourse-pragmatic literature as a special case of the discourse marker or particle (e.g. Jucker & Smith 1998: 189ff), and its vague literality attributed to that. This is not the case for the comparative complementizer *like*; although it shares a "semantic core" (Jucker & Smith 1998: 184) with the discourse marker, it is a syntactically and pragmatically distinct entity (cf. Blondeau & Nagy 2008). However, that shared semantic core still includes the notion of vague literality. Brook (2014) discusses level of literality specifically as a factor influencing the choice of comparative complementizer: for instance, she finds that *that* and the null complementizer are favored for subordinate clauses that are being asserted to actually seem to be the case, as in (8a), whereas *as if* and *as though* are favored for more metaphorical

19. This may merely be a consequence of the *like* in constructions such as (7a) being syntactically ambiguous between the approximative adverb and the pre-DP discourse particle, though D'Arcy (2006) suggests that the discourse particle "rarely" appears in this context. However, even if that structural ambiguity is what is causing the ambiguous literality in this case, ambiguous literality is still being produced and thus is perceivable as a property of approximative *like*.

subordinate clauses, as in (8b) (although variation does exist and all variants are used for both levels of metaphoricality).

(8) a. literal: *It seems that the boys are sick today.*
b. metaphorical: *I feel as though I could eat a boiled alligator.*
(Brook 2014)

López-Couso & Méndez-Naya (2015) echo this in describing *as if* and *as though*, together with other "minor declarative complementizers", as specialized for "non-assertive matrices, i.e., those that do not claim the truth of the proposition". But while López-Couso & Méndez-Naya group *like* in this category as well, Brook (2014) disagrees, arguing that "uniquely [*like*] is *not* sensitive to the literality of the subordinate clause" – it is more favorable to metaphorical clauses than *that* is, but more favorable to literal clauses than *as if* and *as though*. If Brook's analysis is correct, this function of *like* mirrors the vagueness associated with quotative *like*: it is equally open to the possibility that the clause in question is to be interpreted metaphorically and the possibility that it is to be interpreted literally, just as quotative *like* is equally open to the possibility that real speech is being quoted and the possibility that the quotation is only metaphorical or figurative.[20]

Thus the functions of *like* that have been found to be increasing in apparent time all share the pragmatic function of indicating vague or ambiguous literality, alongside whatever other grammatical, pragmatic, and semantic functions they possess – *like* is overtly *equally* compatible with both literal interpretations and approximate, metaphorical, or figurative interpretations of the constituents it is associated with. This is a property of the lexical item *like*, shared across the several distinct variable contexts and grammatical functions in which it appears; it's not strictly a property of its use as a discourse marker or particle even in the broad sense of Jucker & Smith (1998), since it applies to the comparative complementizer as well.

The conspiracy of change toward the variant *like*, then, may be motivated by this shared discourse function. In other words, we can conjecture that there has been a change in discursive practice toward greater ambiguity in degree of literality in vernacular conversation, and that as a result of this *sociolinguistic* change (in Coupland's sense), a variant that indexes vague literality gains ground at the

20. Quotative and comparative-complementizer *like* are parallel in another way as well: despite its ambiguous literality, *like* has become the primary variant for both metaphorical functions, while the more specifically metaphorical *as if* / *as though* and *think* have been driven to marginality. In contemporary Toronto, as if represents only 1.4% of comparative complementizers, with *as though* unattested in the corpus (Brook 2014), and *think* only 4% of quotatives (Tagliamonte & D'Arcy 2007). The literal variants *that*/zero and *say* remain in the 20% range.

expense of its various competitors as a set of *linguistic* changes.[21] This hypothesis thus unites the changes in multiple variables under the umbrella of a single change affecting top-level discourse content, in the same way that Crist (2001)'s account of phonological conspiracy unites several phonetic changes under the umbrella of a single change in phonological output constraints. The case of *like* suggests that change can be motivated by an individual variant being targeted with its specific discursive function shared across multiple variable contexts, and thus best explained by considering the variant, rather than the variable, to be the fundamental unit in terms of which change is described.

The point of the discussion in this section, therefore, has been to illustrate the connection between variant-centered analysis and the theory of change in discursive practice as a mode of sociolinguistic change: since discourse function can be a property of a variant independent of its relationship to the variable context it instantiates, changes in discursive practice can motivate changes in variant choice in ways that would not be captured by an analysis that remained within the envelope of variation. Variant-centered analysis has thus led us to a concrete hypothesis about the motivation for change, which can be tested in future research.

This argument does not directly answer the question mentioned earlier in this paper of whether *like* has the same *social meaning* in all the variables it instantiates: although the pragmatic discourse function of a variant and its sociolinguistic indexicality are related properties, in that they both constitute social information which can be conveyed to the listener over and above the variant's semantic denotation, they are not the same thing. The persistence of the popular "*like* is just *like*" metalinguistic belief does support the hypothesis that social meaning of this sort is shared across variable contexts to some extent, as discussed above, but addressing this question more formally must be the subject of a future paper.[22]

5. Conclusion

The aim of this paper has been to synthesize several strands of research in language variation and change that have been addressing the same deeper issues,

21. This hypothesis proposes an answer to the question posed by Tagliamonte & D'Arcy (2007:214) of "why the extant form *think* was not recycled for the rising option of quoting inner monologue" – viz., that *be like* was selected for its function of flexibly quoting both inner monologue and speech, not just for inner monologue alone.

22. Preliminary results of a matched-guise study (Maddeaux & Dinkin to appear) do not show significant similarity among the judgments of social meanings for different functions of *like*. This suggests that social indexicality is not sufficient to explain the conspiracy of change toward *like* in multiple variable contexts.

in some cases without realizing it. Labov (1993) argued that sociolinguistic evaluation is associated specifically with surface features, and Campbell-Kibler (2011) extended this to show that it is a property of the surface *variant*, not of the variable structure in which it participates. At approximately the same time, Aaron (2010) showed that to explain changes within a variable context, it can be necessary to look at the role a variant plays outside that envelope of variation. In both cases, regarding the variant as an entity on its own terms, outside of its paradigmatic relationship to the variable it instantiates, yields insights about the structure of variation and change. Coupland (2014) argues for a more far-reaching understanding of sociolinguistic change, encompassing more than just changes within a variable context, and D'Arcy (2012) demonstrates that attention to change in discursive practice can explain changes taking place within a variable context as well. If we broaden Campbell-Kibler's finding slightly to hypothesize that it is not only social evaluation but also other aspects of sociolinguistic and discourse function that inhere to the variant rather than the variable, then a change in discursive practice can be attached to a single variant, which becomes targeted for change across multiple variable contexts. The precedent of phonological conspiracy in historical linguistics offers a parallel insight into how multiple changes in distinct variable contexts can be linked by a top-down change in an output target. The multi-functional *like* provides a concrete example of how a variant, rather than a variable, can be the sociolinguistically motivated entity driving a linguistic change; and thus what D'Arcy (2007) terms the "myth" that "*like* is just *like*" in fact represents a deeper sociolinguistic reality.

The traditional variable-centered approach of variationist linguistics hinges upon defining the envelope of variation and considering any variant from the perspective of the structure of its competition with other variants within a single variable contexts. This approach is absolutely necessary for discovering the constraints upon variation and the direction of linguistic change, and is the ideal approach for studying where within (or outside of) the grammar variation is actually produced. But the sociolinguistic work a variant does is, as Wolfram (1991) argued, not dependent on the grammatical structure of the variable processes that produce it; and although the speaker must index social meaning by choosing one variant over another, the listener who perceives that social meaning need not make use of that same contrast. Moreover, keeping the focus within a single variable context can cause variationist researchers to miss the forest for the trees when a single variant has multiple functions, as Aaron (2010) demonstrated. Thus variant-centered analysis, as exhibited in this paper, is a necessary complement to variable-centered analysis if a full understanding of the sociolinguistic structure of change is to be reached.

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References

Aaron, Jessi Elana. 2010. Pushing the envelope: Looking beyond the variable context. *Language Variation and Change* 22. 1–36. doi:10.1017/S0954394509990226

Andersen, Gisle. 2001. *Pragmatic markers and sociolinguistic variation: A relevance-theoretic approach to the language of adolescents*. Amsterdam: John Benjamins. doi:10.1075/pbns.84

Balistreri, Maggie. 2003. *The evasion-English dictionary*. New York: Melville House.

Blank, Andreas. 2003. Polysemy in the lexicon and in discourse. In Brigitte Nerlich, Zazie Todd, Vimala Herman, & David C. Clarke (eds.), *Polysemy: Flexible patterns of meaning in mind and language*, 267–293. Berlin: Walter de Gruyter. doi:10.1515/9783110895698.267

Blondeau, Hélène & Naomi Nagy. 2008. Subordinate clause marking in Montreal Anglophone French and English. In Miriam Meyerhoff & Naomi Nagy (eds.), *Social lives in language – sociolinguistics and multilingual speech communities: Celebrating the work of Gillian Sankoff*, 273–313. Philadelphia: John Benjamins. doi:10.1075/impact.24.18blo

Boberg, Charles. 2005. The Canadian shift in Montreal. *Language Variation and Change* 17. 133–154. doi:10.1017/S0954394505050064

Brook, Marisa. 2014. Comparative complementizers in Canadian English: Insights from early fiction. *University of Pennsylvania Working Papers in Linguistics* 20(2). 1–10.

Buchstaller, Isabelle. 2009. The quantitative analysis of morphosyntactic variation: Constructing and quantifying the denominator. *Language and Linguistics Compass* 3(4). 1010–1033. doi:10.1111/j.1749-818X.2009.00142.x

Buchstaller, Isabelle. 2013. *Quotatives: New trends and sociolinguistic implications*. Malden, MA: Wiley/Blackwell.

Buchstaller, Isabelle & Erez Levon. 2014. Perception, cognition and linguistic structure: The effect of linguistic modularity and cognitive style on sociolinguistic processing. Paper presented at NWAV [New Ways of Analyzing Variation] 43, Chicago.

Campbell-Kibler, Kathryn. 2011. The sociolinguistic variant as a carrier of social meaning. *Language Variation and Change* 22. 423–441. doi:10.1017/S0954394510000177

Chambers, Jack & Peter Trudgill. 1980. *Dialectology*, 2d edn. Cambridge: Cambridge University Press.

Cheshire, Jenny, Paul Kerswill, & Ann Williams. 2005. On the non-convergence of phonology, grammar, and discourse. In Peter Auer, Frans Hinskens, & Paul Kerswill (eds.), *Dialect change: Convergence and divergence in European languages*, 135–167. Cambridge: Cambridge University Press.

Coupland, Nikolas. 2014. Sociolinguistic change, vernacularization, and British broadcast media. In Jannis Androutsopoulos (ed.), *Mediatiazation and sociolinguistic change*, 67–96. Berlin: De Gruyter.

Crist, Sean Jacob. 2001. *Conspiracy in historical phonology*. Philadelphia: University of Pennsylvania dissertation.

Dailey-O'Cain, Jennifer. 2000. The sociolinguistic distribution of and attitudes toward focuser *like* and quotative *like*. *Journal of Sociolinguistics* 4(1). 60–80. doi:10.1111/1467-9481.00103

D'Arcy, Alexandra Faith. 2005. *Like: Syntax and development*. Toronto: University of Toronto dissertation.

D'Arcy, Alexandra. 2006. Lexical replacement and the like(s). *American Speech* 81(4). 330–357. doi:10.1215/00031283-2006-024

D'Arcy, Alexandra. 2007. *Like* and language ideology: Disentangling fact from fiction. *American Speech* 82(4). 386–419. doi:10.1215/00031283-2007-025

D'Arcy, Alexandra. 2008. Canadian English as a window to the rise of *like* in discourse. *Anglistik* 19(2). 125–140.

D'Arcy, Alexandra. 2012. The diachrony of quotation: Evidence from New Zealand English. *Language Variation and Change* 24. 343–369. doi:10.1017/S0954394512000166

Diertani, Chaya Eliana Ariel. 2011. *Morpheme boundaries and structural change: Affixes running amok*. Philadelphia: University of Pennsylvania dissertation.

Dines, Elizabeth R. 1980. Variation in discourse – "and stuff like that". *Language in Society* 9. 13–31. doi:10.1017/S0047404500007764

Drager, Katie K. 2011. Sociophonetic variation and the lemma. *Journal of Phonetics* 39. 694–707. doi:10.1016/j.wocn.2011.08.005

Ferrara, Kathleen & Barbara Bell. 1995. Sociolinguistic variation and discourse function of constructed dialogue introducers: The case of *be* + *like*. *American Speech* 70(3). 265–290. doi:10.2307/455900

Fuller, Janet M. 2003. Use of the discourse marker *like* in interviews. *Journal of Sociolinguistics* 7(3). 365–377. doi:10.1111/1467-9481.00229

Fruehwald, Josef. 2013. *The phonological influence on phonetic change*. Philadelphia, University of Pennsylvania dissertation.

Gordon, Matthew J. 2011. Methodological and theoretical issues in the study of chain shifts. *Language and Linguistics Compass* 5(11). 784–794. doi:10.1111/j.1749-818X.2011.00310.x

Guy, Gregory R. 1991. Explanation in variable phonology: An exponential model of morphological constraints. *Language Variation and Change* 3. 1–22. doi:10.1017/S0954394500000429

Herold, Ruth. 1990. *Mechanisms of merger: The implementation and distribution of the low back merger in eastern Pennsylvania*. Philadelphia: University of Pennsylvania dissertation.

Hock, Hans Heinrich. 1991. *Principles of historical linguistics*. Berlin: Mouton/de Gruyter. doi:10.1515/9783110219135

James, Allan R. 1983. Compromisers in English: A cross-disciplinary approach to their interpersonal significance. *Journal of Pragmatics* 7. 191–206. doi:10.1016/0378-2166(83)90052-8

Jespersen, Otto. 1942. *A modern English grammar on historical principles. Part VI: Morphology*. London: Allen and Unwin.

Jucker, Andreas H. & Sara W. Smith. 1998. *And people just you know like wow*: Discourse markers as negotiation strategies. In Andreas H. Jucker & Yael Ziv (eds.), *Discourse markers: Description and theory*, 171–201. Philadelphia: John Benjamins.

Kallen, Jeffrey L. 2013. *Irish English, Volume 2: The Republic of Ireland*. Berlin: de Gruyter.

Kastronic, Laura. 2011. Discourse *like* in Quebec English. *University of Pennsylvania Working Papers in Linguistics* 17(2). 105–114.

Labov, William. 1966. The linguistic variable as a structural unit. *Washington Linguistics Review* 3. 4–22.

Labov, William. 1972. *Sociolinguistic patterns*. Philadelphia: University of Pennsylvania Press.

Labov, William. 1993. The unobservability of structure and its linguistic consequences. Paper presented at NWAVE [New Ways of Analyzing Variation in English] 22, Ottawa.

Labov, William. 2007. Transmission and diffusion. *Language* 83(2). 344–387. doi:10.1353/lan.2007.0082

Labov, William, Sharon Ash, & Charles Boberg. 2006. *Atlas of North American English: Phonetics, phonology, and sound change*. Berlin: Mouton/de Gruyter.

Lavandera, Beatriz R. 1978. Where does the sociolinguistic variable stop? *Language in Society* 7. 171–182. doi:10.1017/S0047404500005510

López-Couso, María José & Belén Méndez-Naya. 2012. On the use of *as if*, *as though*, and *like* in Present-Day English complementation structures. *Journal of English Linguistics* 40(2). 172–195. doi:10.1177/0075424211418976

López-Couso, María José & Belén Méndez-Naya. 2015. Secondary grammaticalization in clause combining: From adverbial subordination to complementation in English. *Language Sciences* 47B. 188–198. doi:10.1016/j.langsci.2014.07.003

Macaulay, Ronald. 2001. You're like "why not?": The quotative expressions of Glasgow adolescents". *Journal of Sociolinguistics* 5(1). 3–21. doi:10.1111/1467-9481.00135

MacKenzie, Laurel. 2013. Variation in English auxiliary realization: A new take on contraction. *Language Variation and Change* 25. 17–41. doi:10.1017/S0954394512000257

Maddeaux, Ruth & Aaron Dinkin. To appear. Is *like* like *like*?: Evaluating the same variant across multiple variables. *Linguistics Vanguard*.

Maguire, Warren, Lynn Clark, & Kevin Watson. 2013. Introduction: What are mergers and can they be reversed? *English Language and Linguistics* 17(2). 229–239. doi:10.1017/S1360674313000014

Mali, Taylor. 2002. Totally like whatever, you know? In *What learning leaves*. Newtown, CT: Hanover Press.

Metcalf, Allan. 2013. What's not to like? Blog post for *Lingua Franca*, *http://chronicle.com/blogs/linguafranca/2013/10/30/whats-not-to-like/*. (Viewed 25 November 2014.)

Meyerhoff, Miriam. 2001. Dynamics of differentiation: On social psychology and cases of language variation. In Nikolas Coupland, Srikant Sarangi, & Christopher N. Candlin (eds.), *Sociolinguistics and Social Theory*, 61–87. London: Longman.

Miller, Jim & Regina Weinert. 1995. The function of LIKE in dialogue. *Journal of Pragmatics* 25. 365–393. doi:10.1016/0378-2166(94)00044-F

Panman, Otto. 1982. Homonymy and polysemy. *Lingua* 58. 105–136. doi:10.1016/0024-3841(82)90059-6

Pichler, Heike. 2010. Methods in discourse variation analysis: Reflections on the way forward. *Journal of Sociolinguistics* 14(5). 581–608. doi:10.1111/j.1467-9841.2010.00455.x

Poplack, Shana & Danielle Turpin. 1999. Does the *Futur* have a future in (Canadian) French? *Probus* 11. 133–164. doi:10.1515/prbs.1999.11.1.133

Rickford, John R., Arnetha Ball, Renee Blake, Raina Jackson, & Nomi Martin. 1991. Rappin on the copula coffin: Theoretical and methodological issues in the analysis of copular variation in African-American Vernacular English. *Language Variation and Change* 3. 103–132. doi:10.1017/S0954394500000466

Romaine, Suzanne & Deborah Lange. 1991. The use of *like* as a marker of reported speech and thought: A case of grammaticalization in progress. *American Speech* 66(3). 227–279. doi:10.2307/455799

Ryan, Erin Gloria. 2011. My love affair with "like". *http://jezebel.com/5815628/my-love-affair-with-like*. (Viewed 2 December 2014.)

Schourup, Lawrence C. 1985. *Common discourse particles in English conversation*. New York: Garland.

Sharifian, Farzad & Ian Malcolm. 2003. The pragmatic marker "like" in English teen talk: Australian Aboriginal usage." *Pragmatics and Cognition* 11. 327–344. doi:10.1075/pc.11.2.07sha

Shepherd, Zabrinah. 2011. "Guest blog: You, like, need to stop using the word "like". *http://www.rachelsimmons.com/2011/02/guest-blog-you-like-need-to-stop-using-the-word-like/*. (Viewed 25 November 2014.)

Siegel, Muffy. 2002. *Like*: The discourse particle and semantics. *Journal of Semantics* 19. 35–71.

Tagliamonte, Sali A. & Alexandra D'Arcy. 2007. Frequency and variation in the community grammar: Tracking a new change through the generations. *Language Variation and Change* 19. 199–217. doi:10.1017/S095439450707007X

Tamminga, Meredith. 2014a. *Persistence in the production of linguistic variation*. Philadelphia: University of Pennsylvania dissertation.

Tamminga, Meredith. 2014b. Sound change without frequency effects: Ramifications for phonological theory. In Robert E. Santana-LaBarge (ed.), *Proceedings of the* 31st *West Coast Conference on Formal Linguistics*, 457–465. Somerville, MA: Cascadilla Proceedings Project.

Tracy, Marc. 2013. Linguist says you can use "like" more. He's, like, wrong. *http://www.newrepublic.com/article/115440/linguist-says-you-can-use-more-hes-wrong*. (Viewed 25 November 2014.)

Underhill, Robert. 1988. Like is, like, focus. *American Speech* 63(3). 234–246. doi:10.2307/454820

Wallenberg, Joel C. 2013. A unified theory of stable variation, syntactic optionality, and syntactic change. Paper presented at DiGS [Diachronic Generative Syntax] 15, Ottawa.

Wasko, Brian. 2011. Why we, like, say "like" all the time. *http://blog.writeathome.com/index.php/2011/12/why-we-like-say-like-all-the-time*. (Viewed 26 November 2014.)

Wolfram, Walt. 1991. The linguistic variable: Fact and fantasy. *American Speech* 66(1). 22–32. doi:10.2307/455432

Constant effects and the independence of variants in controlled judgment data

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This article proposes that Kroch's (1989) Constant Rate Hypothesis – the generalization that contextual effects tend to be stable in processes of diachronic variation in production data – be extended to synchronic variation in controlled judgment data. Two recent, large-sample judgment experiments are discussed suggesting that shared contextual effects across speakers in acceptability judgments can be used to infer a single abstract source for patterns of variation across superficially different contexts. At the same time, the results suggest that not all sets of variants – or "ways of saying the same thing" (Labov 1972: 271) – are linguistic variables of this formally defined type.

Keywords: variable, variant, constant rate hypothesis, syntax, change, competing grammar, particle verb, ditransitive

1. Introduction

An important accomplishment of modern diachronic syntax has been the discovery of a generalization, originally due to Kroch (1989), about the stability of contextual effects on variation in processes of syntactic change as manifested in production data. Kroch's insight, the *constant rate hypothesis*, was that for any single abstract process of syntactic change, surface contextual effects tend to be constant across the trajectory of the change. A parsimonious explanation of these facts, Kroch suggested, was that syntactic change applies at an abstract level, that is, affecting structural representations rather than surface strings. Constancy in contextual effects, according to Kroch, reflects the fact that, in the general case, learners faithfully acquire (grammar-external) probabilities over contextual conditions on the use of abstract forms. Grammatical change reflects incremental change in the probability of use of one abstract representation vs. a competing one – "grammar competition" in Kroch's terms. In related work, Guy (1980; 2007) has proposed that within a given dialect, constancy in contextual effects applies across speakers to processes of variation more generally, the

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shared constraints hypothesis. That is, shared probabilistic constraints on variation within a dialect/population are visible not just in diachronic processes but in synchronic variation as well.

Constant rate effects have been reported in a now considerable body of production studies of syntactic change (Santorini, 1993; Ball, 1994; Kroch, 1994; Pintzuk, 1999; Cukor-Avila, 2002; Kallel, 2007; Durham et al., 2011).[1] To date, however, very little work has explored the implications of Kroch's generalization beyond production-based studies of syntactic variation and change. Recent results indicating that acceptability judgments closely mirror relative probabilities of semantically equivalent competing forms in production suggest that constant effects may also apply in judgment data (Bresnan & Ford, 2010; Melnick et al., 2011). In this article, we propose that controlled judgment data can be used to measure constancy in contextual effects in synchronic variation and to identify different grammars posited by learners (Tortora & den Dikken, 2010). We describe two large-sample judgment experiments lending plausibility to this approach.

The discussion is organized as follows. In section two, we describe an experiment with 297 subjects examining the effect of object weight on word order in English verb particle constructions in American and British English. In section three, we describe effects of voice and object shift on theme-goal ordering in ditransitives in Norwegian, in an experiment with 500 subjects.

2. Object weight effects on word order in particle verb constructions

In this section, we describe a study of regional and grammatical effects on the English particle verb alternation first reported in Haddican & Johnson (2012). We illustrate this variation in (1), which shows that, with a class of transitive verb + particle combinations, the particle may appear either immediately to the right of the verb, before the direct object, or further to the right, following the direct object. We refer to these word orders as the VPO (verb-particle-object) and VOP (verb-object-particle) orders respectively.

(1) a. She cut open the melon. (VPO order)
b. She cut the melon open. (VOP order)

1. See also Fruehwald et al. (2009) for evidence of constant rate effects in processes of phonological change.

Most formal work on the variation illustrated in (1) takes the two variants to be transformationally related in view of the fact that the thematic interpretations of the two variants are identical. In particular, there are two main approaches to the alternation. One approach takes the VPO order to be underlying, often with the verb and particle merged as a "complex head" taking the object as its complement (Johnson, 1991; Dehé, 2002). On this approach, the VOP order is typically derived by movement of the object to a position above the V+P complex head, followed by "excorporation" of the verb to a position to the left of the object. A second approach takes the VOP order as underlying, with the object and particle merged in a small clause structure (Kayne, 1985; Den Dikken, 1995, 2010; Svenonius, 2010; Haddican & Johnson, 2014). On this approach, the VPO order is typically derived via raising of the particle into some higher position above the object. The present discussion will not require us to take sides in this debate. For our purposes, what will be crucial is the fairly standard assumption that the variants are related via an abstract process – a movement rule in the syntax.

Much of the formal and sentence processing literature on English particle verbs has focused on two kinds of linguistic constraints on word order. One set of studies has discussed the length, or prosodic weight, of the object as a processing or a phonological phrasing constraint on word order. Kroch & Small (1978); Gries (2001) and Lohse et al. (2004) all report evidence from corpus studies showing that "heavy" objects such as those in (2) tend to favor the VPO order.

(2) a. She turned off the fan I bought her for Valentine's Day. (VPO order)
b. ?She turned the fan I bought her for Valentine's Day off. (VOP order)

With lighter objects as in (3), on the other hand, the VOP order is no longer disfavored.

(3) a. She turned off the fan. (VPO order)
b. She turned the fan off. (VOP order)

Indeed, speakers generally find the VOP order obligatory when the direct object is an unstressed, weak pronoun, as in (4). (Because of the strength of this effect, pronominal objects were not included in the experiment stimuli as described below.)

(4) a. *She turned off it. (VPO order)
b. She turned it off. (VOP order)

Lohse et al. (2004) explain the object length effect in terms of a more general processing constraint, namely that processing is facilitated when the material intervening between members of a syntactic dependency is minimized. In the case of the VOP order, but not the VPO order, heavy objects as in (3) incur a heavy

processing cost, on this approach, because they create a large gap between the two elements in the particle verb dependency. The VPO order is therefore preferred in proportion to increasing object length, not because the VPO order itself becomes easier to process, but because the corresponding VOP order becomes harder to process as object weight increases.

A second set of studies has focused instead on information-structural constraints on word order. Bolinger (1971), Svenonius (1996), Kayne (1998), and Dehé (2002) note that given objects, or topics, favor placement further to the left, as found in the VOP order, while focused objects favor placement further to the right, as in the VPO order. This information-structural effect on particle verb variation is discussed in Haddican & Johnson (2012) and Haddican & Johnson (2014). Here we will focus on the effects of object weight.

A further goal of Haddican & Johnson (2012) was to test Hughes et al.'s (2005) claim of a dialectal difference in word order preference. Based on anecdotal evidence, Hughes et al. (2005: 23) propose that Scottish speakers tend toward VPO, while speakers from the south of England tend toward VOP. Based on limited historical corpus evidence, Elenbaas (2007: 273–279) speculates that in the early Modern English period, VPO was favored in areas most exposed to Scandinavian varieties, that is, the Danelaw in Northern and Eastern parts of England, while VOP was favored elsewhere.

Haddican & Johnson (2012) suggested that if these claims for British English were true, there might be corresponding differences in American English. For example, if Scotland tends towards VPO, so might areas of the U.S. Midland with heavy Scottish and Scots-Irish settlement patterns. And if Southern England favors VOP, areas mainly settled from there, like New England, might share this preference. In fact, combining the experimental data with geographically-targeted Twitter data, Haddican & Johnson (2012) found no evidence of regional differences within either country, but did find a clear difference between American subjects (who preferred VPO) and British subjects (who preferred VOP). Canadian and Irish subjects were generally intermediate. For this reason, while not excluding the other nationalities, the present study focuses on the American and British subjects, who showed the clearest contrast in this regard.

Subjects. Subjects for the experiment were 297 self-described native speakers of English recruited online through personal contacts of the authors. 126 of these were from Great Britain (England or Scotland), 113 were from the United States, 32 were from Canada and 26 were from Ireland. Almost all had BA/BS-level degrees or higher. Subjects ranged in age from 18 to 84 (M = 30). 63% were women.

Materials. The experiment crossed three within-subjects factors, each with two levels: particle-object order, object length and focus status of the object. In this

report, we will essentially ignore the focus condition.[2] The word-order factor had the levels VPO and VOP, as illustrated in (1) above. Object length was operationalized as a binary factor: "short" objects were all three-syllable constituents with the definite article and a two-syllable noun, e.g. *the melon*; "long" objects were all seven-syllable DPs with a definite article, two two-syllable adjectives and a noun, for example *the heavy juicy melon*.

Fully crossing these three binary factors yields eight conditions, but combining the data across the focus factor reduces the number of conditions to four, which we illustrate in (5)–(8).

(5) Her kids wanted a snack, so Andrea cut open the melon.
(VPO order, light object)

(6) Her kids wanted a snack, so Andrea cut open the heavy juicy melon.
(VPO order, heavy object)

(7) Her kids wanted a snack, so Andrea cut the melon open.
(VOP order, light object)

(8) Her kids wanted a snack, so Andrea cut the heavy juicy melon open.
(VOP order, heavy object)

Procedure. 32 lexicalizations were created, using particle verbs that were all non-aspectual and compositional, as classified by Lohse et al. (2004). The lexicalizations were blocked and assigned to lists by Latin square, such that each subject saw all 32 lexicalizations, eight in each of the four conditions. Random assignment of subjects to lists ensured that there was no overall correlation between lexicalization and condition. The 32 experimental sentences in each list were pseudo-randomized within blocks with 32 filler sentences, half grammatical and half ungrammatical.

Subjects judged each of the sentences in a self-paced online judgment experiment using Ibex Farm (Drummond 2013). The experiment was anonymous and subjects were neither paid nor did they receive academic credit for participating. Subjects rated each sentence on an 11-point scale by clicking an icon for a value ranging from 0 to 10 in a horizontal array, with the endpoints labeled "Bad" and "Good" respectively.

Results and discussion. The data for each subject were normalized by converting to z-scores, subtracting the mean and dividing by the standard deviation of the ratings of the 32 filler sentences. Since half of the fillers were ungrammatical, the experimental sentences with particle verbs tended to have positive z-scores (with an interquartile range between +0.37 and +0.94 units).

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2. The effects of word order and object length on acceptability were very similar in the two focus conditions. Any differences between lexicalizations with respect to focus were corrected for, as described below.

Using the lme4 package in R (Bates et al., 2015), we then divided the data by focus condition, and fit two separate linear mixed-effects models, with the normalized acceptability judgment as the response, and weight * order (that is, object weight, word order, and their interaction) as fixed effect predictors. We used a maximal random-effects structure, as recommended by Barr et al. (2013).[3]

Since the aim of our paper is to compare the behavior of subjects, the regression models were used to construct estimates of each subject's ratings of each order (VOP and VPO), in each condition. This was done by taking each normalized response and subtracting the random effect estimates (BLUPs) for the appropriate model and lexicalization. For each condition, each subject's eight adjusted ratings were then averaged. The result thus includes the model's fixed effects, the by-subject random effects, and the residual error.[4]

Figure 1 shows, for each subject, the difference between VOP and VPO order (or the preference for VOP over VPO), with the subject's age represented on the x-axis. Trend lines for heavy and light object conditions for UK and US subjects are also shown.

Figure 1 replicates the effect of object weight discussed in the literature: heavy objects tend to be placed after the particle, while lighter objects tend to precede the particle (Kroch & Small, 1978; Gries, 2001; Lohse et al., 2004). In addition, the figure shows a difference between UK and US subjects; on average, UK subjects tend slightly toward the VOP order, while Americans prefer the VPO order. (See Haddican & Johnson (2012) for a discussion of this difference.) The slopes of the trend lines also show an age effect on word order preference. In both UK and US samples, younger speakers tend toward the VOP order. We return to this fact shortly.

More importantly for our purposes, Figure 1 shows that the object weight effect appears constant in apparent time, as indicated by the relatively parallel trend lines for heavy and light objects. In addition, the weight effect is constant across dialects: the gap between the trend line for heavy objects and the one for light objects is the same for the UK and US samples. The constant effects shown in Figure 1 are predicted if cross-speaker variation in preference for VPO vs. VOP orders (across apparent time and across dialect) reflects variation in the probability of application of an abstract process – the movement operation

3. The reason for dividing the data was because the full model with focus *weight *order did not converge. In any case, our results did not differ greatly from a model that simply ignored the focus variable.

4. We adopted this approach after discovering that using the by-subject BLUPs directly yielded very inconsistent results.

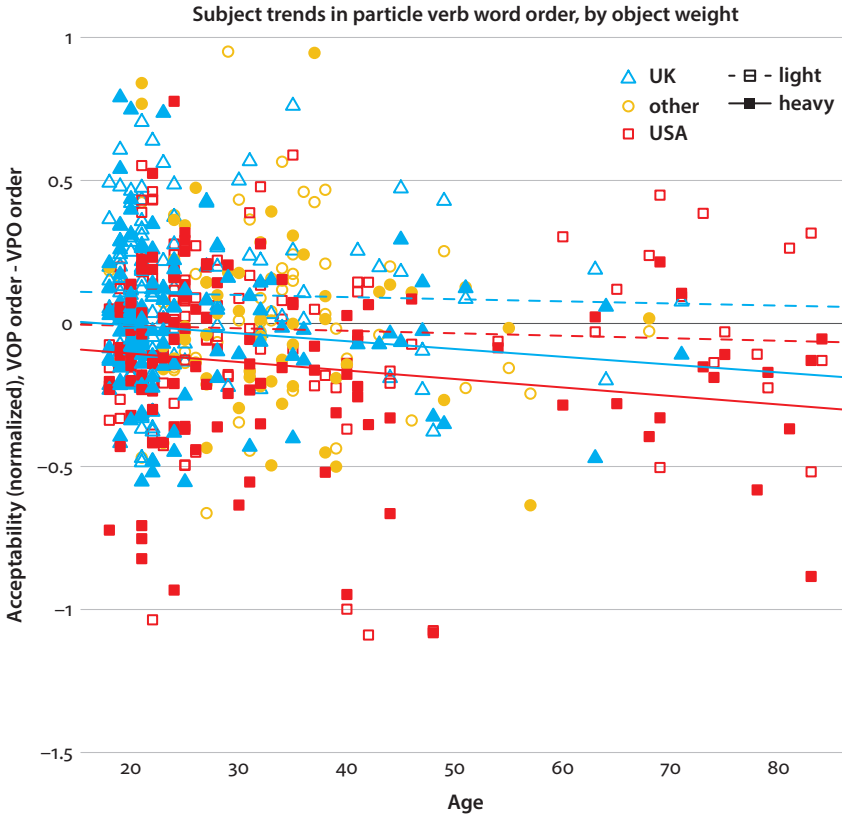

Figure 1. Estimated effects of object weight and word order on acceptability by speaker

responsible for the particle verb alternation – while probabilistic knowledge of contextual effects on this process, such as the effect of object weight, are acquired by learners independently.

A crucial question that arises from the perspective of this discussion is whether weight affects the acceptability of VPO and VOP orders independently in judgement tasks where these sentence types are treated as separate conditions. Previous acceptability judgment experiments have often enforced an inverse or mirror-image relationship between variants, for example by asking subjects to divide 100 points between two alternative sentences presented together – say 45 to variant A and 55 to variant B (Bresnan & Ford, 2010; Melnick et al., 2011). If an experimental manipulation does not affect the acceptability of variants in an inverse manner – for example, if it affects one variant but not the other – this previous approach will appear to show an inverse relationship anyway. However, comparison of such results with variationist corpus studies has suggested that relative acceptability in judgments does correspond to relative frequency of use (Bresnan & Ford, 2010).

The present experimental approach provides a measure of acceptability of a variant independent of that of competing variants, and thereby allows us to infer distinct effects of contextual variables on those variants. For example, if a certain context increases or decreases the acceptability of only one variant, it can hardly be seen as a constraint on grammar competition. But when the inverse pattern emerges – for example, when effects that favor variant A are seen to independently disfavor variant B (and ones favoring B disfavor A) – those constraints may well apply to the competition between variants, that is, to the "variable" itself.

In the particle verb data, the mirror pattern that emerges is only partial. Object weight affects both orders of the English particle verb alternation, but increasing the weight of the object from two to four words (or from three to seven syllables) disfavors the Verb-Object-Particle order about 50% more than it favors the Verb-Particle-Object order.[5] We illustrate this in Table 1, showing the effects of weight on VOP and VPO orders. The greater effect of object weight in the VOP order is also reflected in the greater distance between the two trend lines in the left panel of Figure 2 (VOP), compared to the right panel (VPO).

Table 1. Average acceptability for four conditions

Object Weight	Verb-Object-Particle	Verb-Particle-Object
Light	0.618	0.575
Heavy	0.553	0.617
$\|\Delta\|$	0.065	0.042

These results are partially explained by Lohse et al.'s (2004) processing-based account, where the weight effect is taken to reflect a preference by the processor to resolve dependency relations in a maximally local domain. Heavy objects are dispreferred in the VOP frame, according to this approach, because the object NP material intervening between the verb and its associated particle entails a "non-minimal domain" for processing (see also Hawkins (2004)).

However, the fact that object weight has an effect on the VPO order is unexpected from this perspective, since a larger object noun phrase should have no effect at all on the size of the processing domain for the relevant dependency relation.[6] In our experiment's VPO condition, "the smallest contiguous substring

5. This calculation assumes that object weight itself has no overall effect on acceptability, an assumption we aim to test explicitly in future experiments.

6. A reviewer points out that if object length (or another experimental manipulation) has an overall effect on the acceptability of sentences, it would impair our ability to independently assess its effects on the VPO and VOP orders. We agree that the improvement seen for heavy

containing the verb, the particle, and the first constructing word in the object NP" (Lohse et al. 2004: 240) is the same length – indeed, is identical – in both light-object and heavy-object conditions. For example, the relevant substring for both _cut open the melon_ and _cut open the heavy juicy melon_ is three words (four syllables): _cut open the_.

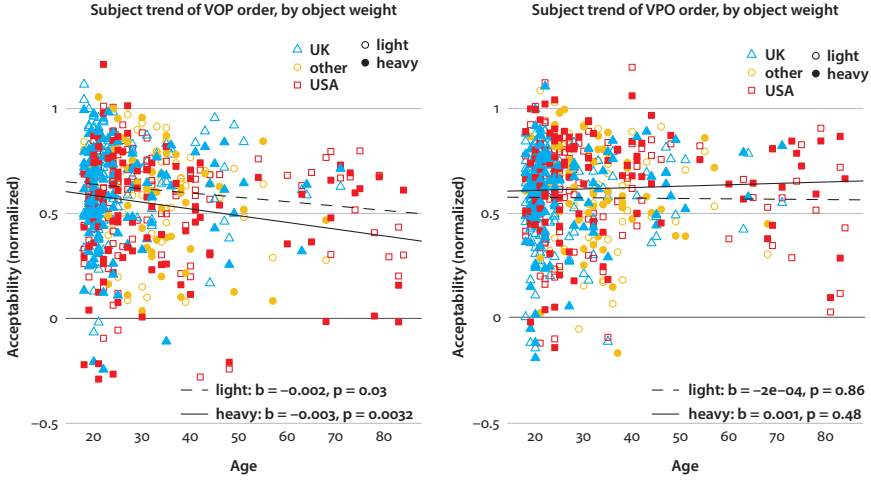

Figure 2. Estimated effects of object weight on acceptability of VOP and VPO orders by speaker

This suggests that when subjects evaluate the acceptability of a given syntactic structure, they may implicitly compare it with a competing structure in the same environment. That is, the well-motivated weight effect disfavoring heavy objects in the VOP order may lead to a preference for heavy objects in the VPO order. Subjects may evaluate the relative acceptability of both orders when they are exposed to either one of them, in a kind of perceptual version of competing grammars. At the same time, the fact that object weight has a smaller effect in the VPO condition may reflect it being parasitic on the effect in the VOP condition.

If the variants show a partially-inverse relationship in this respect, a clear independence between them is visible in diachrony. Over the twentieth century, in both American and British English, corpus data reveals a slow shift in particle verb realization in the direction of the VOP order (see Haddican & Johnson 2012 for the US; unpublished work comparing the Pre-LOB, LOB, F-LOB, and BE06 corpora shows the same trend for the UK). Figure 2 shows that this shift has been driven almost entirely by an increase in the acceptability of the VOP order,

objects in the VPO order is unlikely to be due to an overall preference for heavy objects, while taking the reviewer's point that such effects should be controlled for in future experiments.

without any concomitant decline in the acceptability of the VOP order. Relatedly (though not illustrated in Figure 2), the VOP order is clearly preferred in the UK compared to the US, while the VPO order has similar levels of acceptability in the two countries. (See Campbell-Kibler (2011) for similar evidence of the perceptual independence of variants in phonology.) Corpus studies must necessarily treat any change, like any constraint, as applying to the variable – to the relationship between variants. The present results from a judgement study, in which acceptability of the different variants are measured independently, suggest, instead that depending on the variable, or the constraint, speakers' base rates of variation, and the competition between the variants, may not be governed by a single abstract probability. Rather, probabilistic knowledge of contextual effects may be represented separately for separate variants. The results presented in this section, however, suggest that these effects are relatively constant across speakers, a finding in keeping with Kroch's generalization.[7]

3. Shape conservation effects in Norwegian

The second experiment we discuss comes from a study on object ordering in Norwegian. Norwegian is a "symmetric passive" language, meaning that in passives of double object constructions, both theme and goal arguments may passivize, as illustrated in (9).

(9) Norwegian

a. Jens ble gitt bok-en.
Jens was given book-the
'Jens was given the book.'

b. Bok-en ble gitt Jens.
Book-the was given Jens
'The book was given (to) Jens.'

(Adapted from Haddican & Holmberg (2012))

In this respect, Norwegian differs from Danish – an "asymmetric passive" language – where only goal arguments may passivize in double object constructions:

7. To clarify, when we say a given effect is constant across the speakers in our study, we do not mean that the speakers display no variability. For one thing, our data is noisy, partially because of the rough 0–10 scale, and no amount of statistical manipulation can completely correct for this. A less rigorous operationalization of a "constant effect" on a variable is that the size of the effect should be statistically independent of a speaker's input probability. All the effects reported in this paper meet this criterion.

(10) Danish

a. Jens blev givet bog-en.
Jens was given book-the
'Jens was given the book.'

b. *Bog-en blev givet Jens.
Book-the was given Jens
'The book was given (to) Jens.' (Holmberg & Platzack, 1995)

Anagnostopoulou (2003, 2005) proposed that the difference between Norwegian and Danish illustrated in (9) and (10) is relatable to a further difference between the two languages in terms of object ordering in object shift (OS) constructions in these languages. OS refers to contexts where weak pronominal objects – but not other VP material – raise out of the verb phrase. We illustrate this in (11) where the object pronoun raises out of the VP, to a position to the left of the negative adverbial, *ikke*.

(11) Elsa så den ikke [$_{VP}$ ~~så den~~.]
Elsa saw it not
'Elsa didn't see it.'

Importantly, OS in Scandinavian languages is restricted to contexts where the verb raises out of the VP as well – a restriction known as *Holmberg's Generalization* (Holmberg, 1986). (12), for example, shows that in perfect contexts, where the verb must remain inside the VP, OS is also blocked.

(12) Holmberg's Generalization (HG)

a. Elsa har ikke gitt ham den.
Elsa has not given him it
'Elsa hasn't given him it.'

b. *Elsa har ham den ikke [$_{VP}$ gitt ~~ham den~~.]
Elsa has him it not given
'Elsa hasn't given him it.'

In sentences with object shift, the theme-goal order is strictly disallowed in Danish, while in Norwegian, some speakers marginally allow it, as illustrated in (13) and (14).

(13) Danish double object OS

a. Peter viste hende den jo.
Peter showed her it indeed
'Peter indeed showed it to her.'

b. *Peter viste den hende jo.
Peter showed it her indeed
'Peter indeed showed it to her.' (Anagnostopoulou, 2005)

(14) Norwegian double object OS

a. Elsa ga ham den ikke.
Elsa gave him it not
'Elsa didn't give him it.'

b. %Elsa ga den ham ikke.
Elsa gave it him not
'Elsa didn't give him it.' (Haddican & Holmberg, 2012)

Anagnostopoulou proposed that this cross-linguistic correlation in the availability of theme-goal orders in passives and OS has an abstract source: the same short theme movement responsible for theme-goal orders in OS constructions in Norwegian feeds passivization, as shown in (15). In Danish, where this short theme movement is not available, theme passivization is blocked by the intervening goal. On this approach, then, the unavailability of theme-passivization in asymmetric passive languages is explained as a locality effect.

(15) Theme passivization on the locality approach

[TP Theme T [vP v [XP ~~Theme~~ [XP Goal [YP ~~Theme~~]]]]]

As Anagnostopoulou noted, acceptability of theme-goal orders varies across speakers of Norwegian. The above locality approach therefore makes a strong prediction about this cross-speaker variation: speakers should accept the theme-goal order in passives if and only if they also accept the theme-goal order in OS. Below, we describe a judgment experiment designed to test this prediction.

Subjects. Participants were 500 self-described native speakers of Norwegian, aged 18–81 (M =38.9, SD =11.5), 371 women and 129 men. Participants were recruited online and were not compensated. We did not require participants to be linguistically naive.

Materials. The experiment was a 2x3 design crossing argument order (with levels *theme-goal* and *goal-theme*) with context (with levels *Passive*, *Active-OS* and *Active-non-OS*). The Active-non-OS condition was included to test Anagnostopoulou's (2003) claim that the theme-goal order is degraded in such contexts. We illustrate these six conditions in Table 2.

Table 2. Example sentences for six conditions

Context	Theme-Goal	Goal-Theme
Passives	Den ble gitt ham. 'It was given (to) him.'	Han ble gitt den. 'He was given it.'
Active OS	Elsa ga den ham ikke. 'Elsa didn't give it (to) him.'	Elsa ga ham den ikke. 'Elsa didn't give him it.'
Active-non-OS	Elsa har ikke gitt den ham. 'Elsa hasn't given it (to) him.'	Elsa har ikke gitt ham den. 'Elsa hasn't given him it.'

All theme and goal arguments were third person pronouns. We biased theme vs. goal interpretation of the arguments using animate pronouns for goal arguments and inanimates for themes. Twelve lexicalizations were created for each of the conditions. These were then blocked and assigned to lists by Latin square. Each subject saw four items/condition, yielding 24 critical items, which were pseudo-randomized with 24 fillers, half of which were grammatical and half ungrammatical. Subjects were pseudo-randomly assigned to lists, using a counter mechanism.

Procedure. Subjects judged the above materials in a self-paced, web-based survey in Spring 2013 using Ibex Farm (Drummond, 2013). Subjects judged each sentence one-by-one and were not permitted to view or rejudge previously judged items. Subjects rated each sentence on an 11-point (0–10) scale by clicking an icon for a value ranging from 0 to 10 in a horizontal array, with endpoints labeled *dårlig* 'bad' and *god* 'good'. Results were normalized by converting to z-scores based on by-speaker means and standard deviations of fillers.

Results and discussion. Figure 3 plots mean scores and 95% confidence intervals for our six conditions. Zero on the y-axis corresponds to the mean scores for the fillers, half of which, again, were grammatical and half ungrammatical. Zero on the y-axis might therefore be taken as a rough midpoint of acceptability. The figure shows that theme-goal orders are quite bad in the active conditions. The theme-goal order is particularly degraded in the Active-non-OS condition (Anagnostopoulou, 2003), the same environment where the goal-theme order is rated highest, an effect to which we return shortly. In the object shift condition, the goal-theme order is rated somewhat lower and the theme-goal order is less sharply degraded. In passives, the theme-goal order was judged much better than in the other contexts—substantially better, in fact, than the goal-theme order.

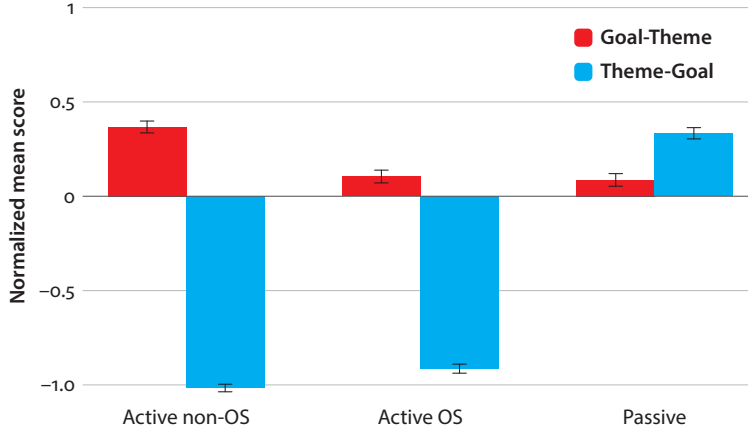

Figure 3. Mean scores and 95% CIs for six conditions

Figure 4 illustrates subjects' word-order preferences in two pairs of contexts. The x-axis shows each subject's preference in the Active-non-OS context – that is, subtracting each speaker's estimate for the Goal-Theme order from their estimate for the Theme-Goal order. The y-axis shows the same contrast for the Active-OS context (in blue) and the Passive context (in red). The blue triangles, therefore, show the correlation of word-order preferences between Active-non-OS and ActiveOS sentences, and the red triangles show the correlation between Active-nonOS sentences and Passive sentences. There is a fairly high positive correlation (+0.570) between the two active contexts, and no significant correlation between the Active-non-OS and Passive contexts.

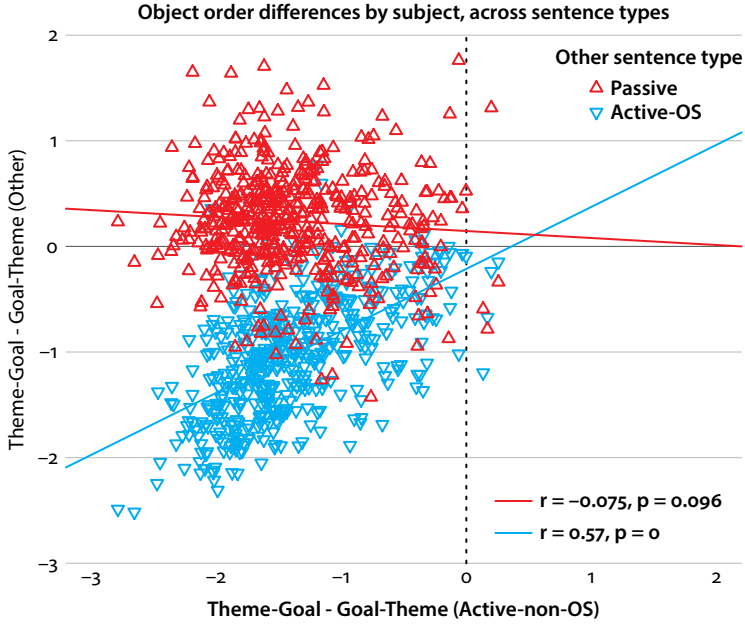

Figure 4. Preference for Theme-Goal over Goal-Theme order (Passive and ActiveOS compared to Active-non-OS)

Figure 4 therefore suggests that an individual's acceptance of the theme-goal order in Active-non-OS contexts is a poor predictor of their acceptance of the theme-goal order in passives, contra the locality approach discussed above. The results, however, do suggest a relationship between the acceptance of theme-goal orders in the two active contexts. Haddican & Holmberg (2014) suggest that this is an order preservation effect, whereby certain movement operations – OS, in this case – may not change the linear order of syntactic objects established at a prior level (Sells, 2001; Richards, 2004; Fox & Pesetsky, 2005; Engels & Vikner, 2013). Specifically,

Haddican & Holmberg (2014) propose that the same VP-internal movement operation responsible for the theme-goal order in Active-non-OS contexts also feeds OS. The cross-speaker correlation in scores for these two environments reflects this fact. To the extent that speakers allow the movement operation, they will also allow theme-goal order in OS; to the extent the movement is unavailable, theme-goal order in OS will also be blocked. Importantly, this object order preservation effect applies in the same environments (OS contexts) as Holmberg's generalization effects, which preserves the relative order of verbs and objects (see (12), above). We refer readers to Haddican & Holmberg (2014) for details on the implementation of this proposal, and an analysis of theme-passivization in these varieties.

The importance of these results for Kroch's generalization is that they indicate stability in contextual effects on judgments across speakers, although acceptance of the abstract rule – a VP-internal movement operation according to Haddican & Holmberg (2014) – varies considerably across speakers. This is precisely the pattern expected if, as Kroch suggests, learners within a given dialect/community faithfully acquire probabilities over contextual conditions on the use of abstract forms.

Recall from the discussion of the English particle verb data that the effect of weight on the VPO order *partially* mirrors its effect on the VOP order: relative to light objects, heavy objects disfavor the VOP order and favor the VPO order, but the former effect is stronger than the latter. A question that arises in this light is whether the acceptability of Norwegian goal-theme and theme-goal word orders are affected differently by OS. Table 3, which summarizes the effects on OS in theme-goal and goal-theme contexts, shows that these effects are in a mirroring relationship with a greater asymmetry: object shift disfavors the goal-theme order more than twice as strongly than it favors the theme-goal order.[8]

Table 3. Average acceptability for four conditions

Context	Theme-Goal	Goal-Theme
Active OS	-0.914	0.115
Active-non-OS	-1.017	0.373
$\|\Delta\|$	0.103	0.258

8. A reviewer notes that when judgments for two conditions fall mainly near one endpoint of the measurement scale (as for the Norwegian active theme-goal sentences), the difference in acceptability between them may be harder to measure. The point deserves further investigation, but we are not dealing with a classic "floor effect" here. Only 118/500 subjects (23.6%) gave the theme-goal stimuli the lowest possible ratings in the Active-OS context, a figure which only increased to 161/500 (32.2%) in the Active-non-OS context.

In discussing the degradation of theme-goal order in non-OS contexts compared to OS contexts, Anagnostopoulou (2003) proposes that the short theme movement responsible theme-goal order is only licit when it feeds a subsequent movement step, OS or passivization (see also Richards (1997: 127–162).) The results summarized in Figure 4 does not support Anagnostopoulou's description, since many subjects in our sample accept theme-goal orders to a degree in active non-OS contexts. The fact that the theme-goal order is *relatively* worse in non-OS contexts than OS contexts is in line with Anagnostopoulou's proposal. Whatever the source of the degradation of theme-goal order in non-OS contexts, it bears observing that it co-occurs with a stronger *increase* in acceptability of the competing word order – Goal-Theme. The fact that OS has an opposing effect on the two word orders again suggests that subjects may judge structures in light of contextual restrictions on *competing* variants. Unlike the object weight effect on particle verbs, however, whose greater effect on the VOP order had a principled explanation, the fact that OS should have a stronger effect on goal-theme than theme-goal orders is something we cannot account for here.

In the particle verb experiment, younger subjects gave more favorable judgments to the VOP order, while judgments of the VPO order were surprisingly stable (Figure 2). An age effect was also observed for the Norwegian experiment, in the Passive condition. Figure 5 shows that as the theme-goal order is judged worse among younger speakers, the goal-theme order is judged better. The size of the age effect is similar for both conditions, as shown by the trend lines (the absolute values of the trends are not significantly different; p = .26).

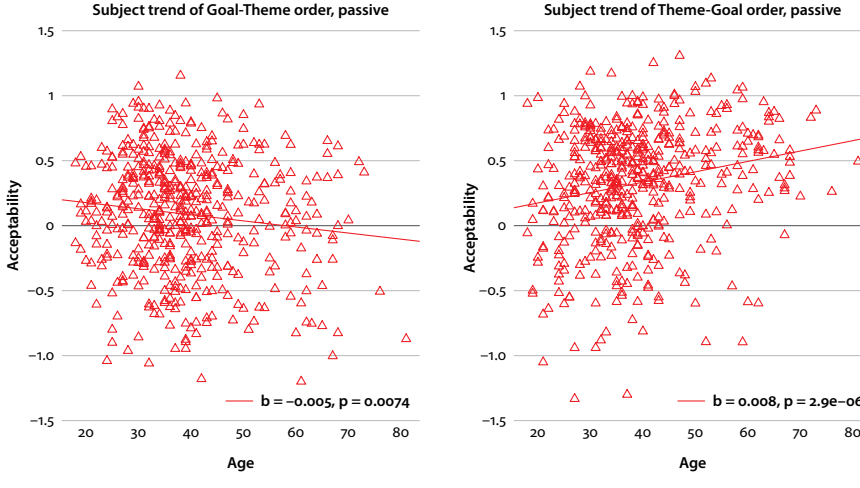

Figure 5. Acceptability of goal-theme and theme-goal word orders in Passive contexts by speaker

To summarize, we have seen evidence that in the light of acceptability judgment data, "grammar competition" is not a single phenomenon. In some cases, we do find the expected pattern: contextual or between-speaker effects have mirror image – that is, inverse – consequences on the two variants (assuming a binary competition). An example is the apparent-time change in the passive of the Norwegian double object construction. For other effects, like object weight in the English particle verb alternation or object shift in the active voice of the Norwegian double object, our experiments found a strong change for one of the variants, while the other showed a much weaker change in the opposite direction. We suggest that in these cases, there may be a principled explanation for the larger effect, while the other effect derives from it through an implied comparison of the two variants (even though the experimental task is only to judge one sentence at a time). A third situation is where only one variant is affected, like the apparent-time change in the English particle verbs. Further research will examine how general these three types of variant (in)dependence are in judgment data, and explore the reasons why a given effect on a given variable follows one of these three patterns, rather than another.

4. Conclusion

Kroch's generalization about the constancy of conditioning effects in production data originally held the promise of a new kind of data capable of informing formal analysis by equipping formalists "to refine grammatical analyses on the basis of the predictions they make about the patterning of usage in change" (Kroch 1989). In practice, the application of this technique to formal issues has been fairly limited owing to the difficulty of finding or building appropriate corpora, and the time required to analyze such data. In addition, identifying the intended interpretation of a given string in production data may add uncertainty to formal analyses of usage data.

In this paper, we have argued that controlled judgment experiments provide an additional technique for inferring a single abstract source for superficially different forms, using Kroch's generalization. In addition, this type of experiment allows us to distinguish and contrast three types of contextual effect: one where the acceptability of variants are affected inversely and equally, one where the inverse relationship is only partial, and one where only one variant is affected. Recent advances in techniques for carrying out web-based experiments now make such experiments relatively easy to implement. Future work in comparative syntax might therefore avail itself of these new techniques.

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References

Anagnostopoulou, Elena. 2003. *The syntax of ditransitives: Evidence from clitics*. Berlin: Walter de Gruyter.

Anagnostopoulou, Elena. 2005. Holmberg's generalization and cyclic linearization. Remarks on Fox and Pesetsky. *Theoretical Linguistics* 31(1–2). 95–110. doi:10.1515/thli.2005.31.1-2.95

Ball, Catherine N. 1994. Relative pronouns in *it*-clefts: The last seven centuries. *Language Variation and Change* 6(02). 179–200. doi:10.1017/S0954394500001630

Barr, Dale J., Roger Levy, Christoph Scheepers & Harry J. Tily. 2013. Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory and Language* 68(3). 255–278.

Bates, Douglas, Martin Mächler, Ben Bolker & Steve Walker. 2015. Fitting linear mixed-effects models using lme4. *Journal of Statistical Science* 67(1). 1–48.

Bolinger, Dwight Le Merton. 1971. *The phrasal verb in English*. Cambridge, MA: Harvard University Press.

Bresnan, Joan & Marilyn Ford. 2010. Predicting syntax: Processing dative constructions in American and Australian varieties of English. *Language* 86(1). 168–213. doi:10.1353/lan.0.0189

Campbell-Kibler, Kathryn. 2011. The sociolinguistic variant as a carrier of social meaning. *Language Variation and Change* 22(3). 423–441. doi:10.1017/S0954394510000177

Cukor-Avila, Patricia. 2002. *She say, she go, she be like*: Verbs of quotation over time in African American Vernacular English. *American Speech* 77(1). 3–31. doi:10.1215/00031283-77-1-3

Dehé, Nicole. 2002. *Particle verbs in English: Syntax, information structure and intonation*. Amsterdam: John Benjamins. doi:10.1075/la.59

Den Dikken, Marcel. 1995. *Particles*. Oxford: Oxford University Press.

Den Dikken, Marcel. 2010. On the functional structure of locative and directional PPs. In Guglielmo Cinque & Luigi Rizzi (eds.), *Mapping spatial PPs*, 74–126. Oxford: Oxford University Press. doi:10.1093/acprof:oso/9780195393675.003.0003

Drummond, Alex. 2013. Ibex Farm, http://spellout.net/ibexfarm.

Durham, Mercedes, Bill Haddican, Eytan Zweig, Daniel Ezra Johnson, Zipporah Baker, David Cockeram, Esther Danks & Louise Tyler. 2011. Constant linguistic effects in the diffusion of *be like*. *Journal of English Linguistics* 40(4). 316–337. doi:10.1177/0075424211431266

Elenbaas, Maatje Barbara. 2007. *The synchronic and diachronic syntax of the English verb-particle combination*, vol. 149. LOT.

Engels, Eva & Sten Vikner. 2013. Object shift and remnant VP-topicalisation: Danish and Swedish verb particles and *let*-causatives. *Nordic Journal of Linguistics* 36(2). 219–244. doi:10.1017/S0332586513000243

Fox, Danny & David Pesetsky. 2005. Cyclic linearization of syntactic structure. *Theoretical Linguistics* 31(1–2). 1–45. doi:10.1515/thli.2005.31.1-2.1

Fruehwald, Josef, Jonathan Gress-Wright & Joel Wallenberg. 2009. Phonological rule change: The constant rate effect. In *Proceedings of NELS*, vol. 40.

Gries, Stefan T. 2001. A multifactorial analysis of syntactic variation: Particle movement revisited. *Journal of Quantitative Linguistics* 8(1). 33–50. doi:10.1076/jqul.8.1.33.4092

Guy, Gregory. 1980. Variation in the group and the individual: The case of final stop deletion. In William Labov (ed.), *Locating language in time and space*, 1–36. New York, NY: Academic Press.

Guy, Gregory. 2007. The scope of generalization in phonology. Talk given at Workshop on Variation, Gradience and Frequency in Phonology, Stanford University.

Haddican, Bill & Anders Holmberg. 2012. Object movement symmetries in British English dialects: Experimental evidence for a mixed case/locality approach. *Journal of Comparative Germanic Linguistics* 15(3). 1–24. doi:10.1007/s10828-012-9051-x

Haddican, Bill & Anders Holmberg. 2014. Four kinds of object symmetry. In Ludmila Veselovská & Markéta Janebová (eds.), *Complex visibles out there. Proceedings of the olomouc linguistics colloquium 2014 Language use and linguistic structure*, Palacký University.

Haddican, Bill & Daniel Ezra Johnson. 2012. Effects on the particle verb alternation across English dialects. *University of Pennsylvania Working Papers in Linguistics* 18(2). 5.

Haddican, Bill & Daniel Ezra Johnson. 2014. Focus effects on particle placement in English and the left periphery of PP. *Proceedings of NELS 43* (2).

Hawkins, John A. 2004. *Efficiency and complexity in grammars*. Oxford: Oxford University Press. doi:10.1093/acprof:oso/9780199252695.001.0001

Holmberg, Anders. 1986. *Word order and syntactic features*. Stockholm University dissertation.

Holmberg, Anders & Christer Platzack. 1995. *The role of inflection in Scandinavian syntax*. Oxford: Oxford University Press.

Hughes, Arthur, Peter Trudgill & Dominic Watt. 2005. *English accents and dialects: An introduction to social and regional varieties of English in the British Isles*. London: Hodder Arnold.

Johnson, Kyle. 1991. Object positions. *Natural Language & Linguistic Theory* 9(4). 577–636. doi:10.1007/BF00134751

Kallel, Amel. 2007. The loss of negative concord in Standard English: Internal factors. *Language Variation and Change* 19(1). 27–49. doi:10.1017/S0954394507070019

Kayne, Richard. 1985. Principles of particle constructions. In Jacqueline. Guéron, Hans-Georg Obenauer, & Jean-Yves Pollock (eds.), *Grammatical representation*, 101–140. Dordrecht, The Netherlands: Foris.

Kayne, Richard S. 1998. Overt vs. covert movements. *Syntax* 1(2). 128–191.

Kroch, Anthony. 1989. Reflexes of grammar in patterns of language change. *Language Variation and Change* 1(3). 199–244.

Kroch, Anthony. 1994. Morphosyntactic variation. In Katharine Beals (ed.), *Papers from the* 30th *regional meeting of the chicago linguistics society: Parasession on variation and linguistic theory. chicago linguistics society, chicago*, 180–201. Chicago Linguistic Society.

Kroch, Anthony & Cathy Small. 1978. Grammatical ideology and its effect on speech. In David Sankoff (ed.), *Linguistic variation: Models and methods*, 45–55. New York, NY: Academic Press.

Labov, William. 1972. *Sociolinguistic patterns*. University of Pennsylvania Press.

Lohse, Barbara, John A Hawkins & Thomas Wasow. 2004. Domain minimization in the English verb-particle constructions. *Language* 80(2). 238–261. doi:10.1353/lan.2004.0089

Melnick, Robin, T. Florian Jaeger & Thomas Wasow. 2011. Speakers employ fine-grained probabilistic knowledge. LSA, Pittsburgh, PA.

Pintzuk, Susan. 1999. *Phrase structures in competition: Variation and change in Old English word order*, London: Routledge.

Richards, Marc. 2004. *Object shift and scrambling in North and West Germanic: A case study in symmetrical syntax:* University of Cambridge dissertation.

Richards, Norvin. 1997. *What moves where when in which language?* MIT dissertation.

Santorini, Beatrice. 1993. The rate of phrase structure change in the history of Yiddish. *Language Variation and Change* 5(3). 257–283. doi:10.1017/S0954394500001502

Sells, Peter. 2001. *Structure, alignment and optimality in Swedish*. CSLI.

Svenonius, Peter. 1996. The optionality of particle shift. *Working papers in Scandinavian syntax* 57. 47–75.

Svenonius, Peter. 2010. Spatial P in English. In Guglielmo Cinque & Luigi Rizzi (eds.), *Mapping spatial PPs*, 127–160. Oxford: Oxford University Press.

Tortora, Christina & Marcel den Dikken. 2010. Subject agreement variation: Support for the configurational approach. *Lingua* 120(5). 1089–1108. doi:10.1016/j.lingua.2009.04.004

Variation as a testing ground for grammatical theory

Variable negative concord in Montréal French

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This paper addresses the contribution that corpus-based studies of syntactic variation can make to the construction, elaboration and testing of formal syntactic theories, with a particular focus on the testing dimension. In particular, I present a new empirical study of obligatory and optional asymmetric negative concord phenomena, and I show how an influential analysis for obligatory concord patterns (de Swart, 2010) can be tested using variation data through looking at the predictions that its natural probabilistic extension makes for the forms, interpretations and frequency distributions of expressions in languages in which asymmetric concord is optional. In obligatory negative concord languages like Spanish, negative indefinites, such as *nadie* 'no one', appear bare in preverbal position (i.e. in an expression like ***Nadie** ha venido* '**No one** came'), but they co-occur with the negative marker *no* in postverbal negative concord structures such as ***No** he visto a **nadie*** 'I did not see anyone.' (lit. 'I did **not** see **no one**.'). Furthermore, in this language, co-occurrence between a negative marker and an n-word is either prohibited (**Nadie **no** ha venido*), or it is obligatory (**He visto a **nadie***). Québec French shows a variable version of the Spanish pattern in which the negation marker optionally co-occurs with postverbal negative indefinites (*J'ai **(pas)** vu **personne*** 'I saw no one') but is prohibited with preverbal negative indefinites *****Personne** est **pas** venu* (Ok: ***Personne** est venu.* 'No one came'). I show how the predictions for Montréal French of de Swart's analysis of Spanish can be tested (and, in this case, mostly verified) using a quantitative study of the distribution of bare and concord structures in the *Montréal 84* corpus of spoken Montréal French (Thibault & Vincent, 1990) through looking at its natural extension within Boersma (1998)'s stochastic generalization of the Optimality Theory framework, which is the framework in which de Swart's proposal is set.

Keywords: syntactic variation, negative concord, probabilistic grammar, Montreal French

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1. Introduction

This paper addresses the contribution that language variation and change (LVC) studies can make to the **construction**, **elaboration** and **testing** of formal syntactic and semantic theories, with a particular focus on the testing dimension.

One of the fundamental scientific hypotheses characterizing the field of linguistics in the 20th and beginning of the 21st centuries is that the principles and mechanisms that underly the construction and interpretation of natural language expressions are different from those principles/mechanisms that determine the patterns of use of these expressions. As a consequence of this hypothesis, formal linguists, be they working in the Generative (Chomsky, 1957, 1965, et seq.) or other traditions, have taken their central object of study to be contrasts in **grammaticality** (i.e. whether or not a sequence of words or morphemes is a well-formed expression in the language) and **interpretation** (i.e. which meanings are assigned to grammatical expressions with which forms). Thus, the main goal of formal linguistic theory has been to model grammaticality and interpretative contrasts found in the languages of the world through the use of **deterministic** grammars: formal descriptions of a language consisting of a set of primitive words/morphemes and rules that combine (or 'generate') complex grammatical expressions from these primitives while, at the same time, assigning them an appropriate meaning.

On the other hand, LVC researchers have taken their central object of study to be patterns of linguistic **variation**; that is, contrasts in the distributions of synonymous grammatical forms (or 'variants') in the speech of a speaker (or a population of speakers), as observed in a written or spoken corpus. One of the main aims of scholars working in the Variationist tradition (Labov, 1963, 1966; Weinreich et al., 1968, et seq.) is to identify the set of factors, linguistic and/or social, that influence the use of one variant over another and the role that these factors play in both linguistic and social change. In the analysis of these patterns of language use, many LVC researchers make use of **probabilistic** grammars: formal grammars that generate a language along with a probability distribution on its elements. These differences in the classes of grammars used in linguistic analysis in these two different fields have made insights from LVC, which are primarily associated with the source and shape of the probability distribution on the language, difficult to integrate into formal linguistic proposals that concern the form of the language itself.

However, more recently, compelling arguments have been developed that the hypothesis of the total separation between the form of human languages and the form of linguistic usage patterns is not well-founded. For example, there is a large (and growing) body of literature that shows that grammatical factors that deter-

mine grammaticality contrasts, also known as **hard** contrasts,[1] in some languages (traditionally, the domain of study of formal linguistics) determine preferential, or **soft**, contrasts in other languages (traditionally, the domain of study of LVC and psycholinguistics). A classic example of this hard/soft duality involves person hierarchy effects and their interaction with grammatical voice. In many languages, the set of DPs that can occupy the subject position is restricted by grammatical person. For example, as observed by Jelinek and Demers (1983) (and taken up in Bresnan et al. (2001)), in Lummi, a Salish language spoken in British Columbia, transitive predicates that have third person actors and first or second person patients must appear in the passive voice; that is, in this language, it is impossible to say (the Lummi equivalent) of *The man knows me*, rather one must say (1-a). On the other hand, if the agent is first or second person and the patient is third person, then the active voice is obligatory (1-b); that is, one cannot say the equivalent of *The man is known by me*.

(1) Person-restricted voice in Lummi

a. xči-t-**ŋ** =sən ə cə swəyʔqəʔ
know-tr-**PASS** =1.SING.NOM by the man
'I am known by the man.'

b. xči-t =sən cə swəyʔqəʔ
know-tr =1.SING.NOM the man
'I know the man.' Cited from (Bresnan et al., 2001, p.1)

The contrast between (1-b) and the corresponding active sentence with a third person subject is one of grammaticality, and, therefore, this is exactly the kind of empirical data that we would like our formal linguistic theories to account for.

Of course, not all languages are like Lummi: in English, having a third person agentive subject with a first person object is perfectly grammatical, and speakers of this language have the option of saying either *The man knows me* or *I am known by the man*. However, as shown by Bresnan et al. (2001) by means of a quantitative study using the parsed *Switchboard* corpus of spoken English (Godfrey et al., 1992), when first and second person actors act on third person patients in the Switchboard corpus, the action is uniformly expressed using the active voice (0/6246 occurrences). On the other hand, when third person actors act on first or second person patients, the action is expressed using the passive voice in 2.9% of the cases (14/486 occurrences), which is a small but highly statistically significant

1. See (Bresnan et al., 2001; Sorace and Keller, 2005; Thullier, 2012, among others).

difference. In other words, what appear as grammaticality contrasts in Lummi and other languages appear as preferences in spoken English.

Hard/soft correspondences of the type just described are widespread and found in many different parts of the grammar, including subject definiteness (Givón, 1979), relative clause formation (Keenan and Comrie, 1977; Keenan and Hawkins, 1987; Hawkins, 2004), argument ordering in the noun phrase (Rosenbach, 2002, 2005; Bresnan, 2007), polarity splits in agreement morphology (Chambers, 2004; Tagliamonte, 2011, among many others) and tense morphology (Deshaies and Laforge, 1981; Poplack and Turpin, 1999; Poplack and Dion, 2009), negative concord patterns (Burnett et al., 2015) and postverbal complement ordering (Bresnan et al., 2007; Thullier, 2012; Tagliamonte, 2014, among others). The coincidences between the shape of grammaticality contrasts in one language and the shape of preferential contrasts in another strongly suggest that these patterns have a common source and that at least some of the mechanisms that underly the construction and interpretation of natural language expressions coincide with at least some of those that determine the patterns of their use. This state of affairs has the important consequence that, if we accept that patterns of variation can shed light on the form of human grammars, we now have access to a whole new empirical domain (variation studies) which can be used to formulate generalizations concerning which kinds of grammatical factors universally condition grammaticality contrasts and/or preferential contrasts in human languages (and which do not).

The hard/soft duality has a further consequence for the form of our linguistic theories: Since we pursue a grammatical explanation for hard contrasts (i.e. we say that, when one expression is grammatical in a language and another is not, it is because of features of that language's grammar), I suggest that the most straightforward explanation for (pertinent) soft contrasts in natural languages is also grammatical. However, in order to integrate 'soft' syntactic patterns into our formal linguistic theories, we need to move to grammars that will allow us to do so.[2]

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2. The use of non-deterministic grammars is not the only logically possible way of capturing the hard/soft correspondences discussed in this paper. One could also propose that variation is the result of the speaker having multiple grammars that define multiple languages, in the style of Kroch (2000). Soft syntactic patterns would therefore mirror hard syntactic patterns because the soft patterns are the result of alternation between languages in which these patterns are hard. I view the proposals made in this paper as compatible, in principle, with this view. Indeed, as we will see, the Stochastic OT grammars that are used in the analysis presented in the paper account for variation using alternation between deterministic grammars. Likewise, certain theories of morphological variation, such as Adger and Smith (2010); Adger (2014), use deterministic grammars for syntax and adopt a more complicated theory

As discussed above, probabilistic grammars can capture preferential distinctions between grammatical expressions in a way that deterministic grammars cannot. Therefore, in this paper, we will explore how (an appropriate subset of) this class of formal systems can be useful in the construction and testing of formal syntactic theories.[3]

As an illustration of this proposal, in this paper, I present a new empirical study of obligatory and optional asymmetric negative concord, and I show how an influential analysis for obligatory concord patterns (de Swart, 2010) can be tested through looking at the predictions that its natural probabilistic extension makes for the forms, interpretations and frequency distributions of expressions in languages in which asymmetric concord is optional. In obligatory asymmetric negative concord languages such as Spanish, Italian and European Portuguese, negative indefinites, known in the literature (after Laka (1990)) as *n-words*, may appear in preverbal position without sentential negation; however, when they appear in postverbal position, they must be c-commanded by an appropriate negative operator, usually sentential negation. This asymmetry is exemplified in using the Spanish n-word *nadie* 'no one'.

(2) a. **Nadie** ha venido.
No one has come.
'No one came.'

b. *(**No**) he visto a **nadie**.
Not have seen a no one
'I saw no one.'

A further characterizing feature of the Spanish/Italian/Portuguese asymmetric pattern concerns co-occurrence possibilities between preverbal n-words and sentential negation; in particular, not only can preverbal n-words in these languages appear bare, they **must** do so. That is, while co-occurrence of *nadie* and *no* is obligatory in (2-b), it is prohibited in (3), under normal intonational patterns.

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of the lexiconmorphology interface. The phenomenon analyzed in this paper is located at the syntax-semantics interface, so it is not clear to me how naturally Adger et al.'s model extends to cover something like variable negative concord (or even if it is meant to). However, this may be an interesting analytical path to pursue in the future.

3. Of course, we must be very careful with which kinds of probabilistic grammars that we choose; in particular, we need to avoid systems (such as Markov models or stochastic context-free grammars) which, as discussed already by Chomsky (1957), have certain features that render them inappropriate for the modelization of linguistic competence. See also Stabler (2013) for similar criticisms of this use of certain recent stochastic extensions of multiple context-free grammars and Minimalist grammars.

(3) *__Nadie__ __no__ ha venido.
No one not has come
Intended: 'No one came.'

Another language that shows the preverbal/postverbal asymmetry is the dialect of French spoken in Montréal, Québec. As observed by (Daoust-Blais, 1975; Lemieux, 1985; Muller, 1991; Sciullo and Tremblay, 1996; Déprez, 2002; Labelle, 2010; Larrivée, 2014, among many others), Montréal French (MF) displays a negative concord pattern similar to the one found in Spanish: MF n-words, such as *personne* 'no one', may not co-occur with sentential negation (the VP adverb *pas*) when they appear in preverbal position (4-a);[4] however, co-occurrence with negation is possible with postverbal n-words (4-b), in which case (under neutral intonation) the unique interpretation created is a negative concord one.[5]

(4) Asymmetric Concord in Montréal French
a. __Personne__ est (*__pas__) venu.
No one is (*__not__) come
'No one came.'
b. J'ai __pas__ vu personne.
I have __not__ seen no one
'I saw no one.'

However, unlike the categorical asymmetric concord systems described above, co-occurrence with negation is optional for postverbal n-words in the French dialect; that is, postverbal n-words can also appear bare (5), and the interpretation is the same the same as (4-b).

(5) J'ai vu __personne__.
I have seen no one
'I saw no one.'

4. As observed by Sankoff and Vincent (1977), bipartite negation (i.e. *ne… pas*) has been (almost) completely eradicated from the language spoken in Québec, with *ne* appearing in only 0.5% of negative sentences in the *Sankoff-Cedergren* (a.k.a. *Montréal 71*) corpus, which is a precursor to the *Montréal 84* corpus used in this paper.

5. This is an important difference between Montréal French and most varieties of French spoken in Europe, where co-occurrence between postverbal n-words and sentential negation obligatorily gives rise to double negation interpretations, i.e. in most of the French dialects spoken in Europe, *J'ai pas vu personne* only means 'I didn't see no one.'

MF thus shows a 'soft' version of the postverbal n-word/negation co-occurence pattern that is 'hard' in Spanish and, in this paper, we will investigate a probabilistic extension of de Swart (2010)'s analysis for the Spanish pattern can capture these patterns of syntactic variation, as observed in a quantitative study of the distribution of negative concord structures in the *Montréal 84* corpus of spoken Montréal French (Thibault & Vincent, 1990).

The paper is laid out as follows: in Section 2, I present the main lines of de Swart (2010)'s account of the Spanish pattern, which is set within a Bidirectional Optimality Theory (OT) approach to the syntax-semantics interface. In Section 3, I consider extending this analysis within Boersma (1998)'s stochastic generalization of the OT framework (StOT) to account for variable asymmetric concord languages, and I identify what predictions the appropriately extended proposal makes for the distribution of negative concord structures in a corpus of spoken Montréal French. Section 4 presents a quantitative study of the distribution of negation and negative indefinites in the *Montréal 84* oral corpus. I show that the main (non-trivial) predictions of the extension of de Swart's account are borne out; however, I also argue that certain other aspects of the distribution of concord structures in the data are problematic for the naive extension of the analysis presented in Section 2. Therefore, in Section 5, I modify de Swart's analysis and show how my proposal can account not only for the range and interpretation of negative structures in this Montréal French, but also for their rate of use in *Montréal 84*. Section 6 gives a summary of the main empirical and theoretical proposals in this work and provides some concluding remarks on the role of both Stochastic grammars and quantitative corpus studies in the construction of syntactic theory.

2. Obligatory asymmetric concord in bidirectional OT

This section presents de Swart (2010)'s account of the syntax and semantics of obligatory asymmetric negative concord in languages like Spanish. As mentioned in the introduction, her proposal is set within a Bidirectional OT approach to the syntax-semantics interface. Therefore, I will first lay out a version of the basic OT framework and then show how de Swart derives the preverbal/postverbal asymmetry within it.

2.1 Bidirectional OT as a theory of the syntax-semantics interface

Although Optimality Theory was originally developed to model phenomena associated with the phonological module of the grammar (Prince & Smolensky,

1993); this architecture was quickly extended to the analysis of syntactic phenomena (Grimshaw, 1997; Bresnan, 2000, and much subsequent work), and, more recently, to semantic and pragmatic phenomena (see Hendriks and de Hoop, 2001; de Hoop and de Swart, 2000; Blutner, 2000; Zeevat, 2001; Krifka, 2007, and much subsequent work in the field). In contrast to the vast majority of work done in Interpretative semantics (Montague, 1970) and derivational approaches to the syntax-semantics interface (May, 1985; Chomsky, 1995), in OT approaches to the syntax-semantics interface, the pairing of linguistic forms with particular meanings is optimized according to both generation (i.e. speaker) and parsing (i.e. hearer) considerations. In order to model this, we use a class of grammars called *Optimality Systems*, which are defined as follows:[6]

Definition 2.1. ***OT System.*** *An OT system* $\mathcal{O}$ *is a pair* $\langle GEN, \mathscr{C} \rangle$*, where GEN is a relation and* $\mathscr{C}$ *(the* constraint set*) is a linearly ordered set of functions (*$\mathscr{C} = \langle c_1, c_2, c_3 \ldots c_n \rangle$*) from GEN into* $\mathbb{N}$*.*

In phonology and morphology, *GEN* is usually conceived of as a relation between ⟨input, output⟩ pairs. In a syntax-semantics interface setting, however, *GEN* is a relation between a syntactic form *f* and a meaning *m* (so we write $\langle f, m \rangle \in GEN$). The OT architecture is extremely versatile, which allows for almost limitless possibilities when it comes to what constitutes a *form* and what constitutes a *meaning*. In order to be as general as possible, in this paper (as in de Swart (2010)), we will consider forms to simply be sequences of words taken from a language-specific lexicon structured into syntactic constituents (although (with some exceptions discussed in Section 5) I will remain as agnostic as possible concerning what exactly those constituents are). Furthermore, I assume that the lexical items of Spanish (or English or Montréal French or whatever) that compose these forms are assigned semantic interpretations in the lexicon in a way that consistent with (many versions of) *Generalized Quantifier Theory* (Barwise and Cooper, 1981; Keenan and Stavi, 1986; Keenan and Westerstahl, 1997, among others).[7] For example, verbal predicates will denote relations of the appropriate arity; that is, intransitive verbs will denote subsets of the domain *D* (so, for the English verb *arrive*, we write $[\![arrive]\!] \subseteq D$) and transitive verbs will denote binary relations (so, for the English verb *see*, we write $[\![see]\!] \subseteq D \times D$). Furthermore, expressions that are syntactically determiner

6. All formalizations are taken from Jäger (2002), sometimes recast in my notation.

7. Thus, this framework is only interested in modelling optimization at the level of compositional semantics, not lexical semantics. This is not necessary, and see Blutner (2000) among others. I will make further remarks on the optimized lexicon in Section 5.

phrases (DPs) are analyzed as denoting generalized quantifiers: arity reducing functions which map n+1-ary relations to n-ary relations in the way specified by the lexical meaning of the DP.[8]

In the spirit (if not the letter) of de Swart, we will take meanings to be strings of symbols, for which will give a model theoretic interpretation based on combinations of possible denotations of lexical items. More specifically, we will have a set of (in)transitive predicates such as ARRIVE or SEE. I highlight that, although these symbols bear striking resemblances to English words, they are meant to form part of the abstract semantic representations that will be given for a number of languages in this paper. Symbols like ARRIVE and SEE are interpreted into the same model as the lexical items above, and we write $[\![ARRIVE]\!] \subseteq D$ or $[\![SEE]\!] \subseteq D \times D$ for their interpretations. Likewise, we will have symbols that will be interpreted as quantifiers: [NOBODY] will map properties to true just in case they have no human members. Thus, the string (7-a), where NOBODY and ARRIVE are appropriately concatenated based on their semantic type, will be true in a model M just in case the denotation of ARRIVE in M has no human members. Strings with transitive predicates such as (7-b) and (7-c) indicate the order of the composition of arguments: (7-b) is true in a model M just in case [JOHN] maps the set of individuals who saw nobody to true in M (i.e. if John saw nobody), and (7-c) is true in a model just in case [NOBODY] maps the set of humans who saw John to true in that model (i.e. if nobody saw John).[9]

(7) Sample meanings in the range of *GEN*

a. NOBODY(ARRIVE)
b. JOHN(NOBODY(SEE))
c. NOBODY(JOHN(SEE))
d. NOT(JOHN(ARRIVE))

---

8. More technically: for a unary generalized quantifier F^1 (a function from properties to truth values over a domain D), we extend the domain of F^1 to include all n + 1-ary relations R by setting

(6) $F^{n+1}(R) = \{\langle a_1, a_2 \ldots a_n\rangle : F^1(\{b: \langle a_1, a_2 \ldots a_n, b\rangle\}) = 1\}$.

(see Keenan and Westerstahl, 1997, for more details).

9. Note that just because, in this paper, we use this small language to pick out meanings, this does not mean that the (language independent) meaning denoted by NOBODY(JOHN(SEE)) will necessarily be paired with a form containing a negative quantifier. Depending on the language specific constraint ranking, such a meaning could also be realized through the combination of an indefinite or negative polarity item and sentential negation.

Furthermore, in line with de Swart and Sag (2002) and Peters and Westerstahl (2006), we will represent sentential negation as a 0-ary quantifier which maps truth values to truth values; thus the string in (7-d) is interpreted as true in a model in which John did not arrive.

Thus, *GEN* will consist of the product of the set of complex forms and the set of meanings, which are strings such as in (7).[10] So some sample members of *GEN* for a language like English would be as in (8):

(8) Subset of *GEN* for English

a. ⟨John saw nobody, JOHN(NOBODY(SEE)⟩
b. ⟨John saw nobody, NOT(JOHN(NOBODY(SEE))) ⟩
c. ⟨John saw nobody, FELIX(MEOW) ⟩

Of course *GEN* will contain very many more form-meaning pairs than will form part of the interpreted language, and the way that the final set of pairings between syntactic forms and semantic interpretations is calculated involves the use of the constraint set *C* in Def. 2.1. A constraint $ci \in \mathscr{C}$ is a function from form-meaning pairs ($\langle f, m\rangle \in GEN$) to natural numbers such that *ci* maps $\langle f, m\rangle$ to the number of violations of *ci* that $\langle f, m\rangle$ incurs. Now, based on the ordering of the constraints in $\mathscr{C}$ and the values of the members of *GEN* at the *ci*s, we define an 'optimization' ordering on form-meaning pairs as follows:

Definition 2.2. ***Optimization Ordering*** ($>_{\mathscr{O}}$) *Let* $\mathscr{O}$ *be an OT system and let* $\langle f, m\rangle$, $\langle f', m'\rangle \in GEN$. *Then,* $\langle f, m\rangle >_{\mathscr{O}} \langle f', m'\rangle$ *iff*

1. *There is some i:* $1 \leq i \leq n$ *such that* $c_i(\langle f, m\rangle) < c_i(\langle f', m'\rangle)$, *and*
2. *For all* $j > i$, $c_j(\langle f, m\rangle) = c_j(\langle f', m'\rangle)$.

According to Def. 2.2, a form-meaning association *x* is better than another one (*y*) just in case there is some constraint *ci* at which *x* incurs fewer violations than *y*, and *x* and *y* have the same values at all the higher ranked constraints. With this definition, it turns out that if $\mathscr{O}$ is an OT system, then $>_{\mathscr{O}}$ is both transitive and well-founded (cf. Jäger (2002)'s Lemma (2). The acceptable form-meaning associations are only a subset of *GEN*, namely those that are **optimal**:[11]

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10. Having *GEN* be quite unrestricted is known as the *free interpretation hypothesis* in OT Semantics (Hendriks and de Hoop, 2001), which can be thought of as the semantic correspondent to OT phonology's *richness of the base* hypothesis.

11. The notion of optimality that we use here is Jäger (2002)'s *X-optimality*, which (given the definition of $>_{\mathscr{O}}$ that we are assuming) is equivalent to and more elegant than Blutner's original formulation, which Jäger calls *Z-optimality*.

Definition 2.3. ***Optimality****. A form meaning pair* ⟨ *f, m*⟩ *is* ***optimal*** *iff*

1. ⟨ *f, m*⟩ ∈ *GEN.*
2. *there is no optimal* ⟨ *f, mr*⟩ *such that* (*f, m′*) $>_{\mathscr{C}}$ (*f, m).*
3. *there is no optimal* (*f′, m) such that* (*f′, m*) $>_{\mathscr{C}}$ (*f, m).*

According to Def. 2.3, then, grammars pair-up forms and meanings in a way such that the best forms get paired up with the best meanings, the second-best forms get paired up with the second-best meanings, and so on.

Of course, the meat of any OT analysis lies in the exact proposals concerning the inventory and ranking structure of the constraint-set. Although the grammar formalism does not force this, it is generally assumed that the constraint inventory is universal, and, therefore, ideally one would like the constraints to be as general and typologically or functionally well-motivated as possible. The rankings of the constraints, on the other hand, vary from language to language, and this variation is what creates the diverse syntactic and interpretative patterns that we see across languages. As a preview of what is to come, I highlight here that the proposed universality of $\mathscr{C}$ is what allows proposals set in OT frameworks to make clear predictions for linguistic systems that have not yet been studied (such as Montréal French).

First of all, most OT syntax/semantics systems adopt some form of highly-ranked (but ultimately violable) faithfulness constraint that ensures that the elements in the semantic representations largely have correspondences in the syntactic representation (see Bresnan, 2000; Hendriks and de Hoop, 2001; Zeevat, 2001; Blutner et al., 2003, among others). This has the effect of eliminating the most unlikely form-meaning pairings (such as (8-c)) and restoring, in the words of (Zeevat, 2001, 10), "the important aspects of compositional semantics (not the full principle but essential aspects)". In line with the setup here, the faithfulness constraint that we will adopt is the following, which I call FaithLex.

(9) FaithLex assigns one violation to a pair ⟨ *f, m*⟩ for every symbol in *m* whose interpretation is not the denotation of a lexical item of *f.*

So, for example, FaithLex assigns no violations to (8-a) and 2 violations to (8-c). This constraint concerns general correspondences between forms and meanings; however, in the next section, we will see more specialized ones that create the Spanish asymmetric negative concord pattern, as analyzed by de Swart (2010).

2.2 Categorical asymmetric concord in bidirectional OT (de Swart, 2010)

In her 2010 book, de Swart proposes an OT analysis of the main typological patterns associated with the distribution and interpretation of negative morphemes. In this work, she accounts for an impressive range of data from the various kinds

of attested negative concord patterns, the Jespersen cycle, double negation interpretations and the distribution of positive and negative indefinites, among other phenomena. As such, the OT analysis presented in de Swart (2010) is highly articulated and involves many different syntactic and semantic constraints. Since the aim of this paper is much more modest (only to account for categorical and variable asymmetric concord languages), I will only present the subset of her constraint-set that creates the patterns discussed above.

The heart of de Swart's proposal is the claim that the asymmetric pattern is created by the interaction between two markedness constraints: *Neg and neg first. *NEG is a constraint that considers both members of the form-meaning pair, and assigns violations depending on how many occurrences of negative marking or elements with a negative interpretation are found in the pair.

(10) *Neg assigns one violation to a pair $\langle f, m \rangle$ for every negative morpheme in f and every symbol in m with a negative denotation.[12]

As de Swart says (p.78), "the intuition behind *Neg is that negation is marked, both in form and in meaning. Marked forms and meanings should be avoided, so negation should be avoided both in the syntax and the semantics".

Unlike *Neg, which evaluates both the forms and the meanings, Neg First only looks at the form. For de Swart, Neg First is actually conceived of as a family of markedness constraints that govern the placement of negation in the sentence, and we will also take this view in this paper. The version of the constraint that de Swart proposes that is highly ranked for languages like Spanish is shown in (11).

(11) Neg First (de Swart, 2010, 96):
Negation precedes the finite verb.

The use of a principle such as neg first to account for the syntactic distribution of negative morphemes has, in fact, a long history in both functional and formal linguistics. Indeed, de Swart adopts the term *Neg first* from Horn (1989), who describes it as "the strong tendency for negative markers to gravitate leftward so as to precede the finite verb or other possible foci of negation" (Horn, 1989, p. 452). Horn himself traces this principle back to the work of Jespersen (1917, 1933), who suggests that natural languages have "a natural tendency, also for the sake of clearness, to place the negative first, or at any rate as soon as possible, very often immediately before the particular word to be negated (generally the verb)" (Jespersen, 1917, p.5).

12. A generalized quantifier F is *negative* iff $F(\emptyset) = 1$ (see Keenan and Stavi, 1986; Peters and Westerstahl, 2006).

In obligatory asymmetric concord languages, de Swart proposes that Neg First is ranked higher than *Neg, since satisfying neg first allows for two negatively marked elements to be acceptable when the n-words are in postverbal position. As I mentioned, in Bidirectional OT, form-meaning pairs are optimized with respect to both the speaker (meaning → form, as in OT Syntax) and hearer (form → meaning, as in OT Semantics). Thus, it is convention to represent this optimization through the use of two tableaux: one showing the evaluation from the semantic input to the syntactic output (speaker), and then another showing the evaluation from syntactic input to semantic input (hearer). In this way, tableau 1 shows how the meaning NOBODY(ARRIVE) is optimally paired with the form *Nadie ha llegado* (abstracting away from tense), and tableau 2 shows how the form *Nadie ha llegado* is optimally paired with the meaning NOBODY(ARRIVE).

Table 1. Preverbal n-words in Spanish (speaker's perspective)

Input: NOBODY(ARRIVE)		FaithLex	NegFirst	*Neg
a. ☞	Nadie ha llegado			*
b. ☞	Nadie no ha llegado			**!

Table 2. Preverbal n-words in Spanish (hearer's perspective)

Input: Nadie ha llegado		FaithLex	NegFirst	*Neg
a. ☞	NOBODY(ARRIVE)			*
b.	NOT(NOBODY(ARRIVE))			**!

Furthermore, because of the high ranking of neg first, the optimal output for the semantic form MARIA(NOBODY(SEE)) is *María no ha visto a nadie*, as shown in Tableau 3.

Table 3. Postverbal n-words in Spanish (speaker's perspective)

Input: MARIA(NOBODY(SEE)		Faith Lex	Neg First	*Neg
a.	María ha visto a nadie		*!	*
b. ☞	María no ha visto a nadie			**

Since, as shown in tableau 4, MARIA(NOBODY(SEE)) has fewer seman tic negations than NOT(MARIA(NOBODY(SEE))), *(*María no ha visto nadie, MARIA(NOBODY(SEE))*)* is selected as the optimal form-meaning pair, and we correctly predict that such sentences should only have a negative concord interpretation.

Table 4. Postverbal n-words in Spanish (hearer's perspective)

Input: María no ha visto a nadie		FaithLex	NegFirst	*Neg
a.	☞ MARIA(NOBODY(SEE))			*
b.	NOT(MARIA(NOBODY(SEE)))			**!

In the next section, I consider applying de Swart's analysis to variable asymmetric concord patterns within a stochastic extension of the bidirectional OT system described above. I show how this account makes straightforward predictions for the patterns of use of negative concord structures in a spoken corpus.

3. Optional asymmetric concord in StOT

This section examines the prospects for integrating the variable Montréal French asymmetric concord system into the OT theory described in Section 2. As mentioned in the introduction, MF shows the preverbal/postverbal contrasts that characterize the asymmetric concord pattern, with the exception that co-occurrence between sentential negation *pas* and an n-word (such as *rien* 'nothing') is optional rather than obligatory (12). That true (i.e. intra-speaker) variation exists in this dialect can be established through the observation that both bare and negative concord variants can be used by the same speakers in the same conversation, as shown, for example, by (12) from the *Montréal 84* corpus. More generally, Burnett et al. (2015) show that education is a significant social factor conditioning the use of concord structures in *Montréal 84*: speakers with a higher level of education are less likely to use concord sentences than speakers with a lower level of education. However, I highlight that there are speakers from every education level that have the variable system described in this paper.[13]

(12) a. La loi cent un moi j'ai **rien** contre ça (27 213)
'Loi 101 me I have nothing against that.'

b. C'est pour ça que j'ai **pas rien** contre la loi cent un (27 221)
'It's for that that I have nothing against Loi 101.'

Although de Swart does not discuss this dialect of French (or other systems that show the same variable pattern), she suggests that similar cases of variation

13. Although very interesting and important, the question of the social meaning of variable negative concord, the style(s) (in the sense of Eckert (2008)) with which it is associated and how its social conditioning should be modelized in an OT framework is out of the scope of this paper.

in the realization and interpretation of negative indefinites should be handled within a stochastic extension of her OT system. Moving to a probabilistic system (or some other kind of significant departure) is necessary to allow for the co-existence of the two synonymous forms in (12-a) and (12-b) for the following reason: if we wish to explain the ungrammaticality of a sentence like ***Rien** me plaît **pas***. (Intended: 'Nothing pleases me') through the use of the *NEG constraint (as we did for Spanish), then we will need to find some reason why (12-b) is not ungrammatical, because it presumably incurs the same number of violations. In Spanish, negative concord structures with postverbal n-words were permitted because they satisfied a higher-ranked NEG FIRST constraint; however, again, if we use the ranking NEG FIRST ≫ *NEG to allow (12-b), we end up predicting that it should win over (12-a) because the negative element appears later in the utterance. In other words, the optimization algorithm that we use to determine which form-meaning pairs are in the language predicts only obligatory patters; there is no place for optionality.

3.1 Modelling grammatical variation

An influential way through which grammatical optionality is modelled in Optimality Theory is through the use of Boersma (1998)'s stochastic generalization of the framework. Stochastic OT (StOT) shares the generation relation (*GEN*) and the constraint set $\mathscr{C}$ with regular (also known as *ordinal*) OT, and the main differences between the two classes of grammars come in the form of the ordering relation between constraints and the evaluation algorithm. Unlike in the system described above in which constraints are ordinally ordered, in StOT each constraint *ci* is assigned a real number on a continuous scale, called its *rank*. Since the constraints are ranked on a continuous scale, we can now talk of the distance between two constraints in a meaningful way. Additionally, at every evaluation event, a small amount of noise (a value chosen from a normal distribution with mean 0 and standard deviation 2 (or some other arbitrary value)) is added to the constraint ranking. The rank of a constraint after the noise is added is called its *selection point*. If the ranks of two constraints are very far apart, the noise that is added at evaluation time will not change the ordinal ranking of the selection points at each evaluation event. However, if the constraints are ranked very close together, then the ranking of selection points might change from evaluation to evaluation. It is in this way that StOT models linguistic variation: the evaluation algorithm defines a probability distribution over ordinal rankings of selection points, which, in turn, defines a probability distribution over the set of candidates. More specifically, the probability of a particular expression (in our case, particular form-meaning pairs) being optimal will be the sum of the probabilities of all ordinal rankings that make

it optimal. As such, a StOT grammar describes an interpreted language just in case it assigns probabilities to the form-meaning pairings that correspond to their relative frequencies in the language.

With these considerations in mind, let's examine the predictions that a stochastic extension of de Swart's analysis applied to variable concord in Montréal French make for the distribution of negative concord structures with *pas* in an oral corpus. As discussed above, MF displays a preverbal/postverbal asymmetry (*Personne est (**pas*) venu.* 'No one came.' vs *Jean a **pas** vu personne.* 'Jean saw no one.'). Therefore, in line with de Swart, we would like to account for this pattern using the interplay between the NEG FIRST constraint and *NEG: the extra negation in *Jean a **pas** vu personne.* is acceptable because it satisfies NEG FIRST; however, it is prohibited in **Personne est **pas** venu.* because *Personne est venu.* is already optimal for NEG FIRST. This being said, variation in this dialect is possible when the n-word is in postverbal position: n-words in this position can also appear bare (ex. *J'ai vu personne*. 'I saw no one.'). Within the context of the analysis developed above, the most natural account of the acceptability of bare postverbal n-words is that it is due to the ranking of *NEG over NEG FIRST: it is more important to avoid the proliferation of negative markers than to express negation as soon as possible in the sentence. The optimal pairing of *Jean a vu personne* with JEAN(NOBODY(SEE)) is shown in tableau 5.

Table 5. Bare postverbal n-words in Montréal French (speaker's perspective)

Input: JEAN(NOBODY(SEE)		FAITHLEX	*NEG	NEGFIRST
a. ☞	Jean a vu personne		*	*
b.	Jean a pas vu personne		**!	

Indeed, the ordering *NEG ≫ NEG FIRST is what de Swart proposes to derive the Spoken European French pattern (13), in which postverbal n-words appear bare and cooccurrence with *pas* creates an obligatory double negation interpretation.

(13) Spoken European French

a. J'ai vu personne.
I have seen no one
'I saw no one.'

b. J'ai **pas** vu personne.
I have not seen no one
'I didn't see no one', i.e. I saw someone. Double negation only

In StOT, the variation between the European French-style system (with bare n-words) and the Spanish system (with negative concord structures) can be

modelled through the construction of an OT grammar in which the *Neg and Neg first constraints are assigned very close values on the continuous ranking scale. The noise that is added at each evaluation event could perturb the initial ranking order between *Neg and Neg first, which will, in turn, define a probability distribution over ordinal rankings: *Neg will be ordered before neg first (which associates *Jean a vu personne* with JEAN(NOBODY(SEE))) some proportion of the time, while neg first will be ordered before *Neg (which associates *Jean a pas vu personne* with JEAN(NOBODY(SEE))) the rest of time. In order to determine how close the initial rankings of the two constraints need to be to create this pattern, we will need to look at corpus data, which is what we will do in Section 4.

An important way in which MF differs from Spanish (which will affect the version of Neg First family of constraints that we test) is in the morphophonological properties of its sentential negation marker. Unlike Spanish, Italian and European Portuguese in which negation is a preverbal head (sometimes called a *light* negation (Giannakidou, 2006)), MF negation is a phrasal adverb (Pollock (1989); Abeillé and Godard (1997), also known as a *heavy* negation), which generally occupies the third position in the sentence following the finite verb (14-b) or auxiliary (14-c).

(14) a. **No** he visto a Juan. Light negation (Spanish)
b. Je vois **pas** Jean. Heavy negation (Montréal French)
c. J'ai **pas** vu Jean. Heavy negation (Montréal French)

So, unlike in Spanish in which neg first is satisfied through having negation in preverbal position, the fact that there exists a preverbal/postverbal asymmetry in Montréal French, shows that neg first in this language must be satisfied with the negation in third position.[14] In other words, de Swart's proposal for the constraint that is highly ranked in Spanish (11) needs to be replaced by a more general version of the constraint.

Furthermore, if we would like to evaluate whether neg first is active (at the 'soft' level) in Montréal French, we first have to be more precise about its formulation. In the literature (Jespersen, 1933; Horn, 1989; Corblin and Tovena, 2003; de Swart, 2010, among others), neg first is treated as a constraint that is sensitive to linear order. Therefore, I will devote the majority of the rest of this paper to testing the pertinent extension of de Swart's analysis using linear Neg first, which counts

14. A similar point could be made about (informal) Welsh, which allows (restricted) variable negative concord with a postverbal adverbial negation marker. See Borsley and Jones (2005) for discussion.

syntactic constituents[15] from the beginning of the utterance. As shown in (15), a form-meaning pair containing a negative constituent is assigned the number of violations equal to the number of syntactic constituents in the utterance that (properly) linearly precede the constituent.

(15) Linear NEG FIRST (NEG FIRST$_L$):
Let $>_L$ be the linear precedence relation between syntactic constituents (ψ, ψ_1, ψ_2 …) in an utterance, and let $\langle f, m \rangle$ be a form-meaning pair such that f contains a constituent ϕ with a negative denotation. Then,

$$\text{NEG FIRST}_L(\langle f, m \rangle) = |\{\psi: \psi >_L \phi\}|$$

Since the set of candidates that we will be considering in the rest of the paper will differ minimally in their number of syntactic constituents, I will only mark the violations of NEG FIRST$_L$ that distinguish two candidates in the tableaux that follow. For example, in a tableau comparing candidates *J'ai pas vu personne* and *J'ai vu personne*, I will mark the concord structure has having no violations of NEG FIRST$_L$ and the bare structure as having a single violation of this constraint. This will greatly increase the readability of the tableaux, and I hope that this will not cause confusion about the application of the constraint.

In combination with some syntactic constraints forcing the realization of sentential negation as an adverb, the constraint in (15) has a consequence for the predictions of an analysis in which variable asymmetric concord patterns are derived through a 'soft' NEG FIRST constraint. In particular, unlike in Spanish/Italian/Portuguese in which having a bare direct object n-word is always less optimal with respect to NEG FIRST than having a concord structure, this is not necessarily the case in Montréal French. As shown in (16), if the verb is in the present tense, a direct object n-word will be in third position (16-a), which is the same place in the linear order as *pas* in the negative concord version of the sentence (16-b). Therefore, both structures should satisfy NEG FIRST$_L$ equally well. However, (16-a) and (16-b) do not both satisfy *NEG equally well: (16-b) has an extra negation marker which earns this candidate an extra violation.

(16) a. Je vois **personne**.
I see no one
'I see no one.'

b. Je vois **pas** **personne**.
I see not no one
'I see no one.'

15. Of course, we could also count the number of 'words' from the beginning of the sentence, which would make similar predictions, but, since we will ultimately revise the linear NEG FIRST constraint in the next section, I will not consider this alternative here.

As a consequence, even at an evaluation event in which the selection point of NEG FIRST$_L$ is higher than that of *NEG, the optimal form for a sentence with a transitive verb in the present tense will be *Je vois personne.* This is shown in tableau 6.

Table 6. Postverbal third position n-words (speaker's perspective)

Input: JEAN(NOBODY(SEE)		FAITHLEX	NEGFIRST$_L$	*NEG
a.	☞ Jean voit personne			*
b.	Jean voit pas personne			**!

In other words, a stochastic extension of de Swart's analysis predicts that negative concord structures where n-words follow the finite verb (modulo *pas*) are harmonically bounded and should not appear in a spoken corpus.

The same prediction is made for fragment answers: because of the extra negation, *pas personne* is harmonically bounded and not predicted to occur.

(17) Qui as-tu vu? 'Who did you see?'
  a. **Pas personne/Personne.** 'No one.'

On the other hand, where we do expect to see the contribution of NEG FIRST$_L$ is in structures in which negation appears in an earlier position in the sentence than the bare n-word would, such as in sentences with composed tenses (18-a), when the n-word is embedded in a prepositional phrase (18-b), when the n-word is in an infinitival construction (18-c), and when the n-word is embedded in subordinate clause (18-d) under a neg-raising verb.

(18) a. J'ai **(pas)** vu personne.
  I have not seen no one
  'I saw no one.'
  b. Je parle **(pas)** à personne.
  I speak not to no one
  'I speak to no one.'
  c. Je veux **(pas)** voir **personne**.
  I want not see no one
  'I don't want to see anyone.'
  d. Je veux (**pas**) que Jean voie **personne**.
  I want **not** that Jean see no one
  'I don't want Jean to see anyone.'

3.2 Summary

In summary, although de Swart (2010)'s analysis of asymmetric negative concord was designed with invariant systems like Spanish in mind, by virtue of its

Optimality Theoretic architecture, it makes clear predictions for the kinds of patterns that should exist in variable systems like Montréal French. In particular, given that, in categorical asymmetric concord languages, NEG FIRST appears as a hard constraint, in variable asymmetric concord languages, it should appear as a soft constraint. Furthermore, taking into account the heavy morphophonological status of MF sentential negation, a straightforward StOT extension of her proposal predicts that variation should be limited to postverbal n-words in 4th position or later in the sentence. These predictions are summarized in Table 7.

Table 7. Predictions of 'soft' NegFirst analysis for Montréal French

Syntactic Position	Prediction
Preverbal	No concord
Fragment	Same as 3rd (no concord)
3rd position	Same as fragment (no concord)
4th position	Variable concord
5th position	Same as 4th (variable concord)
6th+ position	Same as 4th (variable concord)

I test these these predictions in the next section using the *Montréal 84* corpus of spoken Montréal French.

4. Variable negative concord in *Montréal 84*

This section presents a quantitative study of the distribution of negative concord structures in the *Montréal 84* corpus. The *Montréal 84* corpus is composed of sociolinguistic interviews performed in 1984 with 72 speakers of a variety of ages, education levels and professions. From this corpus, we extracted all the occurrences of n-words (*personne* 'no one', *rien* 'nothing', *aucun* 'no', *jamais* 'never', *nulle part* 'nowhere'). From this initial dataset, we excluded clearly idiomatic expressions and structures where the n-words are within the scope of another n-word such as (19); these are instances of what is called (after den Besten (1986)) the *negative spread* construction, which does not allow for co-occurrence with negation.

(19) a. Puis il-y-a **jamais** que: **personne** qui s'est plaint de
Then there is never that no one that refl is complaint of
ma bouffe
my food
'No one has ever complained about my food.' (126 2114)

b. **personne:** débouchait sur **rien**
No one open up on nothing
'No one ended up with anything.' (85 532)

Additionally, I excluded examples in which the n-words are modified by a maximizing degree adverb such as *absolument* 'absolutely', *presque* 'almost', *pratiquement* 'practically', and *quasiment* 'almost', since modification by this class of adverbs uniformly blocks negative concord in Québec French (Déprez and Martineau, 2004, 10) and crosslinguistically (Giannakidou, 2006).

(20) a. Nécessairement, il connaît **absolument** rien. (2 293)
'Necessarily, he knows **absolutely** nothing'

b. Oui parce-que: j'ai **presque** jamais été au travail. (91 273)
'Yeah because: I **almost** never went to work.'

c. on les voit **pratiquement** jamais (64 128)
'We **practically** never see them.'

d. mais la j'écoute **quasiment** rien. (131 506)
'but now I listen to **almost** nothing.'

Furthermore, we also excluded expressions in which an n-word co-occurs with negation yielding a double negation interpretation, not a single negation interpretation. Double negation interpretations in the *Montréal 84* corpus are limited to 5 occurrences of the expression *pas pour rien* 'not for nothing' (21), which suggests also that double negation interpretations in Montréal French are largely idiomatized.

(21) Un gars qui parle bien pour moi c'est un gars comme Robert-Charlebois. ⟨hum⟩ Un gars qui: bien Robert-Charlebois a: a déjà sacré comme tout le monde, il doit sacrer encore de toute façon ⟨humhum⟩ mais: un gars qui a: qui prend **pas** des mots: longs comme ça: pour **rien**.

*A guy that talks well for me that's a guy like Robert-Charlebois. ⟨hum⟩ A guy that: well Robert-Charlebois has: has a cursed before like everyone, he must still curse in any case ⟨humhum⟩ but: a guy that has: that does **not** use long words like that: for **nothing**.* (113 606)

Finally, since this paper only addresses the question of the analysis of variable asymmetric concord systems, I limit the investigation to speakers that actually have such systems. In fact, 11 of the 72 speakers never use negative concord structures with *pas*;[16] in other words, these speakers have an invariant grammar along

16. As mentioned above, although there is social conditioning in the data, the 11 speakers who are invariant in the interviews do not constitute a well-defined socio-economically defined class, according to the stratifications of the corpus.

the lines of the Spoken European French grammar in which *Neg ≫ Neg first and the ranges of these constraints do not overlap. Thus our final dataset contains 2160 n-words taken from the speech of 61 speakers.

We coded each n-word for its syntactic position (preverbal, postverbal (i.e. following the finite verb/auxiliary) or fragment) and whether it co-occurs with *pas*. Then, within the set of postverbal n-words (n = 1964), I coded for the presence of the NEG FIRST$_L$ constraint, as defined in (15).

4.1 Results

The rates of the use of concord structures (i.e. co-occurrence with *pas*) by syntactic position are shown in Table 8.

Table 8. Distribution of negative concord structures by syntactic position in *Montréal 84*

Syntactic postion	Bare n-word	Negative concord	% Concord
Preverbal	77	0	0.0%
Fragment	236	17	6.7%
3rd position	1621	128	7.3%
4th position	39	42	51.8%
5th position	22	40	64.5%
≥6th position	27	45	62.5%

As expected, there were no occurrences of structures of the form **Personne est pas venu.* Furthermore, when we consider the rate of concord between n-words in postverbal position, we find a significant difference between the use of *pas* with n-words in the 3rd position compared to the 4th, 5th or ≥6th positions ($\chi^2 = 460$; $p < 0.0001$); whereas, we find no significant difference between the rate of negative concord between 4th, 5th and 6th position ($\chi^2 = 2.85$; $p = 0.239$). Since our analysis predicted that the rate of negative concord should be drastically higher with n-words in 4th position and later than in third position (and that we should not find major differences in the use of *pas* with n-words past 4th position), I suggest that the data from *Montréal 84* supports this hypothesis.

Our 'soft' linear NEG FIRST analysis also predicted that fragments and n-words in third position should show the same rate of concord; this was borne out (albeit in a trivial way): there is no significant difference between the rate of negative concord in fragments as in 3rd position ($\chi^2 = 0.118$; $p = 0.73$). However, by virtue of the fact that both fragment and postverbal 3rd position structures with *pas* were predicted to be harmonically bounded, it is therefore surprising to find an (albeit limited) number of concord sentences such as (22) and (23) in the corpus.

(22) Third position negative concord structures.

a. Moi: Je suis **pas aucun programme** anyway
'Me, I follow no program anyway.' (27 367)

b. Puis: je connais **pas personne** de parfait.
'So: I don't know anyone perfect.' (2 993)

c. J'ai pas de vacances, j'ai **pas rien**.
'I have no vacation; I have nothing.' (2 616)

d. mes frères ont **pas jamais** été tu-vois dans le hockey
'My brothers were never, you know, into hockey' (54 419)

e. Il-y-a pas de gang.Il y en a **pas nulle part**
'There aren't any gangs; there aren't any anywhere.' (4 942)

(23) Fragment negative concord structures.

a. **Pas aucune**. Aucune aucune aucune influence.[17]
'None. No no no influence.' (66 863)

b. … de voir: ma mère dans la maison **pas personne** d'autre.
'… to see my mother in the house; no one else.' (126 831)

c. Qu'est-ce-que tu vas faire avec ça? 2. Bien non, **pas rien**. (rire)
'What are you going to do with that? 2. Well no, nothing.' (7 126)

d. j'avais bien du stock mais; **pas jamais** ( ).
'I had a lot of stuff but; never ().' (90 500)

In summary, although many of the predictions made by the StOT analysis given above for the distribution of negative concord structures in the *Montréal 84* corpus were borne out, we find an unexpected contrast between third position postverbal and fragments contexts on the one hand, and preverbal contexts on the other. These observations are summarized in Table 9.

Table 9. Negative concord in *Montréal 84*: Predictions vs observations

Position	Prediction	Observation
Preverbal	No concord	No concord
Fragment	Same as 3rd (**no concord**)	Same as 3rd (**limited concord**)
3rd position	Same as fragment (**no concord**)	Same as fragment (**limited concord**)
4th position	Variable concord	Variable concord
5th position	Same as 4th (variable concord)	Same as 4th (variable concord)
≥6th position	Same as 4th (variable concord)	Same as 4th (variable concord)

17. In the final dataset, we also excluded n-words that were part of repetitions, i.e. the last two *aucune*s in this example, since negative concord is uniformly excluded from these contexts.

In the next section, I address the question of what makes third position postverbal nwords and fragment n-words different from preverbal n-words, and I modify the existing StOT analysis to account for the observed patterns of variation.

5. A new probabilistic analysis of Montréal French

This section modifies the analysis presented in Section 3 with an account of the variable use of *pas* in fragments and third postverbal position. Then, with the final constraint-set in place, I show how we can use Boersma (1998); Boersma and Hayes (2001)'s *Gradual Learning Algorithm* (GLA) to assign ranking values to the proposed constraints that will generate the appropriate distribution of concord structures in *Montréal 84*.

5.1 Structural Neg First

Although the results in the previous section suggest that the use of Neg First has significant potential for explaining both categorical and variable negative concord patterns, our extension of de Swart (2010) did not make quite the right predictions. In addition to predicting categorical exclusion of concord in fragment n-words and third position n-words, closer inspection of the set n-words in third position in *Montréal 84* show that not all utterances where the n-word occupies linear third position are created equal. For example, if we restrict our attention to the 1749 occurrences of n-words in third position, we find a significant effect of the presence of (non-)finite clause boundaries in the use of concord structures ($\chi^2 = 146.08$; $p < 0.0001$). In particular, n-words in third position that, presumably, appear in a lower infinitival or finite clause (i.e. would appear in a lower clause than *pas*) are significantly more likely to appear in a concord structure (49% of cases) than n-words that appear in the same finite clause as *pas* would (6%). This pattern is shown in Table 10.

Table 10. Negative concord with n-words in third position

Position of n-word	Bare n-word	Negative concord	% Concord
Upper clause	1593	101	6%
Lower clause	28	27	49%

In other words, despite the n-word appearing in third position in both cases, examples like (24-a), where there is a (infinitival) clause boundary between where sentential negation is placed and where the direct object n-word appears,

are much more frequent than examples like (24-b), where *pas* and *rien* appear in the same clause.

(24) a. Je peux **pas rien** faire face a ça.
I can not nothing do.INF face to that
'I can't do anything faced with that.' (1 770)

b. il-y-a pas rien mais ça serait calme
there is not nothing but it be.FUT calm
'there is nothing, but it will be calm' (8 175)

The pattern in Table 10 tells us that our hypothesis that NEG FIRST makes reference to linear order is not fine-grained enough; rather, hierarchical relationships between constituents play an important role in the co-occurrence patterns between sentential negation and postverbal n-words in Montréal French. Therefore, in order to account for differences in the frequencies of utterances like (24-a) and (24-b), I propose that NEG FIRST should be restated with respect to dominance relations between syntactic nodes in a tree, rather than linear order.

(25) Structural NEG FIRST (NEG FIRST$_D$):
Let $>_D$ be the **dominance** relation between syntactic nodes (ψ, ψ_1, ψ_2 …) in a tree, and let $\langle f, m \rangle$ be a form-meaning pair such that f contains a constituent ϕ with a negative denotation. Then,

$$\text{NEG FIRST}_D(\langle f, m \rangle) = |\{\psi: \psi >_D \phi\}|$$

(25), then, would make a distinction between (24-a) and (24-b) because there are presumably more syntactic nodes (for example, infinitival clause structure) dominating *rien* in (24-a) than in (24-b). Additionally, moving to a structural characterization of NEG FIRST can help explain why, in this system, we might get some occurrences of negative concord with n-words in third position. If we assume, following, for example, Pollock (1989), that the tensed verb in French is base-generated in a low syntactic position and raises into a higher tensed position, and that *pas* occupies an adverbial position that is medial between these two positions, then, under NEG FIRST$_D$, fewer nodes dominate the negative element in the concord structure than in the bare structure. So the concord structure would receive fewer violations than the bare structure, and we would no longer predict that *Je vois pas personne* would be harmonically bounded.[18] This is one possible analysis of the syntactic differences between *Je vois personne* and *Je vois*

18. Under this account, we would have the same explanation for variation in fragments. Thus, this kind of analysis would have to adopt an analysis of the syntax of fragments in which fragment answers are associated with at least some non-audible syntactic structure (for example, in a theory such as Merchant (2004)).

pas personne; there could be other possibilities. The point that is pertinent for this paper is simply that the structural relations between *pas* in a concord structure and *personne* in a nonconcord structure be different and that NEG FIRST$_D$ is be sensitive to this difference.

Although this structural revision to NEG FIRST improves on our previous linear version of the constraint, we now need to capture the difference in frequency between n-words that directly follow the finite verb and those that are separated from it by some other constituent. Once again, I suggest that typology can give us some insight into what is driving these patterns. Although the difference in the use of a negative concord structure between *Je vois pas personne* and *J'ai pas vu personne* is a matter of frequency in Montréal French, we see this preferential contrast showing up as a grammaticality contrast in some other languages. For example, Zanuttini (1997) shows that in Piedmontese, an Italian dialect, the postverbal sentential negation marker *nen* cannot co-occur with an nword such as *gnun* 'no one' if the verb is in (what she calls) a 'simple' form, i.e. it does not consist of an auxiliary and a past participle (Zanuttini, 1997, 76) (26-a). However, if the n-word is embedded under a participle (26-b) or within a prepositional phrase (26-c), then negative concord is grammatical.[19]

(26) Piedmontese (Zanuttini, 1997, 77)

a. *A veddu **nen** **gnun**.
I see not no one
Intended: 'I don't see anyone.'

b. I l'hai **nen** vist **gnun**.
I it.have not seen no one
'I have not seen anyone.'

c. A parla **nen** cun **gnun**.
he talks not with no one
'He doesn't talk with anyone.'

Thus, to capture the categorical patterns found in Piedmontese, we need a constraint that makes reference not only to the presence of syntactic structure, but also to particular syntactic domains. In the logic of the OT analysis, then, this would boil down to saying that forms in which the n-word is not in the same unembedded domain as the finite verb receive an extra violation of NEG FIRST

19. Interestingly, Piedmontese has a second negation marker *pa* which, according to Zanuttini, is not subject to the same restrictions as *nen*; however, *pa* also has very different syntactic and semantic/pragmatic properties than *nen*, so it would seem that certain meaning-related considerations can override the high rankings of NEG FIRST$_{Di}$. But I leave a full analysis of the Piedmontese negation system within StOT to future work.

than forms in which the n-word occurs with no embedding next to the finite verb. So, the version of Neg First that is highly ranked in Piedmontese is a more specialized case of the structural Neg First constraint proposed above, one that only looks at a subset of the dominance relations in the tree. I will call this the *domain-relativized* Neg First constraint (and notate it as Neg First$_{Di}$).

(27) Domain-Relativized Neg First (Neg First$_{Di}$):
Let $>_{Di}$ be the dominance relation between syntactic nodes (ψ, ψ_1, ψ_2 …) **relativized to the appropriate (unembedded) domain** (i.e. $>_{Di} \subset >_D$), and let $\langle f, m \rangle$ be a form-meaning pair such that f contains a constituent ϕ with a negative denotation. Then,

$$\text{Neg First}_{Di}(\langle f, m \rangle) = |\{\psi: \psi >_{Di} \phi\}|$$

In Piedmontese (which also allows optional negative concord with *nen*), Neg First$_{Di}$ and *Neg would be ranked closely together. The more general Neg First$_D$ would be ranked much lower. In Montréal French, on the other hand, I propose that the three constraints are be ranked very close together such that we can have optional negative concord with n-words in postverbal position (but not with n-words in preverbal position), but still capture the difference in frequency between concord structures with n-words with 'simple' verbs and n-words with some level of embedding.[20]

5.2 Structural Neg First and the GLA

Now that we have a full constraint-set, the final step in the analysis is to show that it is possible to assign ranking values to the constraints proposed in this paper (FaithLex, Neg First$_D$, Neg First$_{Di}$, and *Neg) such that our grammar generates the appropriate distribution of concord and bare forms in spoken Montréal French. In order to show that our StOT grammars describe this language, we need to assign ranking values to the constraints in *C* and show that they generate the patterns of variation that we see in the language. In order to do so, I will use the *Gradual Learning Algorithm* (GLA) (Boersma, 1998; Boersma and Hayes, 2001), which is a learner for StOT grammars from categorical or variable data and for which there is an implementation in the Praat system (Boersma & Weenik, 2014). The GLA is given an OT grammar in which all the constraints have the same ranking (as a convention, we set them at 100.00) and learning data which consists of a

20. Note that we might need some other explanation for the contrast between *Je vois pas personne* and *J'ai pas vu personne* if we assume, following Abeillé and Godard (1996, 2002), that composed tenses in French are associated with a flat structure. However, I leave exploring this possibility to future work.

set of form-meaning pairs[21] with the statistical distribution of the language under study. The learner then assigns ranking values to the constraints in the grammar, modifying its ranking assignment based on the form-meaning pairs it is exposed to. In this study, the GLA was fed with 100 000 observations of negative meanings paired with sentences with n-words in preverbal position (i.e. *Personne est (pas) venu*), non-embedded postverbal position (i.e. *Jean voit (pas) personne.*), and embedded postverbal position (i.e. *Jean parle (pas) à personne.*) according to their distribution in *Montréal 84*. To get an idea of the range of constraint rankings that the GLA will learn on the Montréal French dataset, I ran the simulation 5 times, and the resulting learned grammars are shown in Table 11.

Table 11. 5 grammars learned by the GLA learner in Praat (Montréal 84 data)

Grammar	1	2	3	4	5
NegFirst$_{Di}$	102.675	102.699	102.619	102.629	102.691
*Neg	102.172	102.221	102.171	102.251	102.183
FaithLex	100.00	100.00	100.00	100.00	100.00
Neg First$_{D}$	97.828	97.779	97.829	97.749	97.817

As shown above, Faith Lex does not interact with any of the other constraints that are the focus of this paper, so it remains ranked at 100.00 even after exposure to the Montréal 84 data. The other constraints, on the other hand, separate themselves out such that *Neg and Neg First$_{Di}$ have almost the same ranking, allowing for much variation with embedded postverbal n-words; however, the more general Neg First$_{D}$ is ranked much lower, only overlapping with *Neg a very small proportion of the time, allowing for only rare occurrences of concord structures with unembedded postverbal n-words.

Note that if we feed the GLA learner a different dataset, one that is just like Mon tréal 84 but where there are no occurrences of concord sentences with unembedded postverbal n-words (i.e. what we might observe in a corpus of spoken Piedmontese), after 100 000 observations the distance between the rankings of *Neg and Neg First$_{D}$ gets larger and overlap is no longer possible, as shown in Table 12. Thus, I argue that this new analysis can capture not only the typological relationships between categorial asymmetric systems like Spanish and variable asymmetric systems like Montréal French/Piedmontese negative concord on the one hand, but also the more subtle connections between Montréal French-style variable systems and Piedmontese-style variable systems on the other.

21. There is a bidirectional GLA (Jäger, 2003); however, since the variation that interests us in this paper concerns variation in the form of sentences with negative indefinites, we will only need to look at the unidirectional speaker → hearer system.

Table 12. 5 grammars learned by the GLA learner in Praat (Hypothetical Piedmontese)

Grammar	1	2	3	4	5
NegFirst$_{Di}$	107.474	107.758	107.540	107.957	107.878
*Neg	107.070	107.164	102.171	107.527	107.354
FaithLex	100.00	100.00	100.00	100.00	100.00
NegFirst$_{D}$	92.930	92.836	92.964	92.473	92.646

6. Conclusion

In conclusion, this paper argued that language variation and change studies have an important role to play in the construction, elaboration and testing of formal syntactic theories. As an illustration of this proposal, I showed how we can test a probabilistic extension of de Swart (2010)'s analysis of obligatory asymmetric negative concord using *Montréal 84* corpus of spoken Montréal French. I argued that the main lines of the predictions of de Swart's analysis were born out; however, looking at variation data showed us that the syntactic patterns associated with negative concord require a more subtle definition of the Neg First family of constraints. More specifically, I argued that the Neg First constraint family should be conceptualized as taking into account hierarchical structure, rather than simple linear order, and that members of this family can differ with respect to the syntactic domains to which they are sensitive. This conclusion thus constitutes a novel contribution to grammatical theory (particularly OT syntax/semantic theory), one that was arrived at through the careful study of patterns of the use of syntactic variants. Therefore, I argue that, in addition to serving as a testing ground for formal syntactic and semantic proposals, variation data can also provide new data relevant to constructing these proposals in the first place.

Finally, it is worthwhile noting that the choice of testing de Swart's proposal (rather than other proposals) was not arbitrary: in particular, in order to test the quantitative predictions of a formal analysis that was formulated to account for categorical syntactic patterns, we need for this analysis to be set within a syntactic framework that has an (appropriate) stochastic generalization. Since de Swart's proposal was framed within OT, and we have extensions of this framework such as Boersma's that are equipped to model syntactic variation, her analysis for Spanish made clear predictions for Montréal French. However, there are many other analyses of the forms and interpretations of asymmetric negative concord sentences that are set in frameworks that do not permit variation (Penka and Zeijlstra, 2010, for a recent overview). Although a fair amount of progress has been made in extending other mainstream syntactic frameworks, such as Chomsky (1995)'s *Minimalist* framework, to deal with certain kinds of sociolinguistically conditioned variation

such as variable morphological agreement (Adger and Smith, 2010; Comeau, 2011; Adger, 2014, among others), these proposals do not so clearly extend to phenomena at the syntax-semantics interface such as negative concord. I therefore leave the exploration of the probabilistic analysis of variable negative concord in other frameworks as an open research area.

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References

Abeillé, A. & D. Godard. 1996. La complémentation des auxiliaires en français. *Langages* 122. 32–61. doi:10.3406/lgge.1996.1748

Abeillé, A. & D. Godard. 1997. The syntax of French negative adverbs. In D. Forget (ed.), *Negation and polarity: syntax and semantics*, 1–27. Amsterdam: John Benjamins. doi:10.1075/cilt.155.02abe

Abeillé, A. & D. Godard. 2002. The syntactic structure of French auxiliaries. *Language* 78. 404–452. doi:10.1353/lan.2002.0145

Adger, D. 2014. Variability and grammatical architecture. In C. Picallo (ed.), *Linguistic variation in the minimalist framework*. Oxford: Oxford University Press. DOI:10.1093/acprof:oso/9780198702894.003.0009

Adger, D. & J. Smith. 2010. Variation in agreement: A lexical feature-based approach. *Lingua* 120. 1109–1134. doi:10.1016/j.lingua.2008.05.007

Barwise, J. & R. Cooper. 1981. Generalized quantifiers and natural language. *Linguistics and Philosophy* 4. 159–219. doi:10.1007/BF00350139

Blutner, R. 2000. Some aspects of optimality in natural language semantics. *Journal of Semantics* 17. 189–216. doi:10.1093/jos/17.3.189

Blutner, R., P. Hendriks & de H. Hoop. 2003. A new hypothesis on compositionality. *Proceedings of ICCS 2003*, 53–57.

Boersma, P. 1998. *Functional Phonology. Formalizing the interaction between articulatory and perceptual drives*. Ph.D. thesis, University of Amsterdam.

Boersma, P. & B. Hayes. 2001. Empirical tests of the gradual learning algorithm. *Linguistic Inquiry* 32. 45–86. doi:10.1162/002438901554586

Boersma, P. & D. Weenik. 2014. Praat: Doing phonetics by computer. Version 5.3.80, retrieved 29 June 2014. from http://www.praat.org/.

Borsley, R. & B. Jones. 2005. *Welsh negation and grammatical theory*. University of Wales Press, Cardiff.

Bresnan, J. 2000. Optimal syntax. In F. v. d. L. Joost Dekkers & J. van de Weijer (eds.), *Optimality theory: Phonology, syntax and acquisition*, 334–385. Oxford: Oxford University Press.

Bresnan, J. 2007. A few lessons from typology. *Linguistic Typology* 11. 297–306. doi:10.1515/LINGTY.2007.024

Bresnan, J., A. Cueni, T. Nikitina & H. Baayen. 2007. Predicting the dative alternation. In G. Boume, I. Kraemer, & J. Zwarts (eds.), *Cognitive foundations of interpretation*, 69–94. Royal Netherlands Academy of Science, Amsterdam.

Bresnan, J., S. Dingare & C. Manning. 2001. Soft constraints mirror hard constraints: Voice and person in English and Lummi. In M. Butt & T. King (eds.), *Proceedings of the LFG01 Conference*, Hong Kong.

Burnett, H., M. Tremblay & H. Blondeau. 2015. The variable grammar of Montréal French negative concord. In S. Fisher (ed.), *Penn working papers in linguistics*, volume 21. University of Pennsylvania.

Chambers, J. 2004. Dynamic typology and vernacular universals. In B. Kortmann (ed.), *Dialectology meets typology: Dialect grammar from a cross-linguistic perspective*, 127–145. Mouton de Gruyter, Berlin/New York.

Chomsky, N. 1957. *Syntactic structures*. Cambridge: MIT Press.

Chomsky, N. 1965. *Aspects of the theory of syntax*. Cambridge: MIT Press.

Chomsky, N. 1995. *The minimalist program*. Cambridge: MIT Press.

Comeau, P. 2011. *A window on the past, a move towards the future: Sociolinguistic and formal perspectives on variation in Acadian French*. Ph.D. thesis, York University.

Corblin, F. & L. Tovena. 2003. L'expression de la négation dans les langues romanes. In D. Godard (ed.), *Les langues romanes: problèmes de la phrase simple*, 279–242. Paris: CNRS Publications.

Daoust-Blais, D. 1975. *L'influence de la négation sur certains indéfinis en français québécois*. Ph.D. thesis, Université du Québec à Montréal.

de Hoop, H. & H. de Swart. 2000. Adjunct clauses in optimality theory. *Revista di Linguistica/ Italian Journal of Linguistics* 12. 107–127.

de Swart, H. 2010. *Expression and interpretation of negation: An OT Typology*. Springer, Dordrecht. doi:10.1007/978-90-481-3162-4

de Swart, H. & I. Sag. 2002. Negation and negative concord in Romance. *Linguistics & Philosophy* 25. 373–415. doi:10.1023/A:1020823106639

den Besten, H. 1986. Double negation and the genesis of Afrikaans. In P. Muysken & N. Smith (eds.), *Substrata versus universals in Creole languages*, 185–230. Amsterdam: John Benjamins. doi:10.1075/cll.1.10bes

Déprez, V. 2002. Concordance négative, syntaxe des mots-N et variation dialectale. *Cahiers de linguistique française* 25. 97–117.

Déprez, V. & F. Martineau. 2004. Pour use analyse microparametrique de la concordance négative. In F. Corblin, S. Ferrando, & L. Kupferman (eds.), *Indéfinis et prédications*. Presses Universitaires Paris-Sorbonne.

Deshaies, D. & E. Laforge. 1981. Le futur simple et le futur proche dans le français parlé dans la ville de québec. *Langues et Linguistique* 7. 21–37.

Eckert, P. 2008. Variation and the indexical field. *Journal of sociolinguistics* 12. 453–476. doi:10.1111/j.1467-9841.2008.00374.x

Giannakidou, A. 2006. N-words and negative concord. In M. Everaert (ed.), *Blackwell companion to syntax (Volume 3)*, 327–391. Blackwell. doi:10.1002/9780470996591.ch45

Givón, T. 1979. *On understanding grammar*. Academic, New York.

Godfrey, J., E. Holliman & J. McDaniel. 1992. Switchboard: Telephone speech corpus for research and development. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing*, 517–520, San Francisco. doi:10.1109/icassp.1992.225858

Grimshaw, J. 1997. Projection, heads and optimality. *Linguistic inquiry* 28. 373–422.

Hawkins, J. 2004. *Efficiency and complexity in grammars*. Oxford: Oxford University Press. doi:10.1093/acprof:oso/9780199252695.001.0001

Hendriks, P. & de H. Hoop. 2001. Optimality theoretic semantics. *Linguistics and philosophy* 24. 1–32. doi:10.1023/A:1005607111810

Horn, L. 1989. *A natural history of negation*. California: CSLI Publications.

Jäger, G. 2002. Some notes on the formal properties of bidirectional Optimality Theory. *Journal of logic, language and information* 11. 427–451. doi:10.1023/A:1019969702169

Jäger, G. 2003. Learning constraint sub-hierarchies: the bidirectional gradual learning algorithm. In R. Blutner & H. Zeevat (eds.), *Optimality theory and pragmatics*, 217–242. Palgrave McMillan.

Jelinek, E. & R. Demers. 1983. The agent hierarchy and voice in some Coast Salish languages. *International journal of american linguistics* 49. 167–185. doi:10.1086/465780

Jespersen, O. 1917. *Negation in English and other languages*. Horst, Copenhagen.

Jespersen, O. 1933. *Essentials of English grammar*. Allen & Unwin, London.

Keenan, E. & B. Comrie. 1977. Noun phrase accessibility and universal grammar. *Linguistic Inquiry* 8. 63–99.

Keenan, E. & S. Hawkins. 1987. The psychological validity of the accessibility hierarchy. In E. Keenan (ed.), *Universal grammar: 15 essays*. London: Croom Helm.

Keenan, E. & J. Stavi. 1986. A semantic characterization of natural language determiners. *Linguistics and Philosophy* 9. 253–326. doi:10.1007/BF00630273

Keenan, E. & D. Westerstahl. 1997. Generalized quantifiers in linguistics and logic. In van J. Benthem & ter A. Meulen (eds.), *Handbook of logic and language*, 837–893. Elsevier, Amsterdam. doi:10.1016/b978-044481714-3/50020-5

Krifka, M. 2007. Approximate interpretation of number words: A case for strategic communication. In G. Bouma, I. Kräer & J. Zwarts (eds.), *Creative foundations of interpretation*, 111–126. Koninklijke Nederlandse Akademie van Wetenschapen, Amsterdam.

Kroch, A. 2000. Syntactic change. In M. Baltin & C. Collins (eds.), *The handbook of contemporary syntactic theory*, 699–729. Oxford: Blackwell.

Labelle, M. 2010. Negative words and negation in french. In Larrivée, P. & R. Ingham (eds.), *The evolution of negation: Beyond the jespersen cycle*. Berlin: De Gruyter Mouton.

Labov, W. 1963. The social motivation of a sound change. *Word* 19. 273–309. doi:10.1080/00437956.1963.11659799

Labov, W. 1966. *The social stratification of English in New York City*. Center for Applied Linguistics, Arlington.

Laka, I. 1990. *Negation in Syntax*. Ph.D. thesis, MIT.

Larrivée, P. 2014. The continuity of the vernacular. In M.-B Mosegaard Hansen & J. Visconti (eds.), *The Diachrony of negation*, 253–256. Amsterdam: John Benjamins. doi:10.1075/slcs.160.09lar

Lemieux, M. 1985. Pas rien. In M. Lemieux & H. Cedegren (eds.), *Les tendances dynamiques du français parlé à Montréal*, 91–140. Office de la langue française.

May, R. 1985. *Logical Form*. Cambridge: MIT Press.

Merchant, J. 2004. Fragments and ellipsis. *Linguistics and philosophy* 27. 661–738. doi:10.1007/s10988-005-7378-3

Montague, R. 1970. English as a formal language. In B. Visentini (ed.), *Linguaggi nella societa e nella tecnica*, 189–224. Milan: Edizioni di Communita.

Muller, C. 1991. *La négation en français*. Droz, Geneva.

Penka, D. & H. Zeijlstra. 2010. Negation and polarity: an introduction. *Natural language and linguistic theory* 28. 771–786. doi:10.1007/s11049-010-9114-0

Peters, S. & D. Westerstahl. 2006. *Quantifiers in language and logic*. Oxford: Oxford University Press.

Pollock, J.-Y. 1989. Verb movement, universal grammar and the structure of IP. *Linguistic inquiry* 20. 365–424.

Poplack, S. & N. Dion. 2009. Prescription vs. praxis: The evolution of future temporal reference in French. *Language* 85. 557–587. doi:10.1353/lan.0.0149

Poplack, S. & D. Turpin. 1999. Does the futur have a future in (canadian) french? *Probus* 11. 133–64. doi:10.1515/prbs.1999.11.1.133

Prince, A. & P. Smolensky. 1993. Optimality theory: Constraint interaction in generative grammar. *Rutgers University center for cognitive science technical report*, 2.

Rosenbach, A. 2002. *Genitive Variation in English: Conceptual factors in synchronic and diachronic studies*. Berlin: Mouton de Gruyter. doi:10.1515/9783110899818

Rosenbach, A. 2005. Animacy versus weight as determinants of grammatical variation in English. *Language* 81. 613–644. doi:10.1353/lan.2005.0149

Sankoff, G. & D. Vincent. 1977. L'emploi productif de ne dans le français parlé à montréal. *Le Français moderne* 45. 243–256.

Sciullo, A.-M. D. & M. Tremblay. 1996. Configurations et interprétations: les morphèmes de la négation. *Recherches linguistiques de Vincennes* 25. 27–52.

Sorace, A. & F. Keller. 2005. Gradience in linguistic data. *Lingua* 115. 1497–1524. doi:10.1016/j.lingua.2004.07.002

Stabler, E. 2013. Two models of minimalist, incremental syntactic analysis. *Trends in cognitive science* 5. 611–633. doi:10.1111/tops.12031

Tagliamonte, S. 2011. Variation as a window on universals. In P. Siemund (ed.), *Linguistic universals and language variation*. Berlin/New York: Mouton de Gruyter. doi:10.1515/9783110238068.128

Tagliamonte, S. 2014. A comparative sociolinguistic analysis of the dative alternation. In Torres-Cacoullos, R., N. Dion & A. Lapierre (eds.), *Linguistic variation: Confronting fact and theory*. Routledge, London and New York (to appear).

Thibault, P. & D. Vincent. 1990. *Un corpus de français parlé: Montréal 84*. Université Laval, Québec.

Thullier, J. 2012. *Contraintes préférentielles et ordre des mots en français*. Ph.D. thesis, Université Paris-Diderot.

Weinreich, U., W. Labov & M. Herzog. 1968. *Empirical foundations for a theory of language change*. University of Texas Press.

Zanuttini, R. 1997. *Negation and clausal structure. A Comparative study of romance languages*. Oxford: Oxford University Press.

Zeevat, H. 2001. The asymmetry of optimality theoretic syntax and semantics. *Journal of semantics* 17. 243–262. doi:10.1093/jos/17.3.243

The dynamics of variation in individuals

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This paper examines the factors conditioning the production of linguistic variables in real time by individual speakers: what we term the *dynamics of variation in individuals*. We propose a framework that recognizes three types of factors conditioning variation: sociostylistic, internal linguistic, and psychophysiological. We develop two main points against this background. The first is that sequences of variants produced by individuals display systematic patterns that can be understood in terms of sociostylistic conditioning and psychophysiological conditioning. The second is that psychophysiological conditioning and internal linguistic conditioning are distinct in their mental implementations; this claim has implications for understanding the locality of the factors conditioning alternations, the universality and language-specificity of variation, and the general question of whether grammar and language use are distinct. Questions about the dynamics of variation in individuals are set against community-centered perspectives to argue that findings in the two domains, though differing in explanatory focus, can ultimately be mutually informative.

Keywords: variation, dynamics, quantitative, sociolinguistic cognition, language use, locality, alternations

1. Introduction

Since the 1960s, the quantitative patterning of intra-and inter-speaker variation has been the primary focus of study in variationist sociolinguistics. Research in this tradition has documented the sensitivity of variation to social factors, such as class and gender, as well as to grammatical structure. Work in this vein has produced highly successful *community-level* profiles of the factors that affect a given linguistic variable. These profiles are, in the typical case, *static*, in the sense that they provide a snapshot of the social and linguistic parameters that characterize a particular community's distribution of variants at a particular point in time. That is to say, even when work of this type looks at diachronic change, it is usually focused on change in the aggregate distribution of linguistic forms across different generations.

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For a variety of reasons, some of principle and some practical, variationist sociolinguistics mostly puts to the side questions about the dynamics of variation within the speech of individuals, like the one that we have framed in (1):

(1) Dynamics of Variation in Individuals Question (DVIQ): What factors affect whether a given speaker will produce a given variant of a variable in a specific real-time instance of use?

So, for example, it might be the case that two individuals may produce very similar overall proportions of variants A and B of a variable, but the first individual produces the sequence AAAAAABBBBBB while the other produces ABABABABABAB. Although both speakers produce variant A 50% of the time, it may not be accurate to say that the chance of the first individual producing A at any given moment is 50%. The apparent difference would be lost in the traditional variationist approach, which pools tokens across individuals irrespective of which tokens occurred in which order. The temporal-sequential properties of variable observations – by which we mean information about which tokens were produced when, relative to other tokens – are set aside in community-centric approaches to the study of variation but are at the heart of the DVIQ posed here. Our goals in this paper are to synthesize findings showing that there is much to be asked about the dynamics of variation in individuals, and to develop a framework in which this and related questions about how individuals deploy linguistic variants can be investigated systematically.

In the first part of the paper (Section 2), we outline a framework in which an individual speaker's production of variability in any given instance of language use is shaped by three types of conditioning factors: *sociostylistic* ('s-conditioning'), *internal linguistic* ('i-conditioning'), and *psychophysiological* ('p-conditioning'). With respect to the third of these, one of our main lines of argument is that looking at the individual-level dynamics of variation requires a careful examination of general cognitive systems (for example, those related to memory) and psychophysiological systems (like those involved in articulation and perception).

After setting out a general framework, we develop in detail two main points:

(2) Main points to be developed
   a. *Point 1:* Token sequences produced by individuals exhibit systematic patterns that are attributable partly to social context and partly to psychophysiological conditioning.
   b. *Point 2:* Psychophysiological conditioning factors and internal linguistic conditioning factors are architecturally distinct.

Point 1, developed in Section 3, consists of the claim that there are indeed important things to be explained about how variation emerges from individual speakers

in real time. We argue in a review and synthesis of prior literature that there are systematic quantitative patterns displayed in sequences of variants produced by particular individuals, and that aspects of these patterns can be explained in terms of what we have called p-conditioning above. When generalized, the results of this section comprise a research program on variation in language in which the individual must play a central role.

Point 2, which is elaborated in Section 4, addresses a specific question about how two types of conditioning relate to each other, in ways that implicate questions about how language is connected with other cognitive systems. First, we posit that p-conditioning and i-conditioning are subject to different types of contextual restrictions, with i-conditioning being constrained by the same locality demands as categorical grammatical alternations and p-conditioning operating over different, potentially larger, domains. This argument suggests that i-conditioning and p-conditioning are architecturally distinct. Second, we suggest that p-conditioning effects are expected to be more or less invariant across communities (due to the way in which they derive from language-external systems such as memory), whereas i-conditioning is at least potentially arbitrary, so that a given individual must learn the effects that an i-conditioning factor has in their speech community. Separating i-conditioning and p-conditioning in the way that we propose has implications for the often discussed distinction between grammar and language use, a point that is addressed at the end of Section 4.

Section 5 offers general conclusions.

2. Three types of conditioning factors

The primary focus of variationist sociolinguistics is the quantitative correlation of a set of linguistic variants with various independent factors, termed "constraints" in early literature. That any given linguistic variable is typically sensitive to a range of distinct predictors is well known; Bayley (2013, 86) terms this the "principle of multiple causes." These multiple factors are traditionally categorized into two groups: one called "extralinguistic" or "external," which comprises what Cedergren & Sankoff (1974, 333) describe as "non-language factors such as age, class, and social context," and the other referred to as "internal linguistic," reflecting "elements of the linguistic environment" (Labov, 1969; Weinreich et al., 1968). The late 1980s saw a period of intensive inquiry into the basis of this dichotomy, particularly the different developmental profiles of internal and external conditioning patterns (Labov, 1989) and the hypothesized susceptibility of external but not internal factors to interactions (Fasold, 1991). While these particular questions have largely fallen out of focus more recently, general questions concerning

the relative roles of internal and external factors in driving language change continue to be explored (Farrar & Jones, 2002; Torgerson & Kerswill, 2004; King et al., 2011). Overall, the binary separation between social and linguistic factors remains a major organizing principle of sociolinguistic theory, as evidenced by recent general overviews of the variationist paradigm (e.g. Bayley, 2013).

Looking at the dynamics of variation in individuals prompts us to expand the typology of influences on variation. In particular, it becomes necessary to distinguish *three* types of factors that may condition variation, as follows:

(3) Factors that influence variation at the individual level
   a. Sociostylistic factors, the effects of which we term *s-conditioning*
   b. Internal linguistic factors, *i-conditioning*
   c. Physiological and psycholinguistic factors, *p-conditioning*

Our s-conditioning and i-conditioning correspond in some ways to the external and internal factors discussed above (although see Section 2.1 below, where we motivate an internal division of s-conditioning). What we call p-conditioning factors arise from cognitive and physiological systems that are shared by all humans, like working memory capacity, articulatory pressures arising from the physiology of the speech apparatus, resting activation levels for words (of the type that are implicated in priming), and so on. While p-conditioning factors are typically discounted when a community profile is at issue, Point 1 of our paper is to show that these factors figure crucially in determining the dynamics of variation: i.e. that p-conditioning gives rise to systematic quantitative patterns of sequences of variants produced by individuals in real time.[1]

After motivating the study of variation in individuals in Section 3, we move to Point 2, which initiates the search for empirical differences between i-conditioning, s-conditioning, and p-conditioning. We are actively investigating the idea that the three types of conditioning factors are *distinct* in source and in cognitive instantiation, a point which we discuss further in Section 4.2 with respect to i-conditioning and p-conditioning. Though there is no question that they frequently act together to shape a speaker's output distribution of linguistic variants (Bayley's "principle of multiple causes" again), we believe that treating the factors in (3) as distinct is important in ways that are elaborated in the pages to come.

1. S-conditioning – in particular, the effects of style – can of course also structure sequences of variables discussed by individuals. Although s-conditioning is not a primary focus of this paper, several points concerning s-conditioning and its relation to our overall framework are addressed as the discussion unfolds.

In order to frame the main arguments in Sections 3 and 4, we look briefly at the three types of conditioning in the following subsections.

2.1 S-Conditioning

Sociostylistic effects on variation are probably the best known of the three types of conditioning factors identified here. However, when the dynamics of individual variation are considered, it is important to make a distinction between *static* and *dynamic* components of s-conditioning. *Static* s-conditioning refers to the demographic categories or social group memberships with which variants may covary (e.g. age, sex, social class). Many of the current methods used in the variationist program characterize a group of people with respect to their collective rate of use of some variable: their socially-determined *baseline values*. In the discussion to come, it will be assumed that any particular speaker has a baseline value for each variable of their language, and that the baseline value is derived from static s-conditioning in the familiar way. Beyond this, though, we set this type of conditioning aside in our discussion below, as our primary focus in this paper is on variation at the level of the individual (see in particular Section 3.1), and this type of conditioning naturally requires abstracting over individuals to identify group-level patterns.

In addition to covering baseline issues, s-conditioning also comprises a class of intraspeaker properties of variation, sometimes treated under the banner of 'style' but here termed *dynamic* s-conditioning. (With this terminological choice we aim to sidestep debates about competing sociological or anthropological explanations for stylistic variation.) This type of s-conditioning is particularly important for the DVIQ, because different styles deployed by the same individual will have an effect on their probability of producing certain variants. That is to say, dynamic s-conditioning is viewed as a set of socially-motivated or discourse-related changes that affect a speaker's target rate for a variable in real time. In simplified terms, we might expect a given speaker to have an implicit goal of producing a colloquial variant at a high rate in a casual situation and a low rate in a situation requiring formality. Dynamic s-conditioning, then, is a cover term for externally-motivated deflections from a socially-established baseline that may arise from the influence of any number of contextual factors.

2.2 I-Conditioning

I-conditioning refers to the effects that elements of linguistic representation in the environment surrounding and containing an instance of a variable can have on that variable's realization. The types of representation in question can differ depending on the particular variable: some alternations have phonological conditioning

factors, some have morphological conditioning factors, others might be sensitive to syntactic context, and so on. Moreover, for some variables, sensitivity can be to more than one type of representation, as we discuss in Section 4.2 below.

I-conditioning factors are in many cases the common internal linguistic factors considered in classic sociolinguistic studies. So, for example, we categorize as i-conditioning those factors that implicate the morphological makeup of the word containing the varying element, such as the differential sensitivity of coronal stop deletion to monomorphemes versus past tense forms (Guy, 1980), or the effect on [ɪŋ]~[ɪn] variation of the morphological structure of the word containing *-ing* (an effect identified by Houston (1985) and most recently refined in Tamminga, 2014).

Positional constraints on variation also fall under the umbrella of i-conditioning, such as the differential rates of fronting of /θ/ in Glasgow and other communities depending on whether the fricative is word-initial or word-final (Clark & Trousdale, 2009; Stuart-Smith et al., 2013).

2.3 P-Conditioning

P-conditioning comprises the effects of a range of physiological and psychological factors that govern a speaker's language production in real time.[2] P-conditioning can be further divided into two types: physical and cognitive.

Physical p-conditioning has long been recognized in research into speech perception as contributing to what is known as the "lack of invariance problem": the lack of a simple and direct mapping between phonetic categories and the acoustic patterns that physically instantiate them (Liberman et al., 1967). Though this lack of invariance stems ultimately from a range of differences between individuals, speech is naturally variable even within individuals, due to what Hoole et al. (1993, 237) describe as "universal neurological and biomechanical constraints of the speech motor system." Factors such as coarticulation and breathing patterns can be included under this type of p-conditioning.

One of the major claims that we aim to develop is that a number of p-conditioning factors above and beyond these low-level physiological constraints affect the dynamics of variation: this *cognitive* type of p-conditioning involves the universal properties of the human mind/brain. Among the factors that we suggest should be included in this category are working memory, production planning, priming, and automatic imitation. Section 3.1 examines a range of these factors, and discusses how they structure the way in which individuals produce variants.

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2. For reasons related to the Dynamics of Variation in Individuals Question stated in (1), we focus on production; an equally important set of questions concerns the effects of *perceptual* factors on variation.

Although p-conditioning can be observed in aggregate data under the right analysis (see, for example, our discussion of auxiliary contraction in Sections 3.1 and 4.2), these factors are manifested in the behavior of individual humans using language in real time, and as such are seen when the behavior of individual speakers is examined. We suspect that p-conditioning factors are pervasive and potentially involved in most if not all cases of variation. There is also reason to believe that they may be quite strong. Take, for example, the variation between [ɪn] and [ɪŋ] for the verbal *-ing* suffix. In Philadelphia English a shift from careful to casual speech in an interview is accompanied by a shift from around 15% [ɪn] to around 35% [ɪn] (Labov, 2001). By way of contrast, the immediately previous variant choice (the p-conditioning factor of *priming*) has a much larger impact for the same variable in the same speech community: when two tokens of the variable are within a few seconds of each other, the difference in variant choice for the second token triggered by the variant in the first token can be as large as 25% [ɪn] after [ɪŋ] versus 85% [ɪn] after [ɪn] (Tamminga, 2014). Although the stylistic range of the interviews from which these data were drawn is far from maximal, we see that not only is the size of the difference elicited by priming detectable, it is in fact sizable in comparison to better-known conditioning factors. Of course, not all p-conditioning effects are expected to be this strong. For example, with another well-known variable, the deletion of word-final coronal stops in consonant clusters, a priming effect arises only under a narrow set of conditions: when the stop in question represents a past tense suffix or when a lexical item is repeated (Tamminga, 2014). Our view is that understanding such p-conditioning effects (and how they apply to different variables) should be a basic goal in a theory of the dynamics of variation.[3]

2.4 On the division of conditioning factors

Having now outlined three types of factors that condition variation, a brief discussion of Point 2, concerning the factors' architectural distinctness, is in order.

In principle, both i-conditioning and p-conditioning look as if they can involve reference to linguistic objects in the context of the variable in question. For instance, when a particular instance of the *-ing* suffix is affected by the choice made earlier between [ɪŋ] and [ɪn] (the p-conditioning factor of *priming*), there is a sense in which a linguistic object in the context is affecting the probability that one variant will be selected. Superficially, this is the same as saying that, e.g. coronal stop deletion rate is affected by morphological information (an i-conditioning

3. An additional question is whether p-conditioning effects might lead to mistaken attribution of the variation from this source to social, stylistic, or linguistic factors.

factor). However, as we will discuss in depth in Section 4, it is sometimes possible to adduce both grammatical arguments and quantitative arguments to show that a particular instance of conditioning is in fact p-conditioning rather than i-conditioning.

Though separating p-conditioning from other types of conditioning is not unprecedented in the literature on variation (see Labov, 1979 and the more recent Preston, 2004),[4] previous work has typically not differentiated the three types of conditioning factors in the way that we have here. Some researchers, for instance, have proposed treating our i-conditioning as derivative from p-conditioning factors, among them Kiparsky (1972) and Slevc (2011). Conversely, but in a similar vein, factors that we would ascribe to p-conditioning are sometimes implicitly treated as being part of i-conditioning by virtue of their apparently non-social nature (e.g. early discussions of priming (Poplack, 1980, 1984)). More recently, some usage-based models of language make no apparent architectural distinction between our three types of conditioning factors at all, treating all contextual and sociostylistic conditions on variant use as represented in the same way (e.g. as tags on lexical exemplars, as in the implementation of Hay & Bresnan (2006)). Although we will not attempt to make a point-by-point comparison with these and other alternatives, we return to the architectural implications of our three-way distinction between conditioning factors in Section 4.3.

In practice, the dividing line between p-conditioning and i-conditioning, and between p-conditioning and s-conditioning, will not always be *prima facie* obvious from a superficial observation of the facts: the question of which factor(s) determine the properties of any given variable is an empirical one, as we will illustrate in Section 4. First, however, it must be established that there is structure to the sequences of variants produced by individuals in the first place. This is the topic of the next section, which explores this point with a focus on p-conditioning.

3. Point 1: Quantitative patterns in variable sequences

It is useful to frame the study of individual dynamics with reference to the speech community. A speech community has historically been defined (at least within variationist sociolinguistics) as a group of people who share the same constraints on, and social evaluation of, intraspeaker variation (Labov, 2006 [1966]). Such

4. Note also the division of Labov's seminal *Principles of Linguistic Change* trilogy into volumes on Internal, Social, and Cognitive factors; however, 'cognitive' in that case refers to the human capacity to perceive and reproduce cultural patterns.

constraints, because they are by definition common to members of the group, are often discussed as if they are a property of the group itself, recalling the "grammars of the speech community" at the center of the foundational Weinreich et al. 1968. Guy's point that coronal stop deletion is "uniformly compelling on all speakers" (1980, 34) exemplifies the justification for what we might call the community grammar view. But since utterances are produced by human individuals, not communities, the constraints on variation must inhere in the mental representations of individual speakers, and the fact that those speakers all share the same constraints is a product of our definition of a speech community. The study of what is shared by all group members, in other words, is strictly speaking the study of a recurring property of individuals, despite the fact that the conventional terms for such analysis suggest a community-level phenomenon.[5]

Our Point 1 is that there are structured quantitative patterns in the production of variants by individual speakers: patterns in the sequences of variants as they are produced by speakers in real time. As mentioned in Section 2, the temporal-sequential properties of variants are set aside in the traditional variationist methodology. The practice of dissociating variable observations from the order in which they were produced is rooted in claims such as the following (Labov, 2006 [1966], 77, emphasis added):

> Here are the occurrences of (th) in casual speech, in the order that they occurred: 1 2 2 1 2 2 1 1 1 1; and here are the occurrences in careful speech: 2 2 1 1 1 1 1 1 1 1 1 1 1 2 1 2 1. **There seems to be no pattern or system within this sequence** – yet it fits into the larger pattern shown in the array of styles.

While Labov here acknowledges that some stretches of speech are different than others by virtue of style-shifting, he does not pursue the possibility that there is further systematicity within the careful and casual sequences that is derivative of other sources. In other words, the standard view is that once we have delineated stylistically-distinct sections of speech, what remains within each section is stochastic variation (albeit constrained by linguistic factors in a way that can be observed once all tokens are pooled).

In the remainder of this section we will synthesize findings that show that the order and timing in which variant tokens occur are not fully random, in ways that implicate p-conditioning in particular (Section 3.1). We will then outline some

5. How the same set of constraints is learned by many individuals is a separate, though certainly relevant, question; we reject the premise of Labov (2012) that the existence of the individual as an important level of linguistic analysis is isomorphic to the question of the target of acquisition.

further questions concerning sequences of variants, and situate the investigation of individual dynamics with respect to directions for future research (Section 3.2).

3.1 P-conditioning as a source of individual dynamics

It is relatively easy to imagine how dynamic s-conditioning, as described in Section 2, could play a role in giving rise to quantitative patterns of individual dynamics, even if questions about how to incorporate style and related notions into the cognitive architecture of language continue to be actively discussed. On the other hand, the influence of p-conditioning factors, especially cognitive ones, has received much less attention in the study of variation. In this section we review and synthesize evidence concerning the role of p-conditioning.

In Section 2.3 above, we briefly outlined the nature of p-conditioning factors. In that initial discussion, we distinguished *physical p-conditioning* from *cognitive p-conditioning*. Under the former, we have in mind the effects of physiological constraints on speech production. For example, a major source of intra-speaker phonetic variability is coarticulation, the overlap and interaction between articulators in the real-time production of speech (see Farnetani & Recasens, 2010 for an overview). Coarticulation has been proposed as the source of gradient patterns of assimilation such as the palatalization of /s/ before a following /j/ (Zsiga, 2000) and the absence of an alveolar gesture in instances of /n/ before /k/ (Ellis & Hardcastle, 2002). Though there is evidence that coarticulation can show language-specific effects (e.g. Manuel, 1990), these differences constitute crosslinguistic variation in the degree of coarticulation, not its absolute presence, which is thought to be universal (Farnetani & Recasens, 2010). Another source of variability in speech production within the individual is breathing patterns: respiratory function has been found to be influenced by cognitive load, audiovisual stimulation, conversational turn taking, and a speaker's emotional state (McFarland, 2001), and breathing is in turn connected to features of speech including pitch contours across breath groups (Kutik et al., 1983), pause prevalence (Zellner, 1994), and voice onset time (Hoit et al., 1993). Low-level, physical p-conditioning factors always play a role in speech production,[6] and thus must be part of the investigation of individual dynamics.

For present purposes, however, we are more interested in the effects of cognitive p-conditioning on variation. In the rest of this section, we review several cognitive p-conditioning factors, and expand on their relationship with the production

6. In addition, some types of conditioning are not exclusively "low-level", despite being prima facie physical p-conditioning. For instance, Scarborough (2013) reports that degree of coarticulation interacts with neighborhood density/frequency, indicating that the "low-level" effect interacts with what we could call a cognitive p-conditioning system.

of variation in individuals. We begin with a discussion of factors shown to affect variation in recent work, namely production planning and priming, then turn to the factors that we believe should be considered in future investigations.

3.1.1 *Planning*

One cognitive system affecting language production in ways that are important for variation is the planning of utterances (see Allum & Wheeldon (2007) for an overview). There is good reason to believe that the planning of units "downstream" occurs simultaneously with the production of earlier units (Levelt, 1989), and the degree and extent of downstream planning can affect a number of features of those units that are being articulated. Among these features are a unit's likelihood to be followed by a pause and to contain a disfluency, both of which are more likely the more complex the upcoming unit being planned (Clark & Wasow, 1998; Ferreira, 1991).

A speaker's ability to plan a given utterance may be modulated in certain experimental settings, and this, too, can affect her language production. For example, Tilsen (2012) demonstrates that speakers shift a clashing primary stress in accordance with the Rhythm Rule (changing, say, the phrase *Japanése géckos* to *Jápanese géckos*) only in prepared, but not in unprepared speech, where (informally) constraints imposed by the planning system preclude the execution of the prosodic alternation. That planning constraints can produce such an alternation suggests that they may also influence already-variable phenomena in ways that have only begun to be explored.

In most cases, the variationist approach implicitly assumes that all relevant conditioning information is equally present and operative on each instance of the variable (though see Guy (1991a) for a counterexample). But when we consider the dynamics of variation in individuals, it can be seen that this assumption is not uniformly valid. Regarding planning, a possibility is that contextual factors and the variables that they affect are not always present in the same planning buffer. Planning is thus important to variation because the planning system will determine whether or not an instance of a variable and its potential contextual influencer are able to interact with each other. For example, MacKenzie (2012) attributes subject length effects on auxiliary contraction to the possibility that the auxiliary is not always planned in the same buffer as the subject if the subject is long. In Wagner (2011, 2012), data from an experimental production task show that the strength of the prosodic boundary preceding an upcoming clause, a metric taken to indicate whether that clause is likely to have been planned at the time the boundary is reached, affects the conditioning of the [ɪŋ]~[ɪn] alternation. The argument is that when a following constituent has been planned, its phonology is available to condition [ɪŋ]~[ɪn] choice, with more [ɪŋ] surfacing before a following vowel and more

[ɪn] before a following consonant. When the following constituent has not been planned, though, this regressive phonological conditioning cannot operate, and the distribution of variants changes. A number of recent papers have shown that the basic prediction made by this analysis – that variable conditioning by elements across word boundaries is sensitive to planning likelihood – hold in conversational speech corpus data as well (Tamminga, 2015; Tanner et al., 2015), although the facts may differ for phonological and morphosyntactic variation (MacKenzie, 2015b).

The DVIQ asks what factors affect the outcome for a variable in an actual instance of use in real time; the discussion here shows that the production of variation is affected by what is being planned at the moment of that instance of use. Constraints on production planning may cause the choice of a variant to be deferred too late to affect a left-leaning process like contraction, or they may make elements of the context following a variable element unavailable at the time variant choice occurs. Limits on cognitive capacity thus illustrate another way in which individuals must figure prominently in the study of variation. Constraints on variability which seem arbitrary when viewed at the community level may in fact be a reflection of individual-level cognitive constraints. For instance, the finding from MacKenzie (2012) that contraction is unattested in spoken English after subjects longer than eight words may be related to the generally-accepted limits on working memory capacity, which center around seven items across individuals (Miller, 1956).

We return to the topic of interactions between conditioning factors with a more detailed example of production planning effects in Section 4.2.

3.1.2 *Priming*

Another cognitive p-conditioning factor that intervenes in the production of variation is priming. With respect to lexical items, priming (shorthand for *priming facilitation*) refers to speeded lexical access after prior exposure. The seemingly related phenomenon of structural priming is a preference for using a recently-processed syntactic structure to form a novel utterance in cases with multiple syntactic options available, whether in an experimental setting (Bock, 1986; Pickering & Ferreira, 2008) or conversational speech (Weiner & Labov, 1983; Gries, 2005; Szmrecsanyi, 2006). In the context of sociolinguistic variation, priming is generally thought of as an increase in the tendency towards one variant or another after previous processing. For example, as mentioned above, speakers who have recently used the [ɪn] variant of the variable [ɪŋ]~[ɪn] alternation are significantly more likely to reuse [ɪn] in the next instance than if they had recently used [ɪŋ] (Abramowicz, 2007; Tamminga, 2014).

Since this phenomenon was first identified in conversational speech (Sankoff & Laberge, 1978; Poplack, 1980; Weiner & Labov, 1983), sociolinguists and corpus linguists have identified priming in a wide range of variables, across

different languages and different linguistic levels (see *inter alia* Scherre & Naro (1991); Cameron (1992); Scherre (2001); Cameron & Flores-Ferrán (2004); Szmrecsanyi (2006); Abramowicz (2007); Travis (2007); Tamminga (2014); Clark & Walsh (2014)). The identification of priming as a relevant factor in linguistic variation is thus far from new. It is also not novel to point to a cognitive basis for repetitiveness in variant choice; Scherre (2001), Cameron & Flores-Ferra′n (2004) and Szmrecsanyi (2006) all explicitly tie their corpus results to psychological models of priming. However, the notion that priming is a distinct *type* of conditioning factor has not been fully developed in sociolinguistic theory. Crucially, sustained influence from previously–produced or –perceived tokens is not static, and requires reference to the recent experiences of the individual speaker in real time. The study of priming thus requires reference to temporal sequences of variants in a way that is not properly captured by the notion of a community grammar. It is our view that the full architectural and quantitative implications of this point have not been realized or explored.

Furthermore, Tamminga (2014) suggests that repetitiveness in variation, previously conceptualized straightforwardly as a reflex of "priming," is not a single effect but instead may involve multiple underlying facilitatory cognitive mechanisms interacting with variables at different levels of the grammar. She finds that priming effects have different degrees of generality, and different patterns of temporal decay, in phonological and morphological variables, and attributes the differences to a distinction between activation of abstract lexical items and episodic memory for surface properties of words. Each of these layers of complexity adds a dimension to be explored in the dynamics of individual variation.

The progress made in recent studies of how planning and production affect variation motivate us to suggest other cognitive p-conditioning factors that might be considered in future research. While the following paragraphs highlight the potential that studies of imitation and working memory effects hold for understanding the dynamics of variation in individuals, this is far from a comprehensive listing of the set of cognitive p-conditioning factors that might be pursued in future work.

3.1.3 *Imitation*

Another potential source of variation in the dynamics of speech is imitation. A number of studies have shown that speakers imitate details of the speech of their interlocutors; see Zellou et al. (2016) for a recent review of relevant literature. Current theories of the cognitive mechanisms responsible for imitation posit (at least) two distinct (but not mutually exclusive) sources for such effects: one is social in nature (see e.g. Namy et al. (2002); Pardo (2006); Pardo et al. (2012, 2013); Babel (2012)) the other is more bottom-up and mechanical,

reflecting either a perception–production loop (e.g. Pierrehumbert (2002); German et al. (2013)) or a type of priming (e.g. Pickering & Garrod (2004)). Current work in this area is examining exactly what aspects of interlocutors' speech are imitated, with uncertainty remaining around key questions about what is imitated, how fine-grained imitation is, and how long imitation effects last. These questions notwithstanding, automatic imitation (i.e. the non-social type) represents another important source of potential p-conditioning, as it means that the realization of any given token of a variable in real time depends on recently processed tokens in a way that can be conceptualized only at the level of an individual speaker.

3.1.4 *Working memory*

The final cognitive p-conditioning factor that we consider here is limitations on working memory, the system implicated in the processing and temporary storage of verbal material (Baddeley, 1986). A number of converging lines of research have demonstrated that a speaker's working memory capacity affects their language production. For instance, speakers with shorter memory spans (assessed by the number of items which they can remember in a controlled task) are more likely to produce "slip of the tongue" speech errors (Daneman, 1991; Saito & Baddeley, 2004) and subject-verb agreement errors (Hartsuiker & Barkhuysen, 2006) in experimental settings designed to elicit them. Their speech in open-ended production tasks consists of fewer words per minute and is less semantically rich and grammatically complex than that of speakers with longer memory spans (Daneman, 1991; Kemper & Sumner, 2001). These correlations extend beyond cross-speaker differences to the intra-speaker level: when a subject's working memory is taxed (e.g. by a requirement to hold in memory a series of digits or words, or when asked to perform a concurrent task such as walking or finger tapping), they produce less semantically rich and grammatically complex utterances than when speaking without a cognitive load (Kemper et al., 2003; Power, 1985).

Absolute and speaker-specific limits on memory, as well as fluctuations in an individual's available memory capacity over time, may influence variation by limiting the degree to which variables may be sensitive to prior sequences of variants or other contextual factors. Insofar as producing variation entails tracking information across stretches of speech, quantitative patterns of variation may be affected by interspeaker differences or intraspeaker fluctuations in working memory capacity. Memory constraints may interact with the imitation effects so pervasive to the general process of language production; socially-mediated accommodation between two conversational partners, for example, requires crucially that each partner retain a memory of not just what the other speaker has said but how they said it. The level of detail that can be stored in this respect, and how long it can be

stored for, has a direct impact on the amount of accommodation possible and may be based at least partially in memory capacity.

To be quite clear, this discussion does not attribute variability to speech error; we maintain a sharp distinction between systematic inherent variability and speech errors. Rather, we suggest that memory constraints (as discussed in the speech error literature) may interact with other constraints in the systematic production of variation.

3.2 Degree of dynamism and microcovariation

We have seen above the role that p-conditioning can play in affecting the outcome of variation when it is considered in real time. This perspective directs our attention to the temporal-sequential properties of variation. Many of the effects of p-conditioning extend across distances longer than the span of grammatical locality, meaning that the evidence for them is embedded in longer sequences of variants. As the questions that arise from the DVIQ become more complex, we will need to turn away from looking at isolated tokens and find new ways of describing and analyzing the properties of these longer sequences. In other words, we expect sequences of variable tokens to show patterns that are related to the operation of p-conditioning factors. To illustrate, we outline two simple dimensions along which we might expect to find differences between individuals in the temporal properties of the sequences of variants they produce.

The first dimension is *degree of dynamism*: the idea that even two speakers with an identical mean for a given variable might arrive at that mean through a wide or narrow distribution of tendencies and choices over time. Tamminga (2014) illustrates an effect of this type through a brief comparison of several speakers' real-time production of [ɪŋ]~[ɪn] alternation, coronal stop deletion, and [ð]-stopping. The data are taken from the Philadelphia Neighborhood Corpus (Labov et al., 2011), a collection of transcribed and forced-aligned sociolinguistic interviews with English speakers from Philadelphia. Figure 1, adapted from Tamminga (2014), presents rolling averages (with a window equal to 1/20 of the number of tokens, with approximately equal numbers of tokens across both interviews) of coronal stop deletion for two different individuals. Both speakers have an overall mean deletion rate close to 50%. The individual in the top panel, though, arrives at that mean by averaging over sections of very high and very low deletion, whereas the individual in the bottom panel arrives at the same average after clinging quite closely to the 50% mark for most of the interview. This pattern suggests that – despite their identical means – there is something different about how coronal stop deletion is implemented by these two speakers.

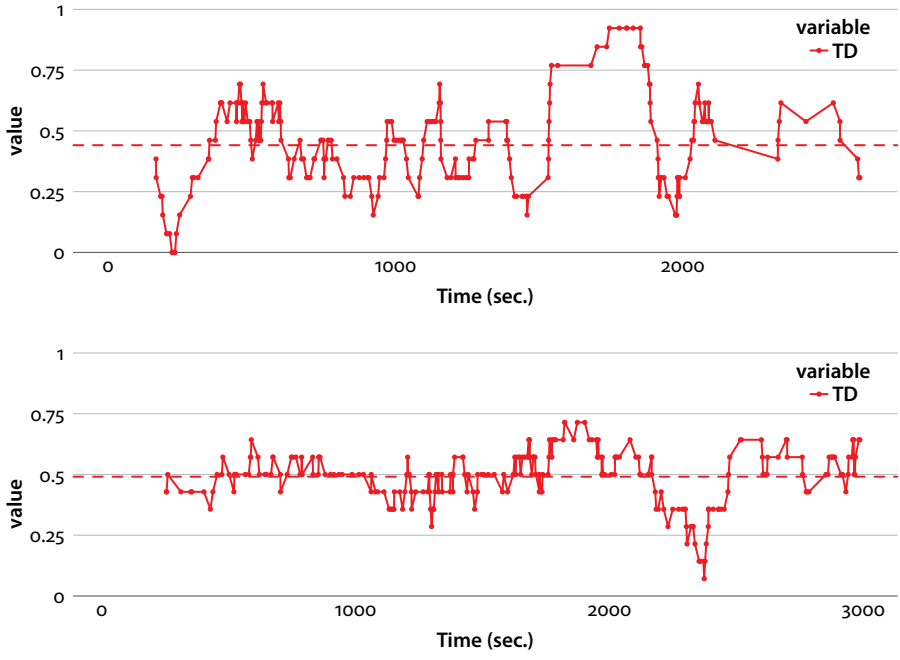

Figure 1. High (top) and low (bottom) dynamism in two PNC speakers' moving averages for coronal stop deletion (window=N/20)

A central component of individual speaker dynamics is of course dynamic s-conditioning. The most obvious interpretation of high dynamism in a stretch of speech is that the speaker was moving across different styles evoked by shifts in topic or interlocutor. Even so, there may well be individual differences in the degree to which different individuals respond to contextual shifts, with some speakers having a wider range of stylistic variability than others. It is is unlikely that dynamism is fully reducible to s-conditioning, as dynamic s-conditioning will likely co-occur with (or even induce) changes in p-conditioning factors that may themselves constrain variability above and beyond the effects of style. For example, inter-speaker differences in dynamism may reflect individual differences in the degree of facilitation from priming or the speed at which priming effects decay.

Modern sociolinguistic views of style in many cases highlight the shifting ways that variants of different variables can cluster together to produce stylistic performances in specific moments or interactions (Eckert, 2012). In keeping with this emphasis on multiple variables at once, the second dimension of individuallevel dynamics of variation that we consider here is *microcovariation*: the different temporal co-occurrence patterns of variant instances across variables, independent of their dynamism profiles. Figure 2, again taken from Tamminga (2014), illustrates

that temporal co-occurrence patterns can differ in this way. For the individual in the top panel, coronal stop deletion and [ð]-stopping track each other closely, moving up and down in tandem. In contrast, the individual in the bottom panel shows exactly the opposite pattern for most of the interview, with coronal stop deletion and [ð]-stopping appearing to be almost repelled by each other.

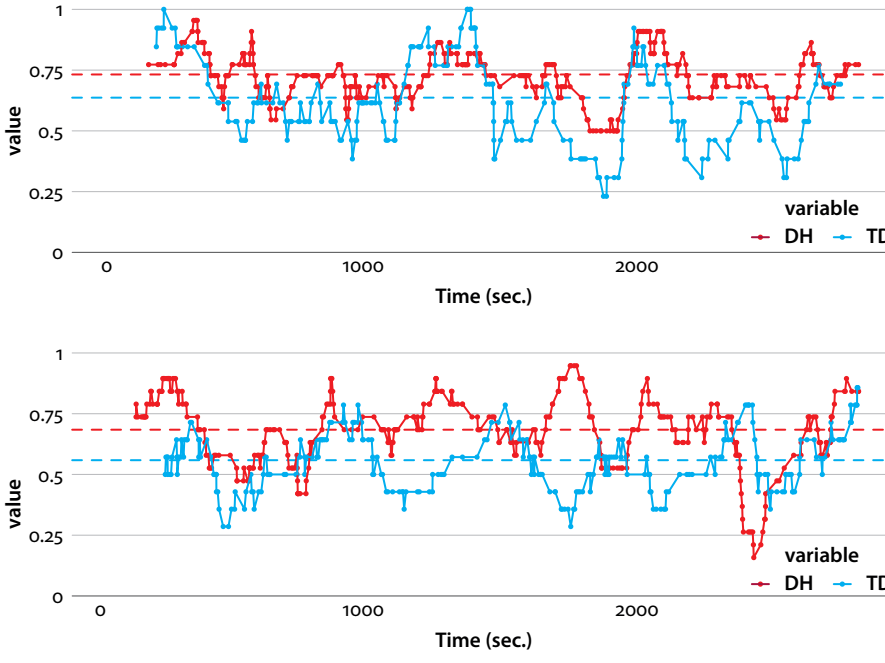

Figure 2. Coincident (top) and divergent (bottom) microcovariation in coronal stop deletion and [ð]-stopping moving averages from two PNC speakers (window=N/20)

The degree to which the patterns here should be attributed to s-conditioning or p-conditioning is, as with the dynamism patterns above, a question which will certainly have a complex answer. Careful attention must to be paid to the analytical and quantitative task of disentangling dynamic s-conditioning from the more mechanical dynamic properties of p-conditioning. An important direction of research will involve connecting the framework outlined in this paper with recent and continuing methodological advances in the quantification of style shifting (Podesva, 2007; Sharma & Rampton, 2011; Ginsberg, 2012; Tamminga et al., 2016).[7]

7. A related and important topic, which is already attracting careful attention from other directions (Campbell-Kibler, 2010; Babel, 2012; Squires, 2013), is how the interface between variable production and social meaning is mediated by social cognition.

3.3 Summary

In this section we have examined a range of factors that are set aside in traditional variationist analysis. These factors affect the outcome of variation when we consider the production of variation by individuals in real time, which is, we argue, structured in ways that deserve systematic investigation. Our main focus in this section is on what we stand to gain by viewing such patterns in terms of p-conditioning. As we discussed, production planning can interact with i-conditioning by disrupting the presence of elements of the linguistic context in real time. Priming can reflect repetition of variants used by the same or a different speaker several utterances earlier. Automatic imitation necessarily makes reference to a connection between what a speaker perceives and what they subsequently produce. A speaker's working memory capacity may limit the temporal span over which accommodation effects can take hold. Such factors do not fit naturally into a perspective where the speech community is the unit of analysis, because they tie instances of a variable to longer sequential contexts reflecting the psychological state of an individual. As the evidence for the influence of these and other p-conditioning factors accumulates, the need to take an individual-level perspective will become more apparent.

The traditional community grammar perspective against which we situate this need has both a methodological and a conceptual component. Methodologically, for as long as sociolinguists' standard statistical tool was what we now call fixed-effects regression, the only options for investigating individual-level patterns statistically were to include individual identity as a predictor (with an unreasonably large number of values), or to fit a separate regression to each individual's data, and thus lose the generalizations about what conditioning patterns individuals do in fact share. The increasingly widespread adoption of mixed-effects hierarchical regression modeling has largely rendered this problem obsolete. The inclusion of by-speaker random intercepts in regression models compensates statistically for different rates of variant use across speakers, and allows for the intercepts to be extracted for further examination (Drager & Hay, 2012).

In line with this shift in statistical practice, sociolinguists have recently begun to investigate the distribution of individual means within groups, asking for example whether speakers' means correlate across variables (Oushiro & Guy, 2015, Oushiro 2016). Although our research agenda extends beyond questions about individual means, sequential properties such as dynamism and microcovariation deal with deflections away from some putative abstract baseline rate that needs to be calculated and discussed. Doing so may in turn open new avenues of inquiry relevant to the DVIQ. As one example, Tamminga (2014) asks whether priming might differ across individuals as a function of their own baselines due to the known sensitivity of priming to rare occurrences (see Jaeger & Snider (2013),

who analyze this effect by calculating *surprisal*, an information-theoretic measure of unexpectedness, over linguistic contexts). So, for a speaker from a working class background who produces primarily [ɪn] it may be the case that [ɪŋ] is the unexpected variant that elicits a strong surprisal-based priming effect, despite the global status of [ɪŋ] as the standard variant. When we focus on the DVIQ, we will also encounter a new set of quantitative problems, such as normalization of variable occurrence rates across individuals and over time. Novel applications of existing statistical tools, such as the use of Generalized Additive Models with time splines to simultaneously estimate independent effects of dynamic s-conditioning and priming (Tamminga et al., 2016), hold promise for the methodological integration of speaker-level and community-level perspectives.

As mentioned above, the traditional view is not merely methodological, however; Labov has called it "the central dogma of sociolinguistics that the community is conceptually and analytically prior to the individual" (2012, 266) and asserted that "the individual does not exist as a unit of linguistic analysis" (2014, 18). While we do not dispute the importance of the speech community in sociolinguistics, we note that this dogma is related directly to the explanatory goals that it is associated with. Variation can be studied in more than one way; if one's goals are to explain how variation is manifested along different social dimensions, then of course the group is going to be of central interest. On the other hand, variation can also be studied in real time, and in individuals, in ways that will be informed by – and ultimately inform – the community-based perspective. Our comments in this section present a preliminary argument that individuals not only exist, sociolinguistically speaking, but also must be taken into account as the source of the p-conditioning factors that are of central interest in a theory addressing the DVIQ. In the next section, we consider the architectural implications of distinguishing individual behavior from community level patterns, through an argument for treating p-conditioning as qualitatively different from i-conditioning.

4. Point 2: p- and i-conditioning are architecturally distinct

In this section we take a closer look at some of the properties of individual speakers that shape variable outcomes. The argument involves two main components. The first point (Section 4.1) is that variable and categorical alternations show asymmetries in how they are conditioned, and that accounting for these asymmetries is straightforward in a theory in which i-conditioning and p-conditioning are architecturally distinct. The second point (Section 4.2) is that p-conditioning is universal, whereas i-conditioning is potentially arbitrary; this is a further argument for distinguishing p- and i-conditioning. In Section 4.3 the more general

implications of this argument are examined, with respect to the idea that grammar and use are distinct.

4.1 Asymmetrical conditioning of alternations

The proposal that p-conditioning and i-conditioning are distinct is suggested by an asymmetry in how conditioning factors interact with different types of linguistic alternations. We use the word "alternation" broadly here, to capture any instance in which a single underlying linguistic element can be realized in more than one way. Alternations can be categorical (i.e. invariant), as exemplified in (4), or variable, as exemplified in (5). As we will show below, categorical alternations and variable alternations can be conditioned in different ways, and it is this asymmetry in conditioning that lends support to a separation between p-conditioning and i-conditioning.

(4) Examples of categorical alternations
   a. Phonological: In many varieties of American English, /æ/ is realized differently in front of nasals (*hand*) than in front of other consonants (*happened*) (Labov et al., 2006).
   b. Morphophonological: The final segment of *plastic*, realized as /k/ in that form, surfaces as /s/ in front of *-ity* (*plastic-ity*). (But not in front of e.g. *-esque* in *plastic-esque*, or *-y* in *plastic(k)-y*.)[8]
   c. Morphological: The past tense morpheme is realized as /d/ in *play-ed* (and all other "regular" verbs), but as /t/ in the context of *bend*, *leave*, and some other verbs.
   d. Morphosyntactic: The first person pronominal is realized as *I* in one set of contexts (to oversimplify, "nominative"), and *me* in others.

(5) Examples of variable alternations
   a. Phonological: Coronal stops are sometimes deleted and sometimes retained in word-final consonant clusters (e.g. *mis' ~ mist*).
   b. Morphophonological: The final segment of *path* is sometimes voiced next to the plural marker /-z/ (*pað-z*), sometimes not, triggering assimilation of the plural suffix (*paθ-s*) (MacKenzie, 2015a).
   c. Morphological: The realization of the past tense morpheme varies for e.g. the verb *burn* (*burn-t ~ burn-ed*); the realization of the participle morpheme varies for e.g. the verb *show* (*show-n ~ show-ed*).
   d. Morphosyntactic: Auxiliaries (forms of *be*, *have*, *will*) are sometimes contracted onto the word immediately to their left (*That dog's barking again*), and sometimes realized as full forms (*That dog is barking again*).

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8. This alternation is *morpho*phonological in the sense that /k/ → /s/ is not a general property of English phonology; compare *wake*, *wak-ing*.

Whether categorical or variable, each of these alternations shows sensitivity to material in its linguistic environment. So, for example, in (4b), the alternation between /k/ and [s] is triggered by the suffix following the /k/; in (4c), the alternation between /d/ and /t/ in the realization of the past tense is triggered by the particular verb the suffix attaches to. In a similar way, variable alternations are sensitive to surrounding linguistic material (as previously outlined in Section 2.2). For example, it has long been known that coronal stop deletion (5a) applies at higher rates in monomorphemes than in contexts where the stop is coterminous with the past tense suffix (Labov et al., 1968); contraction of *is* (5d) applies at a higher rate after a vowel than after a consonant (Labov, 1969); and so on. We unite the contextual sensitivity of categorical alternations and the contextual sensitivity of variable alternations under the heading "conditioning."

It has been recognized (Guy & Boberg, 1997; Bresnan & Nikitina, 2009; Burnett, this volume) that, in many cases, the same factors are at play in the conditioning of both variable and categorical alternations. For instance, Bresnan & Nikitina (2009), discussing the dative alternation in English (e.g. *I gave John the cake ~ I gave the cake to John*), demonstrate an effect of recipient locality, with non-local (third person) recipients favoring prepositional datives compared to local (first and second person) recipients. They then note the presence of a similar, but categorical, effect on dative realization in Kanuri, where non-local person recipients of the verb *give* can be expressed only with a postpositional phrase, while local recipients are expressed via a direct object prefix on the verb. Additional cases in which categorical and variable alternations are conditioned by the same factors are not difficult to find. For instance, variable *is*-contraction in English, which is sensitive to whether the preceding segment is a consonant or a vowel, shares this conditioning with invariant Korean nominative suffix allomorphy, which alternates between /i/ after consonants and /ka/ after vowels (see Paster (2006) and references cited there).

In previous work exploring the extent to which linguistic variation is part of a speaker's grammatical competence, such overlap in conditioning factors plays an important role. For instance, Guy & Boberg (1997) argue that shared conditioning factors between categorical and variable alternations is evidence in favor of treating variable alternations as part of a speaker's linguistic competence, rather than as arising from grammar-external performance phenomena. More specifically, they argue that variable coronal stop deletion, by virtue of being conditioned by the similarity of the coronal stop to the segment that precedes it, demonstrates sensitivity to the same similarity-avoidance effects that condition categorical alternations in the world's languages. Based on considerations of parsimony, they conclude that because categorical grammatical alternations and variable alternations can make reference to the same conditioning factors, they should be handled in the same cognitive system, viz. the grammar.

We will return to Guy and Boberg's claims later in this section. For the moment, we will focus on a different point: there are also cases in which variable alternations are conditioned by factors that **do not** condition categorical alternations. Variable auxiliary contraction in English, for instance, is strongly sensitive to the length of an auxiliary's noun phrase subject, with a gradient decline in likelihood of contraction with every word added to a subject (MacKenzie, 2012). Unlike the preceding-segment constraint on this same alternation, however, this conditioning is, to our knowledge, not shared by any categorical alternation: "grammars can't count" (e.g. Selkirk (1986) among others), and categorical alternations are not found to make reference to quantities greater than two. Similarly, the priming effects demonstrated to condition many sociolinguistic variables (see Section 3.1) are unattested in the categorical domain, and in fact violate the locality conditions that appear to apply to invariant grammatical alternations (see Embick 2010a, 2010b, 2013 for morpho(phono)logical proposals that relate to (4)–(5)).

Based on this observation, our argument is that some factors that condition variation are extragrammatical: that is, factors that condition variable alternations, but never categorical alternations. These types of factors must be represented **outside** of the grammar. To illustrate, a categorical version of the priming effect on variation might be something like this: imagine a language with two suffixal allomorphs for first person singular verb inflection. One allomorph is used after obstruent-final verbs, while the other is triggered by vowel-final verbs. Verbs ending in sonorant consonants, however, invariably take *whichever allomorph was used most recently by the speaker*. We contend that such an alternation, the putative categorical counterpart of [ɪŋ]~[ɪn] priming, does not and could not exist. While interactions across stretches of words are found with priming, they are not attested in categorical instances of allomorphy, for reasons of locality.

Similarly, to our knowledge, there is no invariant version of the subject length effect that conditions contraction: no case of allomorphy where, say, one allomorph surfaces after items of five syllables in length or less, while another surfaces after items of six syllables or longer. Priming and subject length, which operate robustly in the conditioning of variable linguistic alternations, do not operate on the conditioning of invariant ones. For convenience we call such conditioning factors "extragrammatical"; what should be understood by this term is "factors that condition variable but never categorical alternations."

Our proposal is that this asymmetry in conditioning derives from an architecture in which i-conditioning and p-conditioning factors are distinct in kind. Specifically, as we discussed in Section 2.2, i-conditioning is found when an element in a linguistic representation affects the probability that a given variant will be chosen. For this reason, i-conditioned instances of variation lend themselves to analysis in terms of *variable rules* (or related ways of introducing variation

into grammars). It is important to observe that variable rules are just rules whose probability of applying is not 1; that is to say, they are possible rules of grammar, and thus in principle could become categorical if their probability increased to 1. I-conditioning, then, is what we often see when a variable alternation is conditioned by the same factors that apply to a categorical one (for the qualification to "often" see below). By contrast, we conjecture that when a variable alternation is conditioned in ways that are not attested in categorical alternations, the conditioning is p-conditioning (or s-conditioning), and not i-conditioning. Now it is clear what is gained by maintaining a sharp distinction between the sources of p- and i-conditioning: not having such a distinction would amount to saying that there is a set of alternations in the grammar that all happen (i) to be variable, and (ii) to not be subject to the locality conditions that apply to invariant alternations. Rather than accept a single system with this kind of unfortunate coincidence, our view attributes the conditioning asymmetries to the fact that distinct underlying systems are involved in shaping surface variation.

Analyzing extragrammatical effects as p-conditioning is a first step in understanding a particular case of variation. The next step is to identify the particular type of p-conditioning that is at play: that is, it should be possible to identify a grammar-external cognitive system with properties that fit the effect, e.g. one of the p-conditioning factors discussed in Section 3. So, for example, in the case of English auxiliary contraction, MacKenzie (2012) argues that the effect of subject length may derive from constraints on production planning: specifically, long subjects are planned separately from the verb that follows them (Ferreira, 1991), such that contextual conditions on contraction (namely, host–auxiliary adjacency in a single planning buffer) are not always met. Similarly, in the case of priming, the cognitive basis of repetition in variant choice has been studied extensively (see Section 3.1), even though many questions remain about how priming effects are manifested in variation.

With respect to the scope of the argument outlined so far, there are three further points to be made.

First, we have spoken above of factors that affect variable but not categorical alternations, and that have their source in p-conditioning, and not in i-conditioning. However, the possibility also exists that such effects could be attributed to s-conditioning. For example, repeated instances of [ɪŋ] could result from a stretch of especially casual speech rather than from priming. It is for this reason that understanding the dynamic component of s-conditioning identified in Section 2.1 is essential for this research program. Ultimately, a comprehensive theory addressing the DVIQ must be able to identify the ways in which p- and s-conditioning interact to produce patterns of variable behavior in real time.

Second, our claim here is based on the idea that extragrammatical p-conditioned alternations are not possible categorical rules of grammar. While in the typical cases we have in mind this results in *variability* that is affected by p-conditioning, it is also true that there are apparently *categorical* effects in the p-domain. For example, the well-studied case of English center embedding (Miller & Chomsky, 1963, etc.) is of this type: after a certain level of embedding, sentences are categorically regarded as deviant (for a more detailed discussion of this effect see Lewis and Phillips (2015) and references cited there). Unlike what we find with e.g. priming, where the p-conditioning effect allows for grammatically non-local interactions, the memory effect implicated in center embedding restrains the use of certain structures derived by the grammar, making them essentially unusable due to memory considerations. For our purposes, what is important is that even though this effect is categorical, it is not a categorical rule of grammar; rather, it is categorical in the way that it is because of the properties of memory.

Finally, the view that we have developed here builds on ideas developed by Guy & Boberg (1997), but ultimately departs from their conclusions. Our primary point is that non-local conditioning is necessarily p-conditioning, and not grammar-internal. Guy and Boberg, on the other hand, argue that identity of conditioning factors for variable and categorical alternations requires the conditioning factors to be treated in a single cognitive system. This conclusion does not follow in our framework. Rather, conditions on variable alternations that are also observed in categorical alternations could in principle be i-conditioning **or** p-conditioning.

By way of illustration, consider the conditioning of coronal stop deletion. An unresolved question about this phenomenon is to what to attribute the following segment effect, the very robust observation that deletion is more likely when followed by a consonant-initial word and less likely when followed by a vowel-initial word. One explanation for this fact, which relies on a conceptualization of coronal stop deletion as at least partially a fast speech reduction process (as in e.g. Ernestus (2014)), is that consonant clusters may result in overlap and masking of the multiple closure gestures, whereas CV sequences are more likely to allow for full realization of the consonantal gesture. Alternatively, the following segment effect might be attributed to the abstract phonology, with the preference for CV syllables leading to resyllabification of a word-final coronal stop onto the first syllable of the following word, which in turn might bleed a phonological word-final deletion rule (as in e.g. Guy (1991b)). The following segment is grammatically local to the coronal stop regardless of what view we take on the deletion process. But in the former account, the following segment effect on coronal stop deletion is an example of p-conditioning, while in the latter account it is an example of i-conditioning.

The two explanations in the preceding paragraph are not mutually exclusive; they could both be at work to produce the surface effects of variable coronal stop

absence. If there is a phonological coronal stop deletion rule, it is reasonable to expect that the stops that do survive deletion will still be subject to general fast-speech lenition processes, meaning that some absent coronal stops were removed entirely in the phonology while others were eroded to the point of imperceptibility during the online process of speech production. This kind of "deconstruction" of variable alternations has been executed for several phenomena, including coronal stop deletion (Patrick, 1991; Fruehwald, 2012; Tamminga & Fruehwald, 2013; Tamminga, 2014), [ɪŋ]~[ɪn] variation (Labov, 2001; Tagliamonte, 2004; Tamminga, 2014), and auxiliary contraction (MacKenzie, 2013), among others. This work also finds an analog in Bermúdez-Otero's (2013) concept of "rules-cattering."

We will return to the theme of non-exclusivity in the next section, which examines further differences between i-conditioning and p-conditioning.

4.2 Universality and arbitrariness in the p- and i- domains

As discussed in Sections 2 and 3, p-conditioning effects derive from the workings of the (often domain-general) cognitive systems that are involved in language use. In contrast, i-conditioning is hypothesized to be grammar internal. An important consequence of this view is that i-conditioning can be language- or variety-specific, arbitrary, and therefore learned, whereas p-conditioning is expected to be universal and automatic. We expect to find p-conditioning across all similar phenomena in all varieties, exerting a constant or at least predictably-distributed effect on all individuals (although interactions with i- and s-conditioning could complicate this simple picture in practice). Such an expectation does not hold for i-conditioning.

Coronal stop deletion again offers a familiar example to illustrate these points. We classify as i-conditioning the effect of utterance-finality on deletion probability, which Guy (1980) shows goes in opposite directions in New York and Philadelphia English: an arbitrary difference across varieties that must be learned. Similarly, the observation from Tagliamonte & Temple (2005) that the past tense suffix affects deletion rates only in American English, but not in British English, is evidence that grammatical conditioning of deletion in American English results from i-conditioning.[9] In contrast, fast-speech reduction processes (as discussed in Section 4.1) should be essentially unavoidable without concerted effort; indeed, this intuition was the basis for the suggestion that even stops that survive a phonological deletion process should still be subject to lenition in production.

Cross-dialectal differences do not need to be wholly random to be compatible with an i-conditioning interpretation: it would not be surprising to find typological

9. See Tamminga & Fruehwald (2013) and Tamminga & MacKenzie (2014) for more on coronal stop deletion at different grammatical levels in American English.

patterns across varieties in i-conditioning that arise from e.g. p-conditioning tendencies that develop into i-conditioning diachronically. But we would also not be surprised to find exceptions or counterexamples to commonly-attested types of i-conditioning, whereas with p-conditioning such exceptions are not expected.[10]

On the general theme of universal versus language-particular effects, some care must be taken to specify what it means for a conditioning effect to be "universal." One outstanding question where p-conditioning is concerned is the question of how the influence of different cognitive systems found in all humans should be manifested in variable linguistic phenomena. Given that many cognitive systems at issue (e.g. those related to memory) are distributed differently across individuals (Ackerman, 1988), "universal" in this context does not mean completely invariant; rather, it means an individual's p-conditioning effects should fall within an expected distribution. So, for example, we might find that two different individuals show different effect sizes with respect to p-conditioning driven by working memory; the universality is that these two effects would be contained within a range of working memory sizes (Brewer & Unsworth, 2012).

In addition, we have already seen in a number of cases that p-conditioning may interact with other factors. Such interactions may result in apparent nonuniversality. The interaction of planning with the availability of adjacent i-conditioning elements discussed in Section 3.1 (with reference to English auxiliary contraction) is one such example; so is the possibility raised in Section 3.3 that priming magnitude might vary inversely with speaker baselines. Expanding on the latter point, we also note that other facts that generate social expectations, such as changes to the participants in a conversation or the physical situation of that conversation, might likewise evince surprisal-based priming modulations: an interaction between s-conditioning and p-conditioning. Thus, while priming effects may very well be "universal" (i.e. driven by mechanisms that are present in all language users), they may nonetheless vary dynamically with situational factors in ways that are now beginning to be explored quantitatively. This poses not just the problem of quantitatively disentangling two causes with similar surface effects, but rather the even more complex problem of doing this when the two causes also interact.

Finally, we have also already seen that surface variability may have more than one underlying source. From this idea, it is not a great conceptual leap to envision that individuals may differ in *which* of these underlying sources are present in their grammars. For example, consider the variable of [ð]-stopping, the use of a stop or flap in place of a voiced interdental fricative, which is typically a stigmatized

10. There are some important observations to be made considering what happens when p-conditioning interacts with the other conditioning types; see the end of this subsection.

working-class feature in the English-speaking communities where it is found. While the stop variant attracts this stigmatization, Labov (2001) points out that there exists a range of pronunciations between a pure fricative and an affricate that do not seem to carry the same social evaluation. Suppose that it turned out that everyone has a range of initial closure degree for interdental fricatives due to the temporal demands of gestural alignment, sometimes resulting in a completely non-continuant pronunciation; this is a kind of p-conditioning. Suppose in addition that some individuals have a separate *phonological* stop–fricative alternation that is represented in the grammar and thus operates in terms of binary features, not gradiently. In this scenario, we might very well expect different p-factors to interact differently with the two different sources of [ð]-variation. That is, if a p-conditioning factor interacted with the phonology, its effects would be manifested in individuals who have the "phonologized" version of the alternation; other p-conditioning factors such as speech rate might be expected to interact primarily with the gradient part of the alternation.[11] In this hypothetical scenario, the two subgroups in the population would show what might look like different reflexes of the influence of speech rate. Taken at face value this would be counterevidence to the predicted universality of p-factors, but would be no counterexample when the underlying differences in the linguistic representation of the variable processes are taken into account.

In much of the discussion in this section our goal has been to identify potential ways in which the effects of p-conditioning could be studied in the speech of individuals. In almost all of our examples, the important questions quickly become involved with issues from a number of different domains, concerning primarily (i) the nature of the different cognitive systems that drive p-conditioning effects; (ii) the ways in which p-conditioning might interact with grammatical representations, i-conditioning, and s-conditioning; and (iii) the possibility that different individuals might have different loci of variation (in terms of i- versus p-conditioning) for even relatively well-studied variables. We see these complications as a challenge to be faced by a new line of empirical research – both in (re-) examination of corpora, and, in particular, in the experimental domain, where many of the various complicating factors we have identified can be systematically controlled and manipulated.

4.3 Grammar and use

The idea that i-conditioning and p-conditioning are architecturally distinct speaks directly to questions about the relationship between *grammar* and *language use*

11. On the differential patterning of speech rate with different types of variable phenomena, see Coetzee & Pater (2011).

that are central to the study of language. In particular, a distinction between p-conditioning and i-conditioning is straightforwardly compatible with an architecture in which grammar is distinguished from use, with p-conditioning being one instantiation of what happens when speakers use grammars in real time.[12]

It is important to explain exactly what is at issue in the grammar versus use discussion, since questions about this have many different dimensions, and are discussed from distinct theoretical positions with potentially inconsistent terminologies. By *grammar*, we mean a formal system of representations and computations that make one set of linguistic objects *grammatical* (those that are derived by the system, in a generative theory), and another set *ungrammatical* (generatively, those objects that are not derived). The nature of the representations and rules (or their equivalent) of the grammar have been a central concern of a large part of linguistic theory for the past sixty years or so. By *use*, we mean a system that employs grammars in real time to produce and comprehend utterances. In terms of this distinction, p-conditioning derives from use, whereas i-conditioning can (at least in principle) be attributed to variability in the grammar itself.

One fruitful way of understanding the relation between grammar and use is in terms of the distinctions made in Marr (1982), who describes complex neurocognitive capacities like language in terms of three distinct levels of analysis:

(6) Marr's levels of analysis

a. Computational Theory: What is the goal of the computation, why is it appropriate, and what is the logic of the strategy by which it can be carried out?

b. Representation and Algorithm: How can this computational theory be implemented? In particular, what is the representation for the input and output, and what is the algorithm for the transformation?

c. Hardware Implementation: How can the representation and algorithm be realized physically?

In these terms, the typical approach within theoretical linguistics is to construct theories at the computational level: theories that specify what is grammatical and

12. Our distinction between grammar and language use picks up on a recurrent theme in the literature and could connect to many prior such distinctions (for a perspective close to the one in this paper see Embick (2008)). For example, the distinctions between *competence* and *performance* (Chomsky, 1965) and between *I-Language* and *E-Language* (Chomsky, 1986) are directly relevant to our concerns. The first distinction corresponds in certain important ways to the grammar/use distinction as we envision it; the latter has important connections with our central claim that variation must be understood in relation to individuals' grammars (and other cognitive systems), not just at the community level. We leave a detailed examination of these connections for another occasion.

what is not, in ways that abstract away from real-time implementation, memory limitations, errors in performance, and so on. On the other hand, psycholinguistic theories, which are directed at how language is produced and comprehended in real time, are directed at the Representation and Algorithm level of analysis. (For discussion of (psycho)linguistics in these terms, see Lewis & Phillips (2015), and for connections with the neurobiological domain, see Poeppel & Embick, 2005 and Embick & Poeppel, 2015).

In Sections 4.1 and 4.2 we have advanced two hypotheses under the general idea that p-conditioning and i-conditioning are distinct: first, that conditioning is asymmetrical, such that certain effects on alternations must be p-conditioning and not i-conditioning; and second, that p-conditioning is universal while i-conditioning is arbitrary. If these claims are correct, they would follow naturally from a theory in which grammar and use are distinct, but would require puzzling stipulations in a theory that eschews this distinction. The following two paragraphs elaborate briefly.

Asymmetries in conditioning (4.1): In a theory in which grammar and use are distinct, it is easy to explain why certain (non-local) alternations (like the ones influenced by priming, for example) must necessarily be variable and p-conditioned: p-conditioning arises from the properties of the cognitive systems involved in the use of grammars. A theory that collapses grammar and use, on the other hand, would be hard-pressed to explain why alternations that are grammatically non-local should necessarily be variable (and show properties of the systems that produce p-conditioning).

Arbitrary i-conditioning versus universal p-conditioning (4.2): In a theory that separates grammar and use, this difference follows naturally as well: p-conditioning derives from universally shared cognitive systems that are involved in the use of grammars, whereas i-conditioning is by its nature grammatical, and thus potentially different for different languages and speech communities. A division of this type would be difficult to capture in a theory that denies the clear distinction between the cognitive systems of grammar and use.

In summary, our claim is that important facts about the conditioning of alternations follow naturally in an architecture in which grammar and use are distinct. This is, of course, not to say that a framework with no such distinction cannot say something about the kinds of facts we have discussed above; rather, the question is whether a usage-based view is able to adequately explain why the factors that shape the use of linguistic alternations appear to be different in kind.

We are aware that distinguishing between grammar and use is controversial, particularly so in the more experimental and quantitative areas of language research. Our goal here has been to suggest that progress can be made in understanding the dynamics of variation in individuals by making such a distinction,

because of the predictions that we have outlined in this section. We hope that at a minimum, connecting the quantitative details of variation with the larger issues of grammar versus use in this way lays the foundation for more sustained theoretical evaluation of these (and other) architectural matters.

5. Conclusion

The first sections of this paper outline the Dynamics of Variation in Individuals Question and propose a framework in which this question and others related to it can be explored. The framework we advance distinguishes three distinct types of conditioning factors that affect variable processes in real time: i-conditioning, s-conditioning, and p-conditioning. Much of our discussion in this paper has concentrated on p-conditioning and its relationship to i-conditioning.

With respect to p-conditioning, Sections 3 and 4 develop two main themes. First, Section 3 connects the operation of domain-general cognitive factors to their effects on the production of variation in real time, as evidenced in sequences of variants. Section 3.1 outlines a number of factors that fall under the umbrella of p-conditioning, such as production planning and priming. Section 3.2 proposes that the impact of such factors is most naturally detected in structured variation within temporally-ordered sequences of variable tokens, and suggests dynamism and microcovariation as two avenues for quantitative inquiry into such sequences. Section 3.3 juxtaposes our suggestions with the standard practice in variationist sociolinguistics and argues that the two approaches must be taken together as parts of an integrated theory of linguistic variation.

Section 4 develops aspects of our approach that connect with broader architectural issues in the study of language. Section 4.1 explores the possibility that while i-conditioning and p-conditioning both may involve reference to linguistic objects in the context of a variable, p-conditioning allows long-distance and other types of interactions that are not possible for categorical rules of grammar. In Section 4.2, we examine another way in which i-conditioning and p-conditioning differ: while p-conditioning effects are hypothesized to be cognitively universal, and show the same effects (within a particular distribution) across all speakers and languages, i-conditioning effects are potentially parochial or language-specific. If correct, these points (and others related to them) follow naturally in a theory in which i-conditioning and p-conditioning are architecturally distinct. In turn, this distinction is, in our view, a manifestation of the cognitive separation between grammar and language use. The specific hypotheses that can be derived and tested from Sections 4.1 and 4.2 thus have important consequences for understanding

basic architectural questions about grammar, language, and the cognitive systems that are involved in language use.

In many parts of the discussion above, we have described research surrounding the DVIQ as asking different questions from those posed in quantitative studies of variation at the community level, or as building on that work (since, for example, we need to know an expected "baseline" type of s-conditioning for an individual speaker before we can examine questions about p- and i-conditioning in real time). Clearly a large part of the research program outlined here is intended to complement work in quantitative sociolinguistics as typically practiced. However, there are also some indications that, in addition to asking a new set of questions, research on the dynamics of individuals can shed light on community-level findings that would otherwise be mysterious. For example, the effect of subject length on contraction rates, easily detected at the group level, might find explanation in the role of general production planning within the speech of individuals. We believe that looking seriously at language use in individuals will yield many more insights into why community-level variation is structured as it is.

Many of the discussions in this paper are preliminary, and in many cases we have needed to discuss possible findings abstractly, without specific illustrations. In addition, some crucial questions concerning how the different types of conditioning interact with each other have only been outlined in their most skeletal form, even though this type of question is of crucial importance when any particular case-study is examined in depth. Our hope is that by outlining a framework that identifies the potential types of conditioning to be investigated – and by showing how the specific questions addressed here intersect with questions of much more general interest – we have been able to provide a foundation for further work in this area.

References

Abramowicz, Lukasz. 2007. Sociolinguistics meets Exemplar Theory: Frequency and recency effects in (ing). *University of Pennsylvania Working Papers in Linguistics* 13. 27–37.

Ackerman, Phillip L. 1988. Determinants of individual differences during skill acquisition: Cognitive abilities and information processing. *Journal of Experimental Psychology* 117(3). 288–318.

Allum, Paul H. & Linda Wheeldon. 2007. Planning scope in spoken sentence production: The role of grammatical units. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 33(4). 791–810.

Babel, Molly. 2012. Evidence for phonetic and social selectivity in spontaneous phonetic imitation. *Journal of Phonetics* 40. 177–189.

Baddeley, Alan. 1986. *Working memory*. Oxford: Oxford University Press.

Bayley, Robert. 2013. The quantitative paradigm. In J.K. Chambers & Natalie Schilling (eds.), *The handbook of language variation and change*, 85–107. Malden, MA: Blackwell.

Bermúdez-Otero, Ricardo. 2013. Amphichronic explanation and the life cycle of phonological processes. In Patrick Honeybone & Joseph Salmons (eds.), *The Oxford handbook of historical phonology*, Oxford University Press.

Bock, Kathryn. 1986. Syntactic persistence in language production. *Cognitive Psychology* 18. 355–387.

Bresnan, Joan & Tatiana Nikitina. 2009. The gradience of the dative alternation. In Linda Uyechi & Lian-Hee Wee (eds.), *Reality exploration and discovery: Pattern interaction in language and life*, 161–184. Stanford, CA: CSLI Publications.

Brewer, Gene A. & Nash Unsworth. 2012. Individual differences in the effects of retrieval from long-term memory. *Journal of Memory and Language* 66. 407–415.

Cameron, Richard. 1992. *Pronominal and null subject variation in Spanish: Constraints, dialects, and functional compensation*. University of Pennsylvania dissertation.

Cameron, Richard & Nydia Flores-Ferrán. 2004. Perseveration of subject expression across regional dialects of Spanish. *Spanish in Context* 1(1). 41–65.

Campbell-Kibler, Kathryn. 2010. New directions in sociolinguistic cognition. *University of Pennsylvania Working Papers in Linguistics* 15(2). 31–39.

Cedergren, Henrietta & David Sankoff. 1974. Variable rules: Performance as a statistical reflection of competence. *Language* 50(2). 333–355.

Chomsky, Noam. 1965. *Aspects of the theory of syntax*. Cambridge, MA: The MIT Press.

Chomsky, Noam. 1986. *Knowledge of language: Its nature, origin, and use*. Greenwood Publishing Group.

Clark, Herbert H. & Thomas Wasow. 1998. Repeating words in spontaneous speech. *Cognitive Psychology* 37(3). 201–242.

Clark, Lynn & Graeme Trousdale. 2009. Exploring the role of token frequency in phonological change: Evidence from TH-fronting in east-central Scotland. *English Language and Linguistics* 13(1). 33–55.

Clark, Lynn & Liam Walsh. 2014. Recency effects on word-medial /t/ in New Zealand English: initial observations. Poster presented at the 15th Australasian International Speech Science and Technology Conference, Christchurch, New Zealand.

Coetzee, Andries & Joe Pater. 2011. The place of variation in phonological theory. In John A. Goldsmith, Jason Riggle, & Alan C. L. Yu (eds.), *The handbook of phonological theory,* 2nd edn, 401–434. Malden, MA: Blackwell.

Daneman, Meredyth. 1991. Working memory as a predictor of verbal fluency. *Journal of Psycholinguistic Research* 20(6). 445–464.

Drager, Katie & Jennifer Hay. 2012. Exploiting random intercepts: Two case studies in sociophonetics. *Language Variation and Change* 24. 59–78.

Eckert, Penelope. 2012. Three waves of variation study: The emergence of meaning in the study of sociolinguistic variation. *Annual Review of Anthropology* 41. 87–100.

Ellis, Lucy & William J. Hardcastle. 2002. Categorical and gradient properties of assimilation in alveolar to velar sequences: Evidence from EPG and EMA data. *Journal of Phonetics* 30(3). 373–396.

Embick, David. 2008. Variation and morphosyntactic theory: Competition fractionated. *Language and Linguistics Compass* 2(1). 59–78.

Embick, David. 2010a. *Localism versus globalism in morphology and phonology*. Cambridge, MA: The MIT Press.

Embick, David. 2010b. Stem alternations and stem distributions. Ms., University of Pennsylvania; http://www.ling.upenn.edu/~embick/stem-ms-10.pdf.

Embick, David. 2013. Morphemes and morphophonological loci. In Alec Marantz & Ora Matushansky (eds.), *Distributed morphology today: Morphemes for Morris Halle*, 151–166. Cambridge, MA: MIT Press.

Embick, David & David Poeppel. 2015. Towards a computational(ist) neurobiology of language: *Correlational*, *integrated*, and *explanatory* neurolinguistics. *Language, Cognition, and Neuroscience* 30(4). 357–366.

Ernestus, Mirjam. 2014. Acoustic reduction and the roles of abstractions and exemplars in speech processing. *Lingua* 142. 27–41.

Farnetani, Edda & Daniel Recasens. 2010. Coarticulation and connected speech processes. In William J. Hardcastle, John Laver, & Fiona E. Gibbon (eds.), *The handbook of phonetic sciences*, 316–352. Malden, MA: Blackwell.

Farrar, Kimberly & Mari C. Jones. 2002. Introduction. In Mari C. Jones & Edith Esch (eds.), *Language change*, 1–18. Mouton de Gruyter.

Fasold, Ralph W. 1991. The quiet demise of variable rules. *American Speech* 66(1). 3–21.

Ferreira, Fernanda. 1991. Effects of length and syntactic complexity on initiation times for prepared utterances. *Journal of Memory and Language* 30(2). 210- 233.

Fruehwald, Josef. 2012. Redevelopment of a morphological class. *University of Pennsylvania Working Papers in Linguistics* 18(1). 77–86.

German, J.S., K. Carlson & J.B. Pierrehumbert. 2013. Reassignment of consonant allophones in rapid dialect acquisition. *Journal of Phonetics* 41(3). 228–248.

Ginsberg, Daniel. 2012. A computational approach to conversational style. Paper presented at NWAV 41.

Gries, Stefan Th. 2005. Syntactic priming: A corpus-based approach. *Journal of Psycholinguistic Research* 34(4). 365–399.

Guy, Gregory R. 1980. Variation in the group and the individual: The case of final stop deletion. In William Labov (ed.), *Locating language in time and space*, chap. 1, 1–36. New York: Academic Press.

Guy, Gregory R. 1991a. Contextual conditioning in variable lexical phonology. *Language Variation and Change* 3. 223–239.

Guy, Gregory R. 1991b. Explanation in variable phonology: An exponential model of morphological constraints. *Language Variation and Change* 3. 1–22.

Guy, Gregory R. & Charles Boberg. 1997. Inherent variability and the obligatory contour principle. *Language Variation and Change* 9. 149–164.

Hartsuiker, Robert J. & Pashiera N. Barkhuysen. 2006. Language production and working memory: The case of subject-verb agreement. *Language and Cognitive Processes* 21(1–3). 181–204.

Hay, Jennifer & Joan Bresnan. 2006. Spoken syntax: The phonetics of giving a hand in New Zealand English. *The Linguistic Review* 23(3). 321–349.

Hoit, Jeannette D., Nancy Pearl Solomon & Thomas J. Hixon. 1993. Effect of lung volume on voice onset time (VOT). *Journal of Speech, Language, and Hearing Research* 36(3). 516–520.

Hoole, Philip, Noel Nguyen-Trong & William Hardcastle. 1993. A comparative investigation of coarticulation in fricatives: Electropalatographic, electromagnetic, and acoustic data. *Language and Speech* 36(2–3). 235–260.

Houston, Ann. 1985. *Continuity and change in English morphology: The variable (ING)*. University of Pennsylvania dissertation.

Jaeger, T. Florian & Neal E. Snider. 2013. Alignment as a consequence of expectation adaptation: Syntactic priming is affected by the prime's prediction error given both prior and recent experience. *Cognition* 127. 57–83.

Kemper, Susan, Ruth E. Herman & Cindy H. T. Lian. 2003. The costs of doing two things at once for young and older adults: Talking while walking, finger tapping, and ignoring speech of noise. *Psychology and Aging* 18(2). 181–192.

Kemper, Susan & Aaron Sumner. 2001. The structure of verbal abilities in young and older adults. *Psychology and Aging* 16(2). 312–322.

King, Ruth, France Martineau & Raymond Mougeon. 2011. The interplay of internal and external factors in grammatical change: First person plural pronouns in French. *Language* 87(3). 470–509.

Kiparsky, Paul. 1972. Explanation in phonology. In Stanley Peters (ed.), *Goals of linguistic theory*, 189–227. Cinnaminson, NJ: Prentice-Hall.

Kutik, Elanah J., William E. Cooper & Suzanne Boyce. 1983. Declination of fundamental frequency in speakers production of parenthetical and main clauses. *The Journal of the Acoustical Society of America* 73(5). 1731–1738.

Labov, William. 1969. Contraction, deletion, and inherent variability of the English copula. *Language* 45(4). 715–762.

Labov, William. 1979. Locating the frontier between social and psychological factors in linguistic variation. In Charles J. Fillmore, Daniel Kempler, & William S.-Y. Yang (eds.), *Individual differences in language ability and language behavior*, chap. 18, 327–340. Academic Press.

Labov, William. 1989. The child as linguistic historian. *Language Variation and Change* 1. 85–97.

Labov, William. 2001. The anatomy of style-shifting. In Penelope Eckert & John R. Rickford (eds.), *Style and sociolinguistic variation*, chap. 5, 85–108. Cambridge University Press.

Labov, William. 2006[1966]. *The social stratification of English in New York City*. Cambridge University Press.

Labov, William. 2012. What is to be learned: The community as the focus of social cognition. *Review of Cognitive Linguistics* 10(2). 265–293.

Labov, William. 2014. The sociophonetic orientation of the language learner. In Chiara Celata & Silvia Calamai (eds.), *Advances in sociophonetics*, 17–29. Philadelphia, PA: John Benjamins Publishing Company.

Labov, William, Sharon Ash & Charles Boberg. 2006. *The atlas of North American English: Phonetics, phonology and sound change*. Berlin: Mouton de Gruyter.

Labov, William, Sharon Ash, Maya Ravindranath, Tracey Weldon, Maciej Baranowski & Naomi Nagy. 2011. Properties of the sociolinguistic monitor. *Journal of Sociolinguistics* 15(4). 431–463.

Labov, William, Paul Cohen, Clarence Robins & John Lewis. 1968. A study of the non-standard English of Negro and Puerto Rican speakers in New York City. Final report, Cooperative Research Project 3288, vols. I and II.

Levelt, William J. M. 1989. *Speaking: From intention to articulation*. Cambridge, MA: The MIT Press.

Lewis, Shevaun & Colin Phillips. 2015. Aligning grammatical theories and language processing models. *Journal of Psycholinguistic Reasearch* 44. 27–46.

Liberman, Alvin M., Franklin S. Cooper, Donald P. Shankweiler & Michael Studdert-Kennedy. 1967. Perception of the speech code. *Psychological Review* 74(6). 431–461.

MacKenzie, Laurel. 2012. *Locating variation above the phonology*. University of Pennsylvania dissertation.

MacKenzie, Laurel. 2013. Variation in English auxiliary realization: A new take on contraction. *Language Variation and Change* 25(1). 17–41.

MacKenzie, Laurel. 2015a. Opacity over time: Charting the paths of fricative voicing in English plurals. Paper presented at The Second Edinburgh Symposium on Historical Phonology, University of Edinburgh, December 4.

MacKenzie, Laurel. 2015b. Production planning effects on variable contraction in English. Paper presented at NWAV 44, University of Toronto, October 23.

Manuel, Sharon Y. 1990. The role of contrast in limiting vowel-to-vowel coarticulation in different languages. *The Journal of the Acoustical Society of America* 88(3). 1286–1298.

Marr, David. 1982. *Vision: A computational investigation into the human representation and processing of visual information*. Cambridge, MA: The MIT Press.

McFarland, David H. 2001. Respiratory markers of conversational interaction. *Journal of Speech, Language, and Hearing Research* 44(1). 128–143.

Miller, G.A. & N. Chomsky. 1963. Finitary models of language users. *Handbook of mathematical psychology* 2. 419–491.

Miller, George A. 1956. The magical number seven, plus or minus two: Some limits on our capacity for processing information. *The Psychological Review* 63(2). 81–97.

Namy, Laura L., Lynne C. Nygaard & Denise Sauerteig. 2002. Gender differences in vocal accommodation: The role of perception. *Journal of Language and Social Psychology* 21(4). 422–432.

Oushiro, Livia. 2016. Social and structural constraints in lectal cohesion. *Lingua* 172–173: 116–130.

Oushiro, Livia & Gregory R. Guy. 2015. The effect of salience on co-variation in Brazilian Portuguese. *University of Pennsylvania Working Papers in Linguistics* 21(2).

Pardo, Jennifer S. 2006. On phonetic convergence during conversational interaction. *Journal of the Acoustical Society of America* 119(4). 2382–2393.

Pardo, Jennifer S., Kelly Jordan, Rolliene Mallari, Caitlin Scanlon & Eva Lewandowski. 2013. Phonetic convergence in shadowed speech: The relation between acoustic and perceptual measures. *Journal of Memory and Language* 69(3). 183–195.

Pardo, J.S., R. Gibbons, A. Suppes & R.M. Krauss. 2012. Phonetic convergence in college roommates. *Journal of Phonetics* 40(1). 190–197.

Paster, Mary. 2006. *Phonological conditions on affixation*. University of California at Berkeley dissertation.

Patrick, Peter L. 1991. Creoles at the intersection of variable processes: (td)-deletion and past-marking in the Jamaican mesolect. *Language Variation and Change* 3(2). 171–189.

Pickering, Martin J. & Victor S. Ferreira. 2008. Structural priming: A critical review. *Psycholinguistic Bulletin* 134(3). 427–459.

Pickering, Martin J. & Simon Garrod. 2004. Toward a mechanistic psychology of dialogue. *Behavioral and Brain Sciences* 27. 169–226.

Pierrehumbert, Janet B. 2002. Word-specific phonetics. In *Laboratory phonology VII*, 101–139. Berlin: Mouton de Gruyter.

Podesva, Robert J. 2007. Three sources of stylistic meaning. In *Proceedings of SALSA 2007*.

Poeppel, David & David Embick. 2005. Defining the relation between linguistics and neuroscience. In Ann Cutler (ed.), *Twenty-first century psycholinguistics: Four cornerstones*, Lawrence Erlbaum.

Poplack, Shana. 1980. Deletion and disambiguation in Puerto Rican Spanish. *Language* 56(2). 371–385.

Poplack, Shana. 1984. Variable concord and sentential plural marking in Puerto Rican Spanish. *Hispanic Review* 52(2). 205–222.

Power, M.J. 1985. Sentence production and working memory. *The Quarterly Journal of Experimental Psychology* 37(3). 367–385.

Preston, Dennis R. 2004. Three kinds of sociolinguistics: A psycholinguistic perspective. In Carmen Fought (ed.), *Sociolinguistic variation: Critical reflections*, 140–158. Oxford University Press.

Saito, Satoru & Alan D. Baddeley. 2004. Irrelevant sound disrupts speech production: Exploring the relationship between short-term memory and experimentally induced slips of the tongue. *The Quarterly Journal of Experimental Psychology Section A* 57(7). 1309–1340.

Sankoff, D. & S. Laberge. 1978. Statistical dependence among successive occurrences of a variable in discourse. In David Sankoff (ed.), *Linguistic variation: Models and methods*, chap. 8, 119–126. Academic Press.

Scarborough, Rebecca. 2013. Neighborhood-conditioned patterns in phonetic detail: Relating coarticulation and hyperarticulation. *Journal of Phonetics* 41(6). 491–508.

Scherre, M.M.P. 2001. Phrase-level parallelism effect on noun phrase number agreement. *Language Variation and Change* 13(01). 91–107.

Scherre, M.M.P. & A.J. Naro. 1991. Marking in discourse: "Birds of a feather". *Language Variation and Change* 3. 23–32.

Selkirk, Elisabeth O. 1986. On derived domains in sentence phonology. *Phonology Yearbook* 3. 371–405.

Sharma, Devyani & Ben Rampton. 2011. Lectal focusing in interaction: A new methodology for the study of superdiverse speech. *Queen Mary's Occasional Papers Advancing Linguistics* 2. 1–22.

Slevc, L. Robert. 2011. Saying what's on your mind: Working memory effects on sentence production. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 37(6). 1503–1514.

Squires, Lauren. 2013. It don't go both ways: Limited bidirectionality in sociolinguistic perception. *Journal of Sociolinguistics* 17(2). 200–237.

Stuart-Smith, Jane, Gwilym Pryce, Claire Timmins & Barrie Gunter. 2013. Television can also be a factor in language change: Evidence from an urban dialect. *Language* 89(3). 501–536.

Szmrecsanyi, Benedikt. 2006. *Morphosyntactic persistence in spoken English: A corpus study at the intersection of variationist sociolinguistics, psycholinguistics, and discourse analysis*. Mouton de Gruyter.

Tagliamonte, Sali. 2004. Someth[in]'s go[ing] on!: Variable *ing* at ground zero. In G. Eklund S. Fidell, L. H. Hansen, A. Karstadt, B. Nordberg, E. Sundergren, M. Thelander, B.-L. Gunnarsson, & L. Bergström (ed.), *Language variation in Europe: Papers from the Second International Conference on Language Variation in Europe, ICLAVE 2*, 390–403. Department of Scandinavian Languages, Uppsala University.

Tagliamonte, Sali & Rosalind Temple. 2005. New perspectives on an ol' variable: (t,d) in British English. *Language Variation and Change* 17. 281–302.

Tamminga, Meredith. 2014. *Persistence in the production of linguistic variation*. University of Pennsylvania dissertation.

Tamminga, Meredith. 2015. Modulation of the following segment effect on coronal stop deletion. Paper presented at NWAV 44, University of Toronto, October 23.

Tamminga, Meredith & Josef Fruehwald. 2013. Deconstructing TD deletion. Paper presented at NWAV 42, University of Pittsburgh/Carnegie Mellon University, October 17–20.

Tamminga, Meredith & Laurel MacKenzie. 2014. Elaborating extragrammatical effects on variation. Paper presented at the Linguistics Society of America annual meeting, Minneapolis.

Tamminga, Meredith, Christopher Ahern & Aaron Ecay. 2016. Generalized additive mixed models for intraspeaker variation. *Linguistics vanguard* 2(s1): 33–41.

Tanner, James, Morgan Sonderegger & Michael Wagner. 2015. Production planning and coronal stop deletion in spontaneous speech. Paper presented at the International Congress of Phonetic Sciences, Glasgow, UK, August 9.

Tilsen, Sam. 2012. Utterance preparation and stress clash: Planning prosodic alternations. In Suzanne Fuchs, Melanie Weirich, Daniel Pape, & Pascal Perrier (eds.), *Speech production and perception vol. 1: Speech planning and dynamics*, 119–156. Frankfurt: Peter Lang.

Torgerson, Eivind & Paul Kerswill. 2004. Internal and external motivation in phonetic change: Dialect levelling outcomes for an English vowel shift. *Journal of Sociolinguistics* 8(1). 23–53.

Travis, Catherine E. 2007. Genre effects on subject expression in Spanish: Priming in narrative and conversation. *Language Variation and Change* 19. 101–135.

Wagner, Michael. 2011. Production planning constraints on allomorphy. *Canadian Acoustics* 39(3).

Wagner, Suzanne Evans. 2012. Real-time evidence for age-grad(ing) in late adolescence. *Language Variation and Change* 24. 179–202.

Weiner, E. Judith & William Labov. 1983. Constraints on the agentless passive. *Journal of Linguistics* 19(1). 29–58.

Weinreich, Uriel, William Labov & Marvin I. Herzog. 1968. Empirical foundations for a theory of language change. In W.P. Lehmann & Yakov Malkiel (eds.), *Directions for historical linguistics: A symposium*, 97–195. Austin and London: University of Texas Press.

Zellner, Brigitte. 1994. Pauses and the temporal structure of speech. In É ric Keller (ed.), *Fundamentals of speech synthesis and speech recognition*, 41–62. Chichester: Wiley-Blackwell.

Zellou, Georgia, Delphine Dahan & David Embick. 2016. Imitation of coarticulatory vowel nasality across words and time. Ms., U.C. Davis and University of Pennsylvania.

Zsiga, Elizabeth C. 2000. Phonetic alignment constraints: Consonant overlap and palatalization in English and Russian. *Journal of Phonetics* 28(1). 69–102.

Index of Languages and Varieties

Subject index

This volume explores how the patterning of surface variation can shed light on the grammatical representation of variable phenomena. The authors explore variation in several domains, addressing intra- and inter-dialectal patterns, using diverse sources of data including corpora of naturally-occurring speech and judgment studies, and drawing on lesser-studied varieties of familiar languages, such as Northwest British Englishes and varieties of Canadian French. Ultimately, the contributions serve to expand our understanding of the nature of the mental representations and abstract processes required to support variation in language.

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