

Complexity as L2-difficulty: implications for syntactic change

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Abstract: Recent work has cast doubt on the idea that all languages are equally complex; however, the notion of syntactic complexity remains underexplored. Taking complexity to equate to difficulty of acquisition for late L2 acquirers, we propose an operationalization of syntactic complexity in terms of uninterpretable features. Trudgill's sociolinguistic typology predicts that sociohistorical situations involving substantial late L2 acquisition should be conducive to simplification, i.e. loss of such features. We sketch a programme for investigating this prediction. In particular, we suggest that the loss of bipartite negation in the history of Low German and other languages indicates that it may be on the right track.

Keywords: sociolinguistic typology, syntactic change, L2 acquisition, simplification, Interpretability Hypothesis

1. Context and big picture

1.1. Typology, complexity, and language change

The traditional notion that all languages are equally complex, as expressed in Hockett (1958), has recently come under attack from a number of quarters. Notably, in his seminal work *Sociolinguistic Typology*, Trudgill (2011) has suggested that different types of sociolinguistic situation lead to differential simplification and complexification: for instance, long-term co-territorial language contact is predicted to lead to additive complexification, whereas short-term contact involving extensive adult second-language (L2) use is predicted to lead to simplification. An example of the latter is Nubi, an Arabic-derived variety which has undergone a radical reduction in its verbal morphology, making no person, number or gender distinctions on the verb, unlike most other Arabic varieties. Nubi emerged through massive language contact between speakers of mutually unintelligible languages (Owens 2001; Trudgill 2011: 44–45). Additive complexification can be seen in another Arabic variety, Maltese, which has developed differential object marking under long-term influence from southern Romance languages such as Spanish, (dialectal) Portuguese, Sardinian, or (Old) Sicilian (Heine & Kuteva 2005; Trudgill 2011: 47).

Trudgill's work sits at the heart of a rapidly-growing literature on the relationship between language structure, language complexity, and the sociohistorical circumstances under which those languages develop. Languages characterized by morphological simplicity include major world lingua francas such as English and Mandarin Chinese, spoken in what Wray & Grace (2007, following Thurston 1989) and Lupyan & Dale (2010) label the *exoteric* (as opposed to *esoteric*) niche: these languages are more likely to be used with strangers for outward-facing communication, and more likely to be learned and used by adult non-native speakers. Further work testing and refining the predictions of the Trudgill approach includes the papers in Miestamo, Sinnemäki & Karlsson (2008), Sampson, Gil & Trudgill (2009), and Newmeyer & Preston (2014), among many others.

Trudgill considers only phonology and morphology, for which he provides an intuitive but informal definition of simplification based on empirical work on pidgins and creoles; syntax is not considered in his book, as he admits (2011: 16). By and large, the subsequent literature aiming to test the 'Trudgill conjecture' has shared his empirical focus on phonology and (to a greater extent) morphology, leaving syntax aside (with a few exceptions discussed below). This is the primary lacuna that this paper aims to address.

The general approach to variation taken by Trudgill is consistent with the consensus view in syntactic theorizing, that speaker-hearer grammars result from the interaction of no more than a handful of combinatorial mechanisms that are highly general in their application, on the one hand, and a substantial inventory of language-specific features and items on the other (see Mathieu & Truswell 2017). This general architecture is shared by at least Head-driven Phrase Structure Grammar (HPSG; Pollard & Sag 1994: 2), Combinatory Categorical Grammar (CCG; Steedman 2000), various flavours of Construction Grammar (e.g. Traugott & Trousdale 2013), and most syntactic theories developed within the framework of the Minimalist Program. While these few general mechanisms are by hypothesis universals of human cognition (regardless of whether they are domain-specific; cf. Trotzke & Zwart 2014), the feature configurations of individual grammars are idiosyncratic, and subject to variation and change. This has led some researchers working under Minimalist assumptions to understand syntactic change as simply (a flavour of) lexical change: see Hale (1998) and Biberauer & Walkden (2015) for discussion. Crucially, under this approach, nothing requires that the language-specific inventories of different grammars be equally complex, and hence it is not necessary to accept Hockett's (1958: 180–181) thesis that 'the total grammatical complexity of any language, counting both morphology and syntax, is about the same as any other' (see also Biberauer, Holmberg, Roberts & Sheehan 2014, who reach the same conclusion). Despite this, to date there has been little research in historical syntax on the relation between L1 and L2 acquisition and syntactic change (Meisel 2011).

1.2. Defining syntactic complexity

Syntactic complexity is currently a hot topic, though the exact definition of complexity varies from researcher to researcher. There are evidently many different dimensions along which complexity can be conceived: for instance, processing complexity (Hawkins 2004), node counts (Szmrecsányi 2004), complexity of syntactic representations (Roberts & Roussou 2003, van Gelderen 2011), and information-theoretic measures such as entropy reduction or surprisal (Hale 2016). For the purposes of this paper, we follow Trudgill (2011) in taking the relevant notion of complexity to be *L2-difficulty* in the sense of Dahl (2004: 294), i.e. how difficult a syntactic property is for a second-language (post-critical-period) acquirer to learn.¹ It is widely agreed that ‘whatever we learn after the period of normal first-language acquisition, we learn in a different way’ (Anderson & Lightfoot 2002: 209). In general terms, then, we adopt the Fundamental Difference Hypothesis of Bley-Vroman (1989).

The most well known measure of general complexity is Kolmogorov complexity (Kolmogorov 1965), applied to linguistic corpora by Juola (1998, 2008) and in the context of L2 acquisition by Ehret & Szmrecsányi (2016, 2019). As a measure of description length, when applied to syntax, Kolmogorov complexity has the ‘counterintuitive’ (Ehret & Szmrecsányi 2019: 27) consequence that syntactic complexity equates to word order rigidity. Ehret & Szmrecsányi (2019) in fact find that syntactic complexity in this sense is *lower* among more advanced L2 learners as well as L1 learners, in stark contrast to morphological complexity, with which it is negatively correlated (2016a: 29, 34). This suggests that Kolmogorov complexity, despite its advantages (e.g. ease of operationalization and relative theory-neutrality), is not a good candidate for a measure of L2-difficulty in the Trudgill sense. Moreover, unlike morphological complexity as defined by Trudgill, Kolmogorov complexity as operationalized by these authors is a measure of text complexity, or utterance complexity, rather than grammar complexity: the same author may produce different texts (for instance, in different genres) with greater or lesser degrees of complexity. Ehret & Szmrecsányi acknowledge (2019: 28) that their approach differs from the metrics proposed in the literature on L2 acquisition. These considerations suggest that a different measure of syntactic L2-difficulty is needed for our purposes, for which we will turn to the L2 acquisition literature.

1.3. Aims and methods

Our aim in this paper is to develop a theory of variation and change in syntactic complexity, building on the Trudgill conjecture and on the general architectural assumptions of Minimalist syntax (e.g. Chomsky 1995, 2008). In particular, we aim to shed light on the following questions:

¹ We return to the exact definition of L2-difficulty, and the role of the L1, in section 2.

- I. **Which particular syntactic features**, constructions, or properties meet different fates in different sociolinguistic situations, for instance, long-term co-territorial contact vs. short-term intensive contact involving adult second-language learners?
- II. How can we make sense of these developments in terms of what is known about different types of language acquisition? (Specifically, **what predictions do theoretical models of L2 acquisition make** for the diachronic development of syntactic properties in particular sociohistorical situations, and are these predictions borne out in empirical investigations?)
- III. How does acquisition type interact with population structure to produce the attested outcomes? (A single L2 acquirer of a language is clearly not sufficient, in the general case, to cause a dramatic shift in the distribution of grammars at the population level – but in that case how many do we need, and in what type of population?)

To date, most of the work on the Trudgill conjecture has been based either on large-scale correlational studies (e.g. Lupyan & Dale 2010, Bentz & Winter 2013) or on small-scale experiments in the lab (e.g. Atkinson, Kirby & Smith 2015). A third method has involved computational simulation (e.g. Jon-And & Aguilar 2016). We take the view that, in addition, the Trudgill conjecture ought to be assessed in detail against the historical record itself, using corpora. All four approaches have their strengths and weaknesses. Correlational studies are often based on datasets such as WALS (Dryer & Haspelmath 2013), which by virtue of their size and data collection methods are likely to contain at least some superficial or misleading data; moreover, they cannot establish causation, and factors such as relatedness and contact must be carefully controlled for (Roberts & Winters 2013). Experimental approaches, by contrast, are open to the charge of lacking ecological validity; similarly, models used in simulations, though they are well suited to testing specific hypotheses, necessarily contain a great deal of simplification and abstraction (compared to the real-world object of study) in order to make them computationally tractable. Finally, the corpus-based approach is only applicable to those languages with a reasonably substantial and continuous written tradition, and thus risks typological skew.

An issue as nuanced as the Trudgill conjecture ought to benefit from as many different lines of attack as possible, hopefully with convergent results. Our approach is based on corpus investigation and hence should complement existing typological-correlational, experimental, and simulation-based work. In particular, only the present corpus-based approach can tell us whether the predictions of the Trudgill conjecture are met on the ground, in real historical time, in concrete linguistic communities. It is crucially important to note that we are *defining* complexity as L2-difficulty as far as this paper is concerned: other types of complexity (and ways of interpreting the pretheoretical term) are relevant only insofar as they may be potential confounds, and do not constitute the object of study for us.

The structure of this paper is as follows. In section 2 we delve into more detail on how to operationalize L2-difficulty. Section 3 presents our key case study, the loss of bipartite negation. In section 4 we speculate on further arenas in which our general proposal could be tested. Section 5 concludes.

2. Assessing L2-difficulty in diachrony

There are a number of competing proposals in the literature as to how L2-difficulty should be defined and what counts as L2-difficulty in syntax. Crucially, the Trudgill conjecture can only be correct for syntax if there exists a scale of *absolute* L2-difficulty, i.e. if L2-difficulty is not simply relative to the acquirer's L1. The Full Transfer/Full Access/Full Parse hypothesis of Schwartz & Sprouse (1996), for instance, predicts that the initial state of the L2 is constrained only by the final state of the L1; in case of parsing failure, all universally permitted options are available. If this model is correct, L2-difficulty is always relativized to individual L1s, and so there is no such thing as absolute L2-difficulty (see also the Feature Reassembly Hypothesis of Lardiere 2008). However, consensus has not been reached, and many alternative proposals maintain that some structures or features are indeed universally L2-difficult.

Key contenders in the generative literature on L2 acquisition include the *Bottleneck Hypothesis* (Slabakova 2009), according to which acquisition of L2 syntax is unproblematic in and of itself, but restricted by the difficulty of acquiring functional morphology, and the *Interface Hypothesis* (Sorace 2011), which states that properties of syntax that must integrate with other types of information such as pragmatics, semantics or prosody are vulnerable in L2 acquisition. In this paper we will specifically assess the predictions of a third contender: the *Interpretability Hypothesis* (henceforth IH; see Hawkins & Hattori 2006; Tsimpli & Dimitrakopoulou 2007), which states that uninterpretable features are not accessible to adult L2 acquirers as part of the initial state.² The IH predicts that certain structures will be universally L2-difficult, regardless of the learner's L1; it thus also makes clear predictions for contact situations. In Minimalist syntactic theory, uninterpretable features are those which are present only within the syntax, with no interpretation at the interfaces (i.e. no semantic or phonological content), as opposed to interpretable features, which are semantically as well as syntactically relevant. According to the IH, uninterpretable features are universally difficult for L2 learners to acquire: all else being equal, then, we predict that in sociohistorical situations in which adult L2 learners are particularly dominant quantitatively or qualitatively, uninterpretable features will typically be lost.

² According to one understanding of the IH, only those uninterpretable features that are not employed during L1 acquisition are subject to such critical period constraints. We follow Tsimpli & Dimitrakopoulou (2007: 224) in assuming that all uninterpretable features are L2-difficult. In L1-acquisition, uninterpretable features are postulated by the learner if dependencies (e.g. agreement relations) are detected in the input, cf. Schütze's (1997) Agree Maximization Principle. In adult L2 acquisition, we assume here, they are not.

In assessing this view, of course, it will be crucially important to distinguish the role of L1 transfer, and L1-relative difficulty (which exists independently of any notion of absolute L2-difficulty), from the L2-difficult features we are interested in. Making this distinction has been a central part of generative work on L2 acquisition over the past few decades (see Rothman & Slabakova 2018 for an overview), and so we are not on untrodden territory here. The ideal case studies for our purpose are those in which such L1 transfer effects can be ruled out, since the feature in question is found in *both* of the languages or varieties in contact. One such case study is the development of bipartite negation in various European languages, to which we now turn.

3. Case study: bipartite negation

3.1. Negation as a testing ground

The diachronic change in the expression of negation known as Jespersen's Cycle (Jespersen 1917, Dahl 1979) is a particularly well-studied area of syntactic change. In this development, a negative particle (1a) is first joined by an adverbial reinforcer grammaticalized from e.g. an indefinite argument, or a nominal minimizer (1b) such as *pas*, lit. 'step', and later replaced by it (1c) (for an overview, see Willis, Lucas & Breitbarth 2013b).

- | | | | | |
|-----|----|-----------|------------------------------------|------------------------------------|
| (1) | a. | stage I | <i>jeo <u>ne</u> dis</i> | (Old French) |
| | b. | stage II | <i>je <u>ne</u> dis <u>pas</u></i> | (Middle and Modern written French) |
| | c. | stage III | <i>je dis <u>pas</u></i> | (Colloquial French) |

While the development is geographically widespread in north-western Europe, and has been considered an areal feature by typologists (Bernini & Ramat 1996), it is also found in Greek (Kiparski & Condoravdi 2006, Willmott 2013), Niger-Congo languages (Beyer 2009, Devos & van der Auwera 2013 and references cited there), Afro-Asiatic languages (Lucas 2013 and references cited there), and creole languages (e.g. Hagemeijer 2008). Language contact has long been suspected to be behind several instances of Jespersen's Cycle (Beyer 2009, Lucas & Lash 2010), and has been argued to be responsible for differences in the speed of the transition between stages II and III (Rutten et al. 2012, Breitbarth 2014b). This makes Jespersen's Cycle an ideal testing ground for our hypothesis.

Under a Minimalist analysis of Jespersen's Cycle (e.g., Zeijlstra 2004; Van Gelderen 2011), the stages of the Cycle can be captured in terms of changes in the interpretability of formal negation features and phrase-structural status of negative markers, occupying the head or specifier positions of NegP. At stage II, the original negator occupies the Neg⁰ position and bears an uninterpretable [*u*Neg] feature. Typically, it occurs immediately before the finite verb because the latter, moving through the Neg⁰ position, picks it up like an affix or clitic (e.g. Jäger 2008). The adverbial new negator, bearing an [*i*Neg] feature, comes to occupy SpecNegP by grammaticalization from a lower, VP-internal position (see also Roberts & Roussou

2003). A rather simplified representation based on Van Gelderen (2011: 304) is seen in (2).³

- | | | |
|-----|--|-----------|
| (2) | a. [NegP ____ [Neg' Neg ⁰ _[uNEG] [VP ...]]] | stage I |
| | b. [NegP XP _[/NEG] [Neg' Neg ⁰ _[uNEG] [VP ...]]] | stage II |
| | c. [NegP XP _[/NEG] [Neg' [Neg ⁰ Ø] [VP ...]]] | stage III |

That is, at stage II of Jespersen's Cycle, regardless of finer distinctions between proposals in points of detail, the crucial property for the current paper is that the original negative marker is a syntactic head with an uninterpretable negation feature [*uNeg*]. In a monolingual community/community with only child L1 acquisition, this [*uNeg*] head would (continue to) be acquired under Schütze's AMP (see fn. 2) because it does not express negation by itself, but looks like agreement.

The languages of north-western Europe that have undergone Jespersen's Cycle have made the transition from the bipartite expression of negation at stage II to the single expression at stage III at very different speeds. High German and English went from stage II to stage III within about 150–200 years only. Most Middle High German scribal languages had reached stage III by around 1300, with some delays in north-western scribal languages (Jäger 2008; Schüler 2016). In Middle English, stage III replaces stage II between 1250 and 1420 (Wallage 2005, 2017; Walkden & Morrison 2017). Dutch, on the other hand, remained in stage II all through Middle Dutch (c. 1150–1500), and only started to give up the old preverbal marker around 1650 in the northern provinces (Burridge 1993), while southern dialects only started to lose it in the 19th century (Beheydt 1998), and many Flemish dialects still preserved it until the end of the 20th century (e.g. Koelmans 1967, Neuckermans 2008, Breitbarth & Haegeman 2014), when large-scale dialect loss began (Vandekerckhove 2009). Among the Romance languages, French has progressed the furthest along Jespersen's Cycle, with stage II beginning in the 14th–15th centuries (Catalani 2001)⁴ and still persisting today, even though the original preverbal negator *ne* began to be dropped in spoken language from the 19th century onwards (Martineau & Mougeon 2003).

In the following two subsections, we want to explore the possibility that the sociolinguistic situation could help understand the differences in the speed at which languages pass through stage II of Jespersen's Cycle.

3.2. From Stage II to Stage III in Middle Low German

Jespersen's Cycle in Middle Low German provides a good case for the application of Trudgill's sociolinguistic typology to syntax, coupled with the IH as a measure of L2-difficulty.

³ Especially for the Romance languages, negative heads (and phrases) with different distributions have been identified. We abstract away from these here. A NegP-free account of Jespersen's Cycle is proposed in Breitbarth (2017).

⁴ The earliest use of emphatic reinforcers in Old French, not yet fully grammaticalized as phrasal negation markers, goes back to the 11th century (Buridant 2000).

Middle Low German (MLG) refers to the dialects spoken in northern Germany between 1200 and 1650 (Stellmacher 1990: 39, Peters 2000: 1482), and is transmitted in several scribal languages (*Schreibsprachen*) from the 14th century onwards. The dialects and scribal languages are divided into so-called *Altland* ('old land') and *Neuland* ('new land') varieties. The *Altland* varieties (Westphalian, Eastphalian, and North Low Saxon) are found in the area where Old Saxon is presumed to have been spoken, that is, west of the river Elbe. The *Neuland* is the area east of the Elbe that was colonised by settlers from the *Altland*, but also from Flanders and other parts of the Low Countries, during the 12th and 13th centuries, and where the East Elbian, Elbe-Eastphalian, Southmarkish and Baltic varieties of MLG developed. The rise of the Hanseatic league of trade led to the foundation of commercial/trading towns using MLG instead of Latin as the language of administrative, legal, and commercial writing around the southern coast of the Baltic Sea, and to the development of MLG into an international lingua franca around the Baltic and North Seas. The new towns, like Lübeck, Rostock, Greifswald, or Stralsund, attracted new settlers from the *Altland* and the Low Countries, besides international traders. For the spoken language of Lübeck, whose emerging scribal language gained great influence particularly on the scribal languages of the north of the MLG area, Peters (2000: 1414) notes:

In der Frühzeit Lübecks ist mit einem Nebeneinander verschiedener altländischer Mundarten zu rechnen. Das Zusammenleben in der Stadt führt im Verlauf des 13. Jhs. zu einem innerstädtischen Ausgleich, es entsteht eine städtische Umgangssprache. Es ist anzunehmen, dass sich relativ früh innerhalb der hansischen Gemeinschaft, unter den Fernhandelskaufleuten im Ostseeraum eine lübisch geprägte mündliche Handels- und Verkehrssprache entwickelt hat [. . .].⁵

That is, urbanization and dialect contact (possibly initially also 'receptive multilingualism'; Braunmüller 2007) in the Hanseatic cities led to dialect levelling and the emergence of new dialects in a situation of multidialectalism (and partially multilingualism with Slavonic and Baltic languages).

As observed by Breitbarth (2014a), Low German made the transition from stage II to stage III of Jespersen's Cycle during the MLG period. The standard expression of sentential negation in MLG can be argued to be *nicht* 'not', because while the old preverbal negation particle *ne/en* inherited from Common Germanic (< *ni*) can still occur in negative clauses, though with decreasing frequency, it always needs to be accompanied by *nicht* (3a) or another expression of negation such as a negative

⁵ 'In the early days of Lübeck, we have to assume a co-existence of different dialects of the "Altland". The collective life in the city leads to a city-internal levelling during the 13th century, to the rise of an urban vernacular. We can assume that already early on, an oral trade language and lingua franca based on the dialect of Lübeck developed within the Hanseatic community, among the traders around the Baltic Sea.'

indefinite (4a), and appears to be no longer able to express sentential negation on its own.⁶

- (3) a. *dar en sculle wii se nicht ane hinderen*
 there NEG shall we them NEG from bar
 ‘we shall not bar them from it’ (UB Lübeck 06/01/1450)
- b. *den schal me dat nicht weygeren*
 the.DAT shall one that NEG deny
 ‘One shall not deny them that’ (UB Lübeck 19/11/1474)
- (4) a. *To dessen vorscreven missen unde tiiden*
 to these aforementioned masses and times
shal men nemande nemen ane he sii prester
 shall one no.one take without he be.SUBJN priest
 ‘For those aforementioned masses and (prayer) times, one shall take no one, unless he be a priest.’ (UB Lübeck 29/05/1465)
- b. *des en scholde he nene macht hebben*
 the.GEN NEG should he no power have
 ‘He should have no power to do that’ (UB Lübeck 20/08/1485)

The situation outlined above therefore obtains in MLG: *en/ne* bears a [uNeg] feature, *nicht* bears [iNeg]. As Breitbarth (2014a,b) shows on the basis of a corpus of legal texts from 10 places between the 14th–16th centuries (two Westphalian, three Eastphalian, three North Low Saxon, two East Elbian Hansa cities), there are significant differences in the speed at which the scribal dialects make the transition from stage II to stage III.⁷ While the Westphalian and Eastphalian places start the transition, using bipartite negation in about three quarters of the cases for the first hundred years, North Low Saxon and in particular East Elbian have already reached the turning point of around 50% in the early 14th century, and keep losing it more quickly. What unites the latter two scribal languages is the fact that they are used in the area where most Hansa cities are found, even though the North Low Saxon sub-corpus does not contain data from any, while the East Elbian does. Especially those Hansa cities in the Neuland lose the preverbal particle at a significantly faster rate. Table 1 reproduces Breitbarth’s data, Figure 1 places them in a map.

⁶ The particle can still occur on its own; however, it is almost exclusively found in exceptive clauses, where it does not express sentential negation (Breitbarth 2015; Witzzenhausen 2019), (i).

(i) *dhe scal ome sin wulle loen gheuen*
 the shall him his demanded pay give
he ne hebbe it uerboret mit bosheit
 he NEG have it forfeited with mischief
 ‘He shall give him his demanded pay, unless he have forfeited it with mischief’
 (Stader Stadtrecht 1279)

⁷ At the time of the study, no electronic corpora of MLG were available yet. In the meantime, the *Referenzkorpus Mittelniederdeutsch und Niederrheinisch* (ReN; <https://www.slm.uni-hamburg.de/ren.html>) has become partially released (Peters 2017; Barteld et al. 2017), and a fully parsed version of it is in preparation (www.chlg.ac.uk).

Table 1: The use of Stage II (preverbal particle with nicht), by scribal dialect (Breitbarth 2013)

	Westphalian	Eastphalian	North Low Saxon	EE Hansa cities
1325–1374	22 (78.6%)	56 (72.7%)	37 (56.1%)	3 (50%)
1375–1424	25 (83.3%)	52 (71.2%)	42 (33.1%)	12 (18.5%)
1425–1474	3 (37.5%)	25 (52.1%)	75 (33.0%)	20 (29%)
1475–1524	14 (35.8%)	15 (14.6%)	62 (31.2%)	10 (7.8%)
1525–1574	8 (21.1%)	18 (10.2%)	3 (12%)	2 (12.5%)

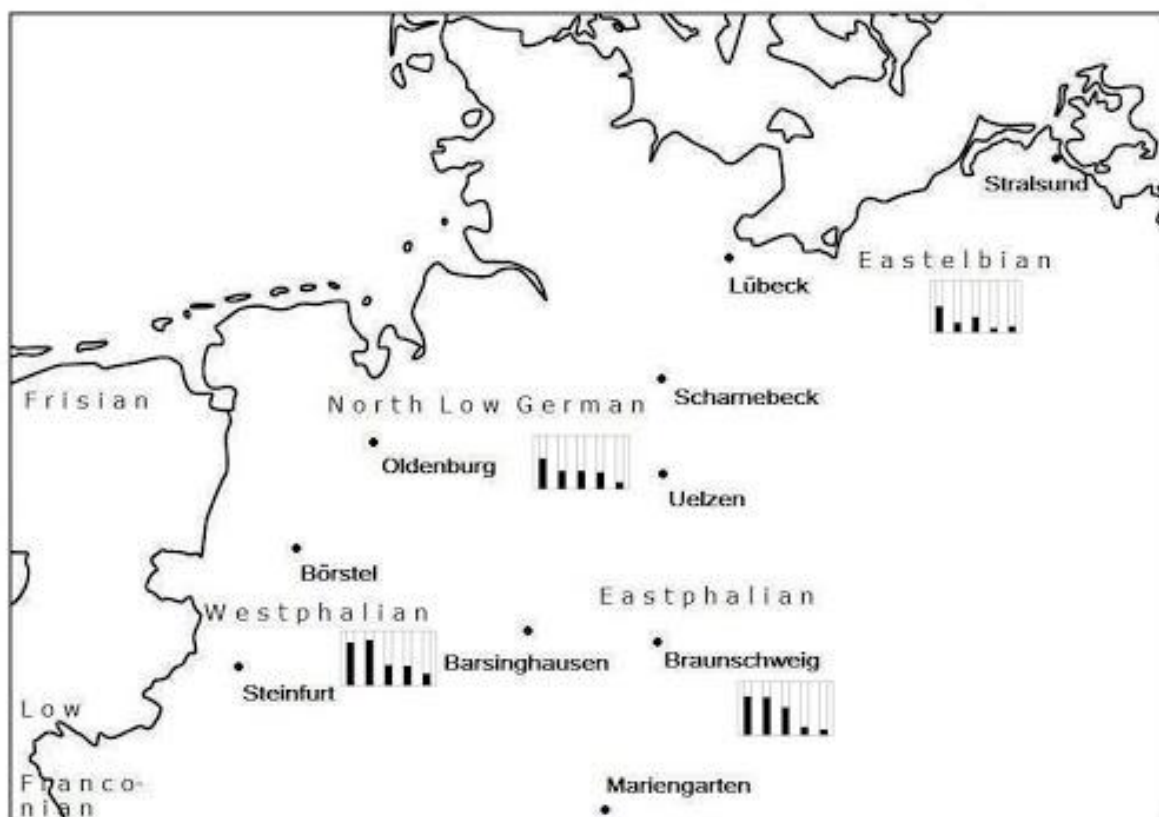


Figure 1: The use of Stage II *en/ne .. nicht* (black) in the corpus of Breitbarth (2014a)

Given the sociolinguistic situation of the Hansa cities, particularly in the Neuland (Lübeck, Stralsund), and the analysis of *en/ne* being [uNeg] and *nicht* being [iNeg], this difference in starting point and speed of the transition to stage III is consistent with the prediction we made. As the quote from Peters above suggests, short-term dialect contact between adult speakers led to dialect levelling, and, under the Interpretability Hypothesis, the (L2-)simplification of the expression of negation by dropping the carrier of the uninterpretable feature, *en/ne*. Here the L2 being acquired

is a levelled form of Low German, with input L1 varieties including not only a range of northern West Germanic varieties but also Baltic and Slavonic languages.

Crucially, this simplification happened despite the fact that some of the input varieties, i.e., Westphalian and North Low Saxon Middle Low German, but also e.g. Flemish, had [uNeg] *en/ne*, and kept it for much longer in the areas they came from. However, they used *en/ne* with different frequencies, none of them 100%. This imbalance added to the disadvantage for [uNeg] *en/ne*: According to Peters' (2000) quote, initially, different *Altland* varieties coexisted before the levelling began, presumably in the form of semi-communication. The different distribution in the input dialects would have made it hard for speakers to decide when to use *en/ne* with different groups of fellow colonists. Coupled with the L2-difficulty of uninterpretable features, this meant that [uNeg] did not survive into the interlanguage, or rather, the levelled dialect in the contact situation. The levelled output of the first adult speakers itself becomes the input to new generations of L1 learners.

3.3. From Stage II to Stage III in other languages

Obviously quite detailed investigation of specific varieties is needed in order to test the prediction further. Here we can do no more than point to three languages in which the developments reported in the literature appear to be consistent with our predictions.

3.3.1. French

The transition from Stage II to Stage III in French is relatively recent. Since Stage II is part of the standard language as prescriptively enforced, and hence written texts often do not reflect Stage III at all, it is not easy to tell when the development began: Martineau & Mougeon (2003) make the case for the 19th century. Moreover, the change is still ongoing today in some varieties. This recency means that the change has been heavily investigated, and we do not attempt a full review of the literature here (see Hansen 2013), instead flagging up selected varieties and works that are relevant to our hypothesis.

In Montreal French, a colonial variety, the original negative particle *ne* is almost completely absent (Sankoff & Vincent 1977). This variety arose in a colonization scenario in the 17th century, which would have involved the coming together of adult speakers of several different Oïl (northern Gallo-Romance) languages. According to Wittmann (1995), these speakers used the Paris *koiné* as their *lingua franca*; importantly, this *koiné* was itself the result of dialect mixture through urbanization as speakers from all over France migrated to Paris. Both of these situations are comparable with the establishment of the Hanseatic cities and the sociolinguistic situation there.

At the other end of the scale we have the Picard dialect of the north of France. Here, sociolinguistic and dialectological studies have consistently shown that *ne* is rarely if

ever omitted (Coveney 1996: 62; Auger & Villeneuve 2008). In this case, two typologically and historically close varieties – regional French and Picard – are in long-term contact under a receptive multilingualism scenario.⁸ Crucially, however, since Picard has never been subject to widespread adult L2 acquisition, the Trudgill conjecture predicts no simplification here, and indeed we find none in the domain of negation.

We close this section by mentioning the findings of Pohl (1968: 1352), cited in Coveney (1996). Pohl is able to establish that *ne* is lost more in France than in Belgium, more in Paris than in the provinces, and more in towns than in the countryside. All of these generalizations are compatible with an account in which the loss of *ne* is a case of syntactic simplification induced by sociohistorical circumstance.⁹ Indeed, Pohl (1968) and Coveney (1996) argue that socio-economic factors contributed to the loss of *ne*, accelerating in the mid-19th century: specifically, they adduce the opening and extension of social networks as a result of the development of the railway and the concomitant large-scale migration to towns and cities. This again is a typical urbanization scenario with short-term adult language and dialect contact leading to levelling/simplification.

3.3.2. English

English underwent the transition from Stage II to Stage III very early and rapidly, during the Middle English period. Since Jespersen (1917), this development has been as intensively studied as the rather patchy textual record allows: see Wallage (2005, 2017), Ingham (2008, 2013) and the references cited there. In particular, work by Wallage using the Penn Historical Corpora of English has tracked the quantitative unfolding of the change in quite some detail. However, since the crucial PPCME corpus (Kroch & Taylor 2000) is based on prose texts and the geographical distribution of these texts is extremely patchy during the course of the change, dialectal differences in negation are difficult if not impossible to assess using this resource (Wallage 2005: 229, 238).

Walkden & Morrison (2017) investigate the change to Stage III using a different resource, the near-exhaustive *Linguistic Atlas of Early Middle English*, which covers the period 1150–1325 (Laing 2013–). They find that Stage III emerges first in texts from the East Midlands, Yorkshire, and East Anglia (see Figure 2). Since these are the areas where Scandinavians settled extensively between the 9th and 11th centuries, Walkden & Morrison attribute a crucial role to L2 acquisition of Middle English by Scandinavian speakers during the process of language shift away from Anglo-Norse

⁸ Whether Picard is a dialect of French or a European minority language in its own right has been a matter of some debate (see Auger & Villeneuve 2008). For our purposes, the difference between ‘language’ and ‘dialect’ is not a meaningful one: all that matters is that they are linguistically distinct varieties.

⁹ Pohl also argues, however, that *ne* is lost more among monolinguals than among bilingual/bidialectal speakers, something which our account does not predict.

(see also Ingham 2008). On the face of it, this fits neatly with our hypothesis. There is, however, an important confounding factor: Norse had already undergone the shift to Stage III during the pre-textual period (Eythórsson 2002), and so another possible scenario is syntactic transfer from Norse to northern Middle English, as Walkden & Morrison (2017) suggest. It may be that both transfer and simplification are at work as processes here, but it is not possible to distinguish the two empirically. The evidence from the history of English, then, is not incompatible with our hypothesis, but nor does it provide convincing support for it.

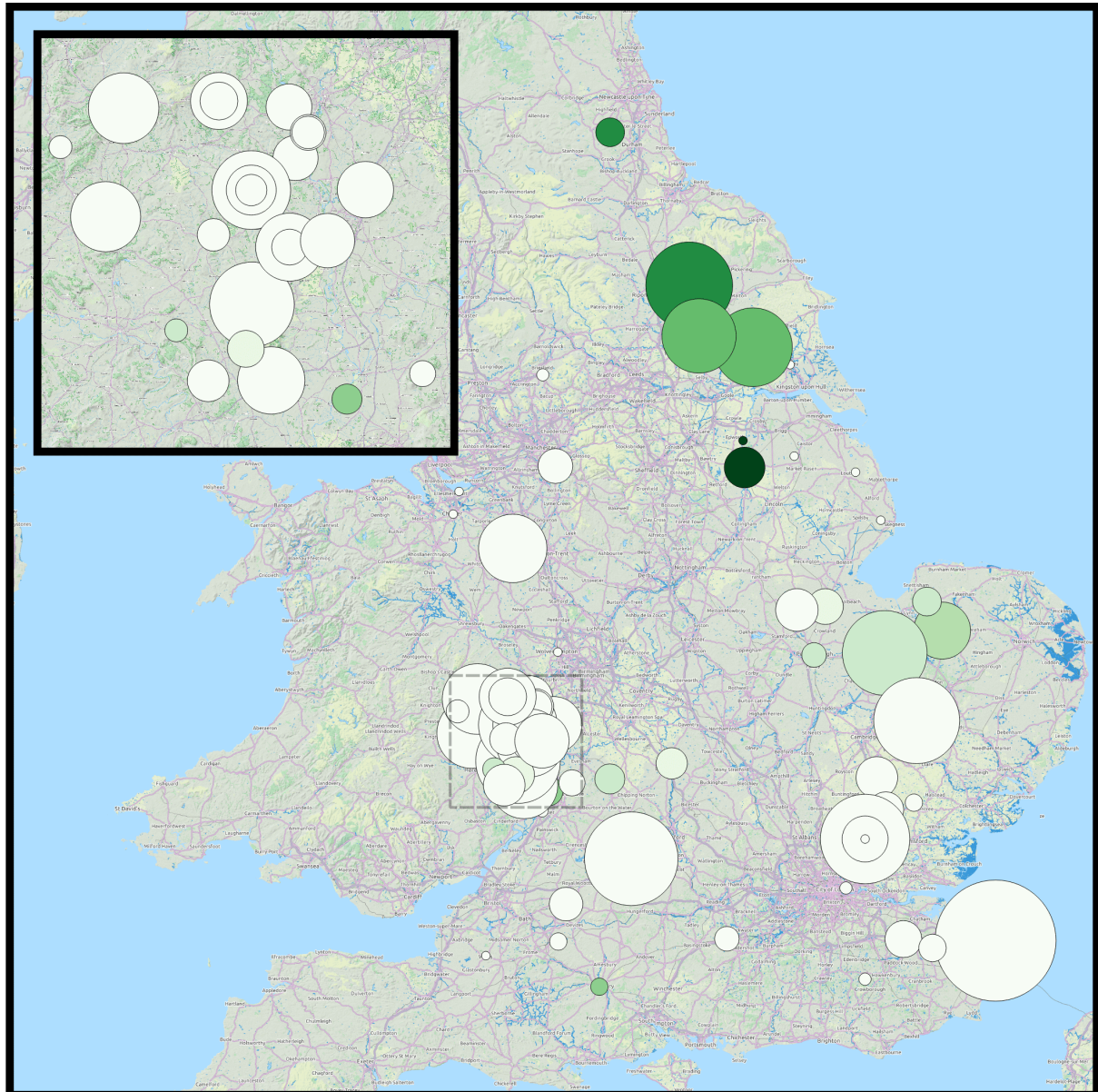


Figure 2: Percentage use of Stage III by text, 1150–1350 (Walkden & Morrison 2017: 182, their Figure 2). Size of point indicates size of text; the darker the point, the more Stage III is found.

3.3.3. Dutch

In the history of Dutch, the older preverbal negation particle *en* was lost much earlier from northern dialects (during the 17th and 18th centuries) than from southern ones (beginning in the 19th century) (Burridge 1993; Beheydt 1998; Rutten et al. 2012; Vosters & Vandenbussche 2012); indeed, the preverbal particle is still present in some Flemish dialects today, especially in more rural areas. The results of Koelmans' (1967) study on the frequency of *en* in the RND-questionnaires¹⁰ from the 1920-30s shows that the southern transitional area between West and East Flanders, and southern East Flanders is particularly conservative (even more than in French Flanders, where long-term contact with French is at play).¹¹

Once again, these developments can be linked to sociohistorical factors. After their independence at the end of the 80 Years' War, the northern provinces, especially Holland, enjoyed a great economical upturn known as the *Gouden Eeuw* 'golden age/century'. During this period, these provinces became an international centre of trade and intellectual life. Crucially for our purposes, this attracted a large amount of migration from within the Low Countries and from outside, resulting in dialect levelling and koinéization (Goss 2002; Howell 2006; Breitbarth 2013b). Goss (2002) in particular argues for the importance of dialect contact and urbanization in facilitating the loss of bipartite negation. Rutten et al. (2012) and Rutten & van der Wal (2013) investigate the change in negation in detail using a corpus of private letters, and are able to confirm the regional patterns identified in earlier work. Though they also suggest some important caveats,¹² they agree that the factors identified by Goss (2002) and others probably did play a role in the loss of preverbal *en*. In the rural areas of Flanders, the longer preservation of stage II only started to shift with increasing mobility in the first half of the 20th century, and hence, increasing dialect contact, once again consistent with our hypothesis about the IH and the Trudgill conjecture.¹³

4. Further directions

Negation is of course not the only empirical domain in which the IH in conjunction with the Trudgill conjecture makes predictions. Two other candidates for further investigation which we will briefly outline here are the distribution of null subjects and

¹⁰ *Reeks Nederlandse dialectatlassen* (Series of Dutch dialect atlases); <http://www.dialectzinnen.ugent.be>. The questionnaire comprises 141 sentences, which were translated into the local dialects of 1,956 places in the Netherlands, Belgium and France, and recorded in detailed phonetic transcriptions.

¹¹ A recent study (Breitbarth & Ghyselen 2018) shows based on recordings from the 1960s–1970s (<https://www.dialectloket.be/geluid/stemmen-uit-het-verleden/>) that Koelman's findings are confirmed for spontaneous dialect speech (instead of elicited data), and for a more recent period, too.

¹² For instance, Rutten & van der Wal (2013: 117–118) show that Amsterdam, by far the fastest-growing city during this period, is not exceptionally innovative, as might be expected under a scenario in which urban dialect contact is crucial, but rather fits neatly into the general north-south diffusion of the change.

¹³ The dialect recordings mentioned in fn. 11 talk extensively about the arrival of the first bicycles and cars in the villages, the increase of train travel, commuting for work, and displacement during the two World Wars.

the distribution of abstract and lexical Case. Our discussion here is intended to be suggestive of future research areas rather than conclusive.

4.1. Null subjects

The subject cycle, so named by van Gelderen (2011), involves the reanalysis and grammaticalization of pronominal subjects as verbal morphology, potentially via an intermediate clitic stage. The rich verbal morphology thus created often goes hand in hand with the rise of null referential subjects; the development is cyclical in the same way as Jespersen's Cycle, as rich morphology can then be eroded, with new subject pronouns arising and the null subject property being lost again in the process.

It is clear that verbal morphology does not play a role in all null subject languages. We follow Holmberg & Roberts (2010) in distinguishing between Italian-style 'consistent' null subject languages, Japanese-style 'radical' or 'discourse' null subject languages, and an intermediate category of 'partial' null subject languages such as Finnish and Hebrew (see also Barbosa 2011a,b, D'Alessandro 2015). Walkden (2014: chapter 5) analyses the loss of null referential subjects in consistent null subject languages, as in Italian *parla italiano* 'He/she/it speaks Italian', as the loss of an uninterpretable [μ D] feature associated with the clausal functional head T^0 (cf. Holmberg 2010: 94), and the loss of null referential subjects in partial null subject languages as the loss of a [μ D] feature on DPs.¹⁴ If this analysis is along the right lines, then null subjects are predicted to be lost in situations involving extensive adult L2 learning.

There is tantalizing evidence that this proposal might be on the right track, both from heritage language communities and from colonial varieties of Romance languages. In heritage varieties of Spanish used in New York, the rate of pronominal subject use is much higher in second- and third-generation speakers than in Spanish-born speakers (Otheguy, Zentella & Livert 2007).¹⁵ Heap & Nagy (1998) demonstrate that in Faetar – a null subject Francoprovençal variety spoken in southern Italy – apparent-time data from different generations indicate increased use of subject pronouns, and Chocieĵ (2011) shows that in heritage Polish spoken in Toronto, the rate of pronominal subject use is much higher in second- and third-generation speakers than in speakers born in Poland. Since heritage language speakers are typically defined as having had L1 exposure to their heritage variety at home during their childhood, we would not necessarily expect them to pattern with L2 learners generally. However, insofar as

¹⁴ Concretely, the [μ D] feature is valued by Agree with a left-peripheral aboutness topic or logophoric operator, and null subjects are able to receive their referential interpretation by means of this relation. In consistent null subject languages, this feature is on T^0 , allowing a ϕ P pronoun to incorporate into T^0 via head-movement and receive a referential index. In partial null subject languages it resides within the DP itself, though the valuation process is the same. See Walkden (2014: 209–215) for details.

¹⁵ Though this evidence is not uncontroversial (Torres Cacoullos & Travis 2011). Moreover, to the extent that these speakers' language is English, a non-null-subject language, we cannot rule out the possibility of L1 transfer here.

these speakers of subsequent generations have acquired the community language as an L2 (i.e. are so-called “neo-speakers”), this behaviour is as predicted.

The proposal also gives us a handle on why Brazilian Portuguese and Caribbean Spanish, colonial varieties which developed through a sequence of short-term high-contact situations, only exhibit limited null subjects (Toribio 1996; Kato 2012), while European Portuguese and General Spanish have remained full null subject languages. In relation to this, Walkden (2014) argues that partial null subject languages are a diachronic waystation between consistent and non-null-subject languages. A further variety to be investigated in this connection is Finnish, where the colloquial variety appears to have developed into a non-null-subject language (Holmberg 2010), though the historical sociolinguistic circumstances of this change remain to be investigated.

Moreover, a major typological study (Lupyan & Dale 2010; their Feature 28) has shown that languages in the exoteric communicative niche are less likely to have null subjects; though null-subject languages constitute the vast majority of the world’s languages, the rare non-null-subject languages include major world lingua francas such as (standard varieties of) English and French. Even though Lupyan and Dale’s result is based on the somewhat simplistic binary coding of subject expression in WALS, it can be considered a further tentative indication that the proposal is on the right track in general terms.

Finally, the experimental literature on language acquisition supports the prediction that overt pronominal subjects will increase in frequency among L2 learners, regardless of their L1. Bini (1993) shows that L1 Spanish speakers learning Italian systematically overproduce ‘redundant’ overt pronouns in their L2, despite the fact that both Spanish and Italian are consistent null subject languages. Sorace et al. (2009: 464) make a stronger claim based on their review of the literature: L2 learners of *any* null subject language appear to ‘use overt subject pronouns as a compensatory “default” strategy’, regardless of the structure of their L1. Obviously, though, these findings cannot be considered conclusive: what remains is to investigate the historical evidence in detail.

4.2. Case

At the morphological level, it is well known that case morphology presents particular difficulties for L2 acquirers of a language (e.g. Haznedar 2006). It is therefore plausible that, in situations in which a population contains many (and/or influential) L2 acquirers, case systems will be lost or reduced, and this is also a corollary of Trudgill’s (2011) theory of sociolinguistic typology. Bentz & Winter (2013) demonstrate a synchronic correlation between increased numbers of L2 speakers and absence of (overt) nominal case, as well as between increased numbers of L2 speakers and reduced numbers of cases. They argue from this that a preponderance of L2 speakers leads to the loss of case(s). In Germanic, overt case is lost in the histories of Dutch, Mainland Scandinavian and English, and the distinction between accusative and dative is lost in the history of Low German. In order to test whether increased presence of L2 learners is indeed a causal factor here, it is necessary to assess on the basis of quantitative

corpus data how these changes progress, and whether they are further advanced in areas that are hotspots for short-term intensive language contact.

It seems likely, then, that case morphology is vulnerable in situations involving extensive adult L2 acquisition, though little detailed quantitative corpus work has been done on the issue to date. Moreover, especially in recent times it is important to be able to factor out the effect of formality and prescriptivism (Weerman, Olson & Cloutier 2013). However, in conjunction with the Trudgill conjecture, the IH makes stronger predictions: whereas e.g. the Bottleneck Hypothesis predicts that only case *morphology* should pose problems for L2 acquirers, the IH predicts that the *syntactic* features that underlie it – abstract Case – should also be vulnerable. Abstract Case, as understood in generative theory since Vergnaud (1977), is not in a one-to-one mapping with morphological case. If Case features are always uninterpretable, following Chomsky (1995: 278–279), then an increased rate of Case loss in such situations is predicted by the IH in conjunction with Trudgill's (2011) ideas about simplification.

Care will be needed in teasing apart abstract Case from morphological case. Abstract Case has usually been viewed as universal; however, Diercks (2012) and Sheehan & van der Wal (2018) argue that abstract Case is in fact not universal, and may be lacking entirely in some languages. Moreover, Case comes in at least three types: structural, inherent, and lexical (Woolford 2006). Lexical Case, in particular, is likely to be exceptionally responsive, since the distribution of these features is idiosyncratic to particular lexical items which must each be individually learned. If this is correct, then in high-L2-contact situations it is possible that lexical Case is lost independently of the *morphological* attrition of the case system.

Within diachronic generative syntax, the dominant viewpoint has moved away from one in which syntax and morphology are in a tight biconditional relationship (e.g. Kiparsky 1997; Rohrbacher 1999) to one in which the connection is much looser and mediated by processing or variational acquisition (e.g. Heycock & Wallenberg 2013; Simonenko, Crabbé & Prévost to appear); in the theoretical domain, the prevailing view is now that morphological case is largely independent of the syntactic licensing function that abstract Case was originally introduced to fulfill (McFadden 2004). Assuming that abstract Case exists and can vary cross-linguistically (Diercks 2012; Sheehan & van der Wal 2018), the crucial question is whether its effects can be teased out in the historical record, and if so whether they support the Trudgill conjecture or not. There are several diagnostics for the presence or absence of abstract (and by hypothesis uninterpretable) Case features: these include i) the availability of overt referential subjects in non-finite clauses, ii) the presence of non-agreeing DPs bearing the grammatical function of subject, and iii) the availability of movement from apparently subject-licensing domains (Sheehan & van der Wal 2018: 533–534). Lexical Case, meanwhile, can be distinguished from inherent Case by its (semantic) unpredictability and the restricted theta-roles it may be associated with (Woolford 2006).

Within Germanic alone, good candidates for this sort of research are Early Middle English, Middle Low German, and Early Modern Dutch: as is well known, English and Dutch lost morphological case everywhere other than pronouns, and Middle Low German variably lost the distinction between accusative and dative (Lasch 1914: 211–213). In particular, investigating the changing case-marking patterns of prepositions and lexical verbs could help to test the susceptibility of lexical Case features to situations of short-term intense L2 acquisition.

5. Summary and conclusion

In this paper we have laid out a programme for testing the Trudgill conjecture on the relation between sociohistorical situation, age of acquisition, and grammatical complexity in the domain of syntax. Following Trudgill in equating complexity with L2-difficulty, we have adopted the Interpretability Hypothesis as a characterization of what is L2-difficult in syntax. Focusing on a specific and oft-repeated linguistic change – the loss of bipartite negation as part of Jespersen's Cycle – we have argued that this change is catalysed in sociohistorical situations involving intense, short-term language contact. An in-depth study of this development in Middle Low German is consistent with our proposal, and there are indications that the same factors might have been at play in the histories of French, English and Dutch. In all cases it is crucial not to conceptualize the change as a monolithic transformation of one grammar into another but rather as a process unfolding within populations along geographical and diachronic dimensions, and to look at texts that come closest to representing the local vernacular.

The programme sketched here opens several avenues for future research. For one, our adoption of the Interpretability Hypothesis makes predictions for several other grammatical phenomena, including (but not limited to) subject expression and Case; lexically-specified gender is a further relevant area (Tsimplici 2014, Weerman 2014). For another, it ought to be instructive to compare the Interpretability Hypothesis with other theories of syntactic L2-difficulty and see how each fares in the diachronic domain. With enough care, it might even be possible to bring diachronic evidence to bear on the choice between these competing theories. A third avenue is research into complexification. In this paper we have focused on simplification, but the Trudgill conjecture (and our understanding of it) cuts both ways: do we find syntactic complexification in situations of long-term co-territorial multilingualism, or in situations of isolation?

All in all, the programme we have sketched fits neatly with recent calls to take second language acquisition and population structure more seriously in research on syntactic change (e.g. Lucas & Lash 2010, Meisel 2011), factors that have been largely ignored in diachronic generative syntax, despite early seminal works such as Weerman (1993). More generally, it offers a new way to approach one of the most central questions of modern linguistics: the division of labour between the biological and the historical-cultural, the necessary and the contingent, in grammar. In particular, formal generative

syntax and sociohistorical explanation are often seen as antagonistic, even mutually incompatible approaches. As this paper has shown, this need not be the case.

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