

# Persistence as a diagnostic of grammatical status: The case of Middle English negation

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Diachronic Generative Syntax 15

# Introduction

- ▶ Diachronic generative syntax encompasses the analysis both of historical grammatical structures and of the processes by which they change
- ▶ Analysis of underlying structures is particularly challenging without access to native speakers

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# The persistence effect

- ▶ Individual observations of variable phenomena are not independent (Sankoff and Laberge 1978)
- ▶ **Persistence:** the tendency to repeat the same linguistic option again in natural speech
- ▶ Inherently interesting phenomenon, but also a useful dependent variable for its reflection of underlying structures

# Experimental structural priming

- ▶ Persistence seems to be related to the experimental phenomenon of priming
- ▶ Extensive structural priming literature (beginning with Bock 1986) demonstrates that syntactic structures can be primed
- ▶ For example, use of a double-object construction gives rise to a preference for double-object over prepositional dative

# Persistence in written and spoken corpora

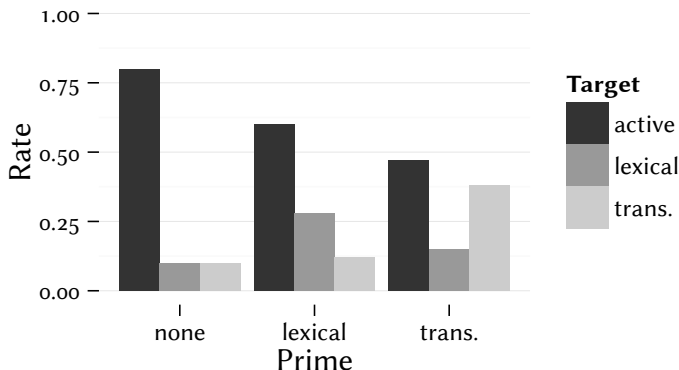
- ▶ Early demonstrations of persistence in spoken language include number agreement in Spanish DPs (Poplack 1980) and passive alternation (Weiner and Labov 1983)
- ▶ Gries (2005) finds that persistence effects in both written and spoken corpora are consistent with experimental results for the same constructions
- ▶ Linking hypothesis: persistence effects in written historical data reflect priming effects in language production at the time

# Structural identity in persistence

- ▶ Tendency to repeat the same linguistic option — repetition reveals sameness
- ▶ “If the processing of a stimulus affects the processing of another stimulus, then the two stimuli must be related [...] if the relationship between the two stimuli is syntactic, then we can use this relationship as a way of understanding what syntactic information is represented” (Branigan et al. 1995, p. 490)

# Previous demonstrations of structural identity

- ▶ Estival (1985): different types of passives (lexical vs transformational) each facilitate themselves but not each other
- ▶ The structural distinction this reflects is maintained in modern syntactic accounts (e.g. Embick 2004)





# Previous demonstrations of structural identity in persistence

- ▶ Bock and Loebell (1990): Infinitival purpose clauses with “to” do not facilitate prepositional datives with “to”
  - ▶ I brought a book to study
  - ▶ I brought a book to Stella
- ▶ Ferreira (2003): complementizer *that* presence is not increased by previous use of demonstrative *that*

# The change in negation

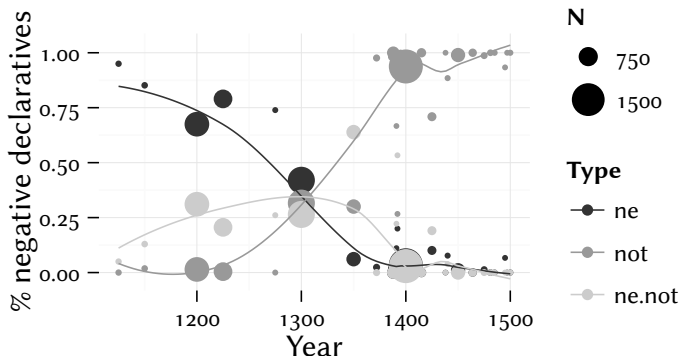
- ▶ In Middle English, there is a change in the exponence of Neg
- ▶ The negator *ne*, inherited from OE, is lost
- ▶ *not*, formerly a negative adverb, becomes the new negator

# Details of the change

- ▶ During the period of the change, a large number of negative sentences have both *ne* and *not*:

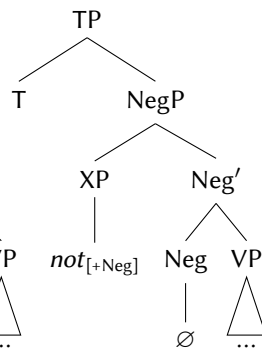
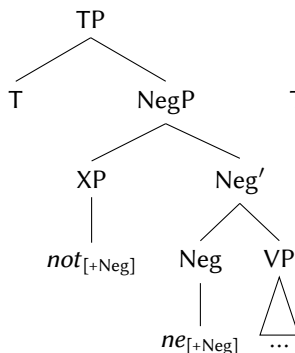
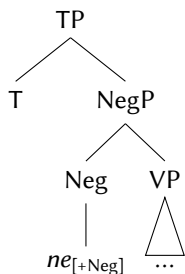
(1) he ne shal nouȝt decieue him

Early Prose Psalter, 161:131:11, from Frisch (1997)



# Frisch (1997)

- ▶ Frisch (1997) analyzes this change to be due to competition between two grammars
  - ▶ One grammar contains an entry for *ne* as the head of NegP
  - ▶ One grammar contains *not* as the specifier of NegP
- ▶ When both “grammars” (really, lexical entries) are simultaneously activated, *ne ... not* sentences result

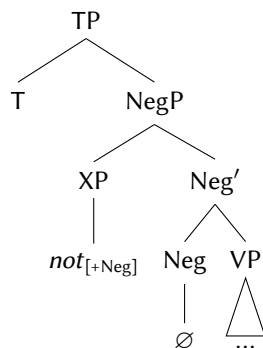
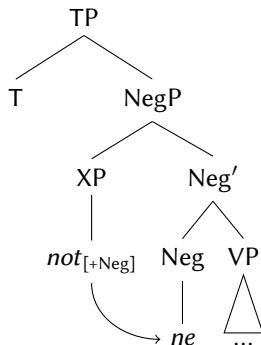
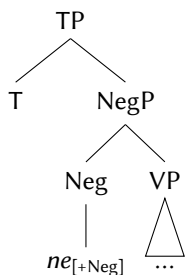


# Frisch's evidence

- ▶ To distinguish between sentence adverbial uses of *not* and uses as negation: assume 16% of sentence adverbs are pre-verbal (parallel with *never*)
- ▶ To argue that the *ne* and *not* are not a single change viewed from either end: the logit-slopes of the rise of negation-*not* and the loss of *ne* are not parallel (Kroch 1989)
- ▶ To argue that *ne ... not* results from independent insertion of *ne* and *not*:  $P(ne) * P(not) \approx P(ne \dots not)$

# Wallage (2008)

- ▶ Wallage (2008) analyzes the change in a different way
- ▶ Jespersen's Cycle: *ne*, *ne ... not*, and *not* are each stages of the cycle
- ▶ In *ne ... not* constructions, *ne* does not have negative force (cf. negative concord)



# Wallage's evidence

- ▶ The distribution of *ne* alone differs between main and subordinate clauses, whereas that of *ne ... not* is constant across clause types
  - ▶ the loss of *ne* in these different contexts obeys the CRH
- ▶ Redundant negation with *ne* comes in two types: licensed by a higher negative and licensed by an inherently negative verb (e.g. of denial). The higher-negative version survives longer. Wallage argues that the *ne* in *ne ... not* constructions is another instance of redundant *ne* licensed by negation

(2) You may deny that you were **not** the meane of my Lord  
Hastings late imprisonment Shakes. *Richard III*

(3) j'évite qu'il **ne** découvre la raison

# Disagreement

- ▶ There is a fundamental disagreement between Frisch and Wallage about the grammatical structures at play in the change from *ne* to *not*
- ▶ This can be summarized by the question: are there two atomic units (*ne* and *not*) interacting during this change, or three (those two plus *ne ... not*)?
- ▶ We propose that priming data can help answer this question

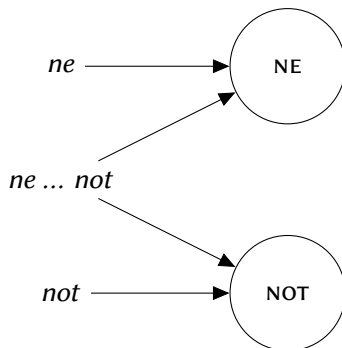


# Dataset

- ▶ The data used in this presentation come from the PPCME2 (Kroch and Taylor 2001)
- ▶ We assembled a corpus of attestations of consecutive negative declarative clauses
  - ▶ can be at any distance (must be in the same text)
  - ▶ cannot have another negated clause intervening
- ▶ The resulting corpus contains 598 target–prime pairs from the years 1250 – 1350, the middle century of the change and the focus of the bulk of our analysis

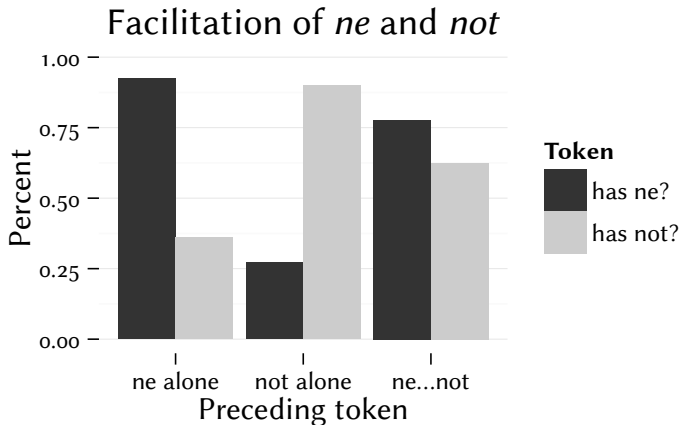
# Two-atom prediction

- ▶ If the two-atom model is correct, then we expect that uses of *ne* alone will facilitate following *ne* (alone or with *not*), and similarly for *not* alone
- ▶ We also predict that tokens of both negators together will have the same effect as *ne* alone on following use of *ne*, and similarly for *not*



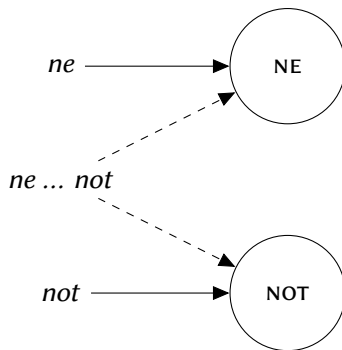
# Two-atom prediction: no

- ▶ This prediction is not borne out completely



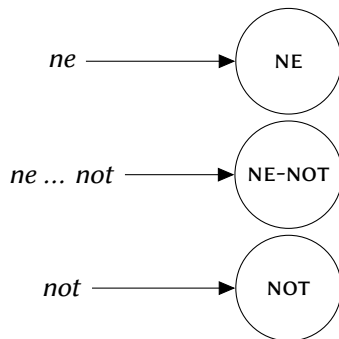
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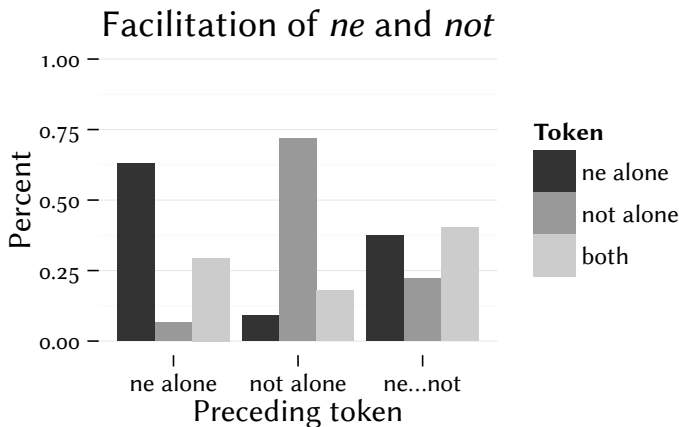
# Three-atom prediction

- ▶ If the three-atom model is correct, then we predict that each kind of negation should facilitate itself, and not any of the other forms.



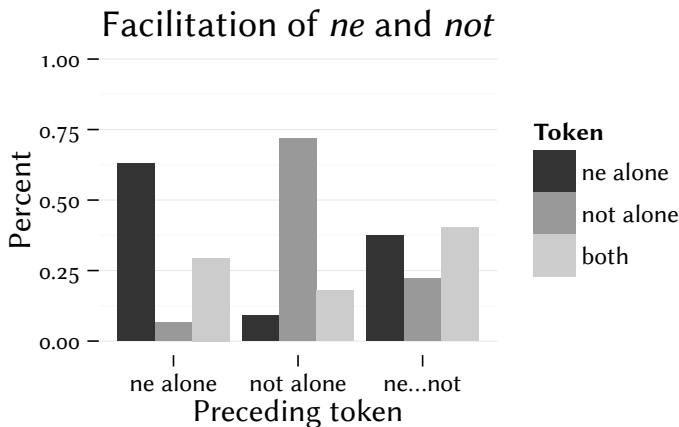
# Three-atom prediction: maybe

- ▶ This prediction is partially borne out



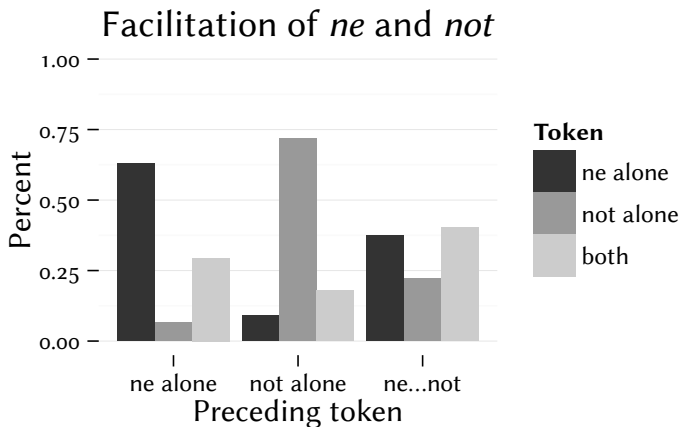
# Three-atom prediction: maybe

- For *not*, the prediction is clearly fulfilled: *not* facilitates itself, and the other two types of negation have equal, low, rates of *not*



# Three-atom prediction: maybe

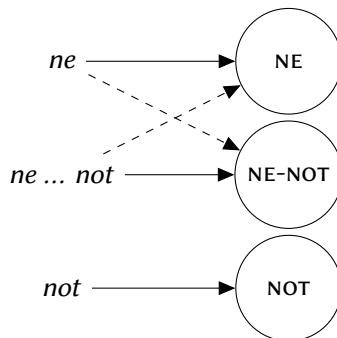
- On the other hand, *ne* and *ne ... not* both cross-facilitate each other to a certain extent, which the three-atom model does not predict





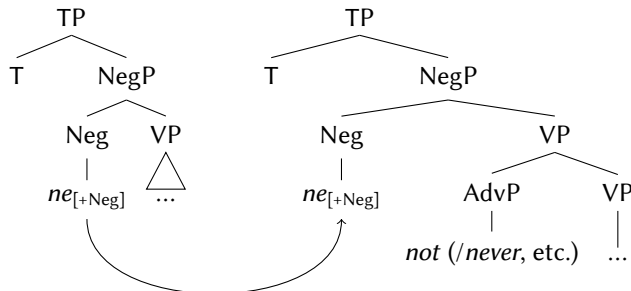
# Three-atom prediction: maybe

- ▶ On the other hand, *ne* and *ne ... not* both cross-facilitate each other to a certain extent, which the three-atom model does not predict



# Three atom prediction: yes?

- ▶ The fact that *ne ... not* and *ne* cross-facilitate to a degree can be explained by assuming that some *ne ... not* tokens retain the older structure, where *ne* alone is the negator, with *not* providing merely emphasis
- ▶ In these cases, *ne* facilitates itself and emphatic *not* is additionally either added or subtracted



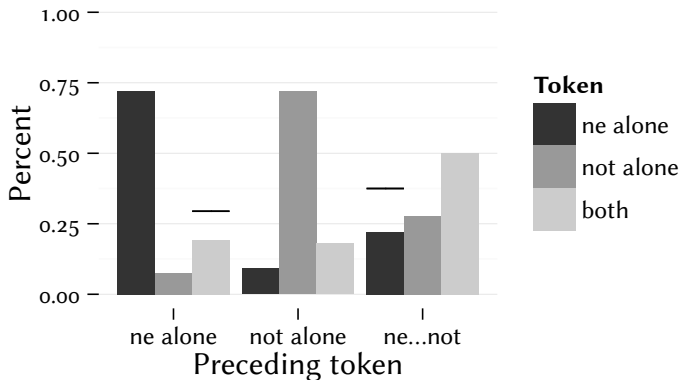
# Testing the patch

- ▶ It is possible to test this fix, using a method from Frisch (1997) to calculate the rate of *ne...not* tokens which contain adverbial *not*
- ▶ For *ne...not* targets, the test is exact: we discount the number of observed *ne...not* tokens by the rate of adverbial *ne...not*
- ▶ For *ne...not* primes, we cannot assume that the distribution of adverbial *not* is consistent across target categories
- ▶ However, we can set a bound on the discount by assuming that all adverbial *not* cases prime *ne*

# Testing the patch

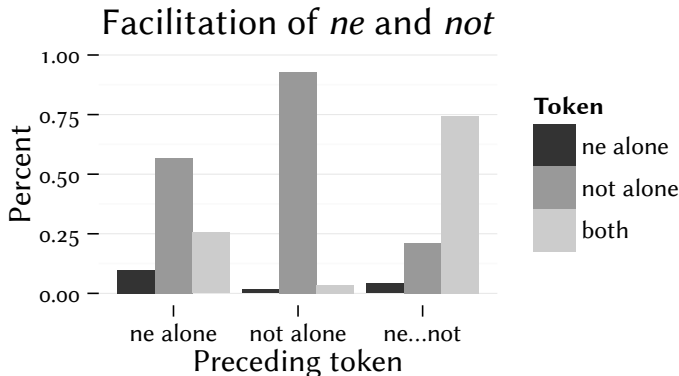
- Frisch's formula:  $N(\textit{ne} \text{ with adverbial } \textit{not}) = N(\textit{ne} \text{ with preverbal } \textit{not}) \div 0.16$

## Facilitation of *ne* and *not* (patched)



## Further evidence against the two-atom model

- ▶ Another piece of evidence in favor of the three-atom model comes from the later period of the change (1350–1400; N = 1617)
- ▶ Here, we see that *ne* facilitates *not* more strongly than *ne ... not* does, which is never expected to happen on the two-atom model



# Conclusions

- ▶ The corpus persistence data presented here, interpreted as priming, are inconsistent with the two-atom model and provide tenuous support for the three-atom one
- ▶ It remains a subject of investigation how this fact fits into the total picture of evidence about the change, which must also include the quantitative evidence discussed by Frisch (1997) and Wallage (2008)

# Conclusions

- ▶ The Constant Rate Hypothesis is important because it provides a link between frequency data attested in historical corpora and the mental representations that underlie language and language change
- ▶ We would like to suggest that persistence data constitute another, independent source of linkage between these two domains
- ▶ The investigation of persistence evidence can support and refine the conclusions of quantitative studies of syntactic change

# Acknowledgments

We would like to thank the following:







- ▶ The compilers of the PPCME2
- ▶ Beatrice Santorini
- ▶ Tony Kroch
- ▶ Our fellow graduate students at Penn



# High technology

All the data and code used in this analysis is available on GitHub:  
<https://github.com/aecay/digs15-negative-priming>

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