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

Introduction

- Researchers have made headway by using the Constant Rate Hypothesis (Kroch 1989) to infer grammatical analyses through quantitative data on historical change
- We will propose an independent source of quantitative evidence about historical grammatical analyses: clustering tendencies across tokens

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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

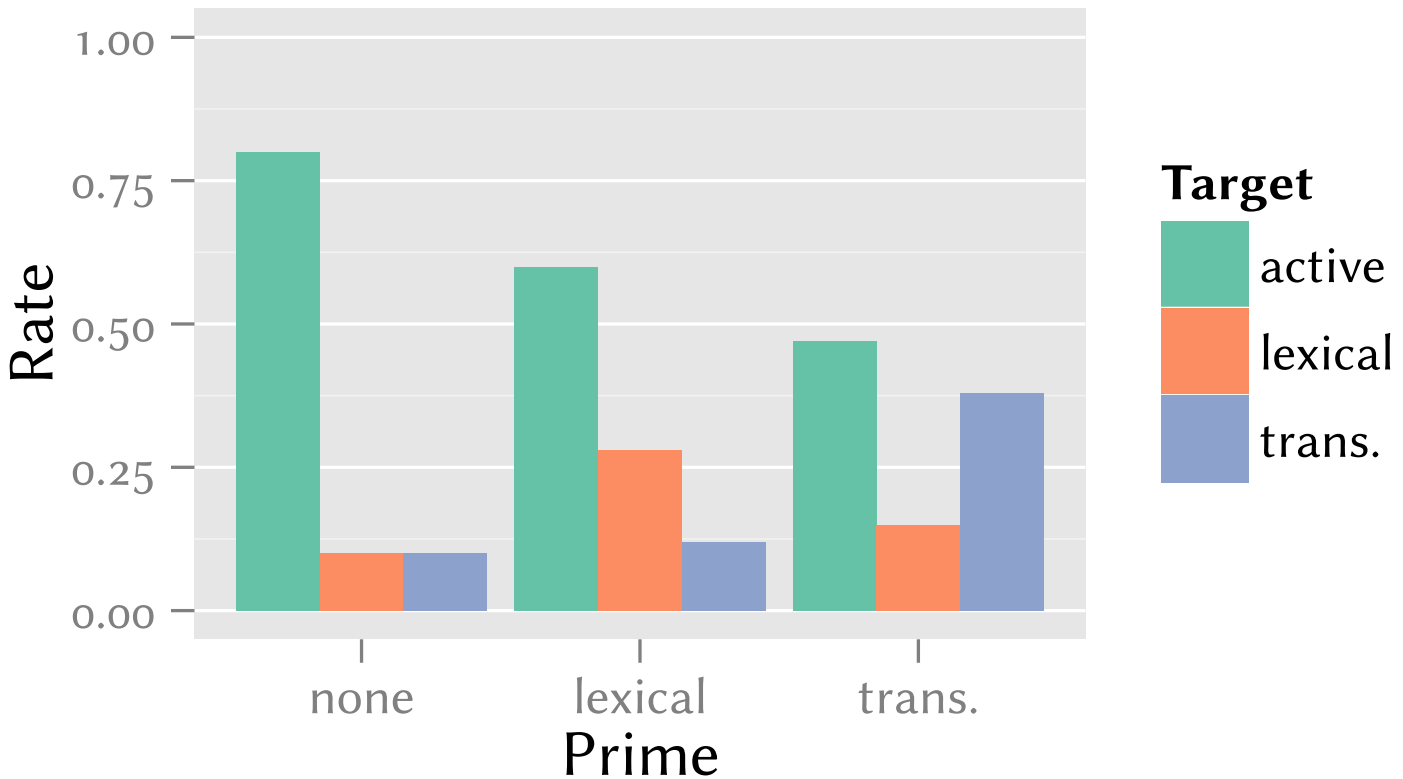
- Early demonstrations of persistence in spoken language include number agreement in Spanish DPs (Poplack 1980) and passive alternation (Weiner and Labov 1983)
- Gries (2005) finds that persistence effects in both written and spoken corpora are consistent with experimental results for the same constructions
- 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

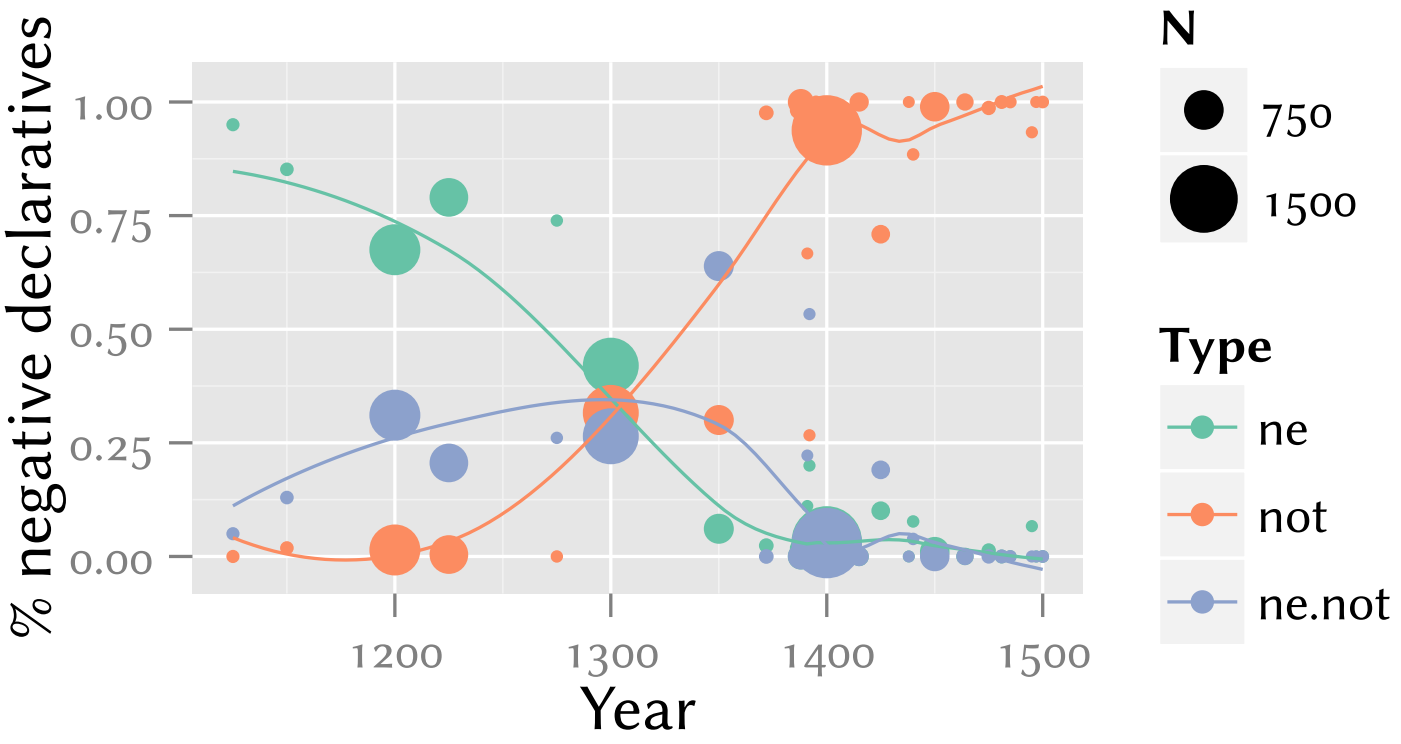
- In Middle English, there is a change in the exponence of Neg
- The negator *ne*, inherited from OE, is lost
- *not*, formerly a negative adverb, becomes the new negator

Details of the change

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

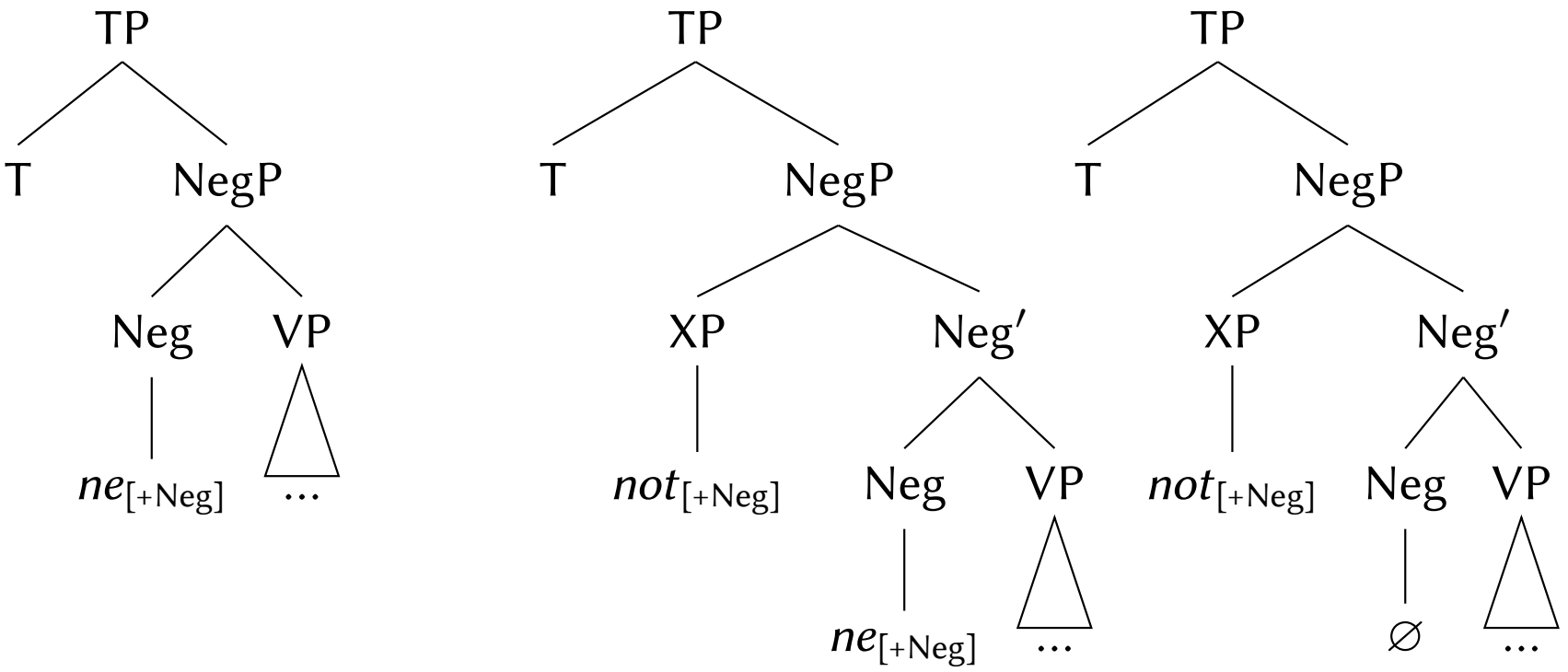
(1) he ne shal nouȝt decieue him

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

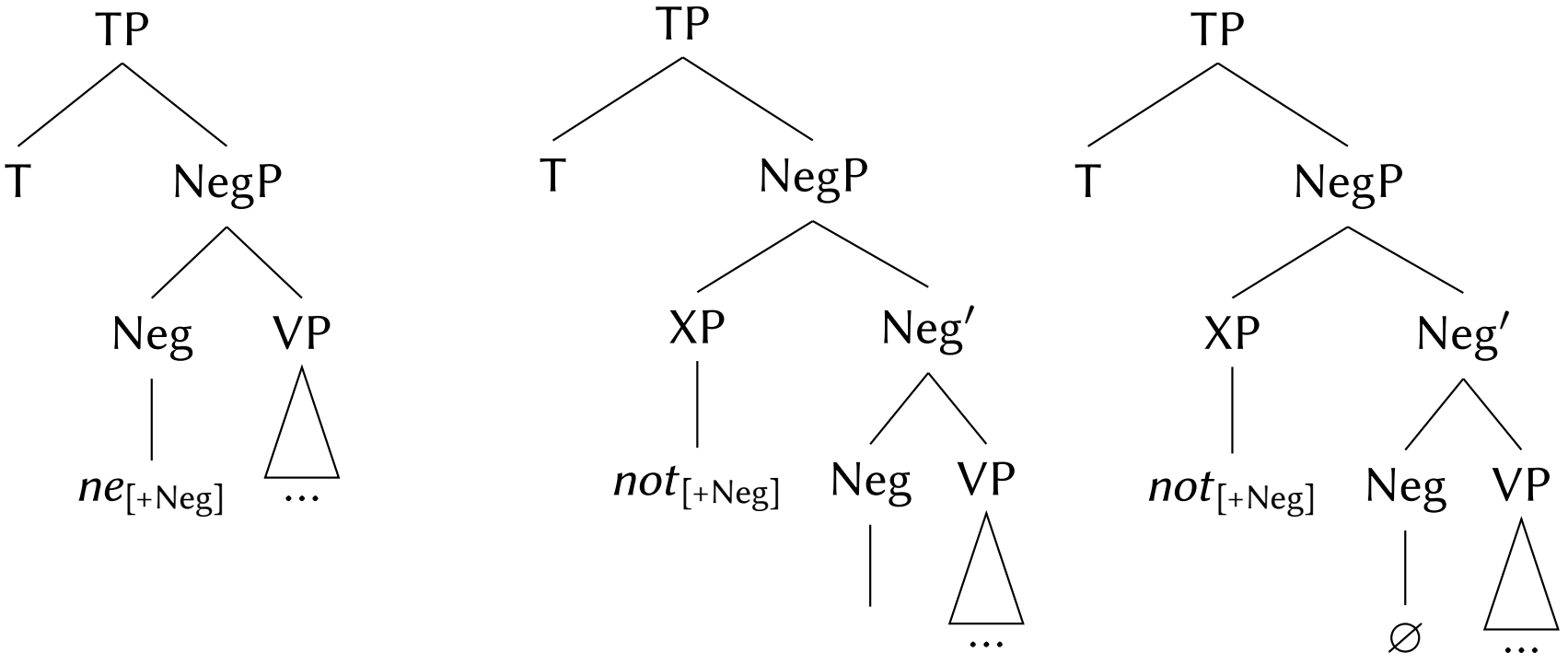


Frisch's evidence

- 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*) ≈ P(*ne ... 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)



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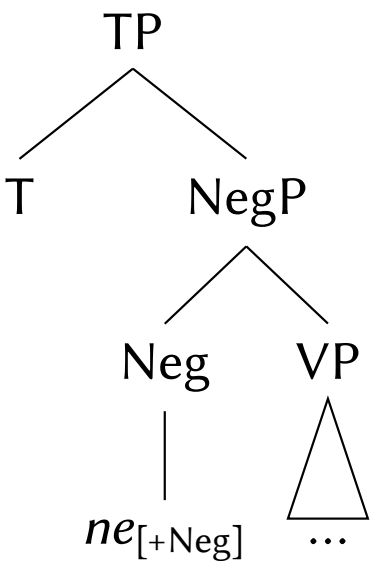

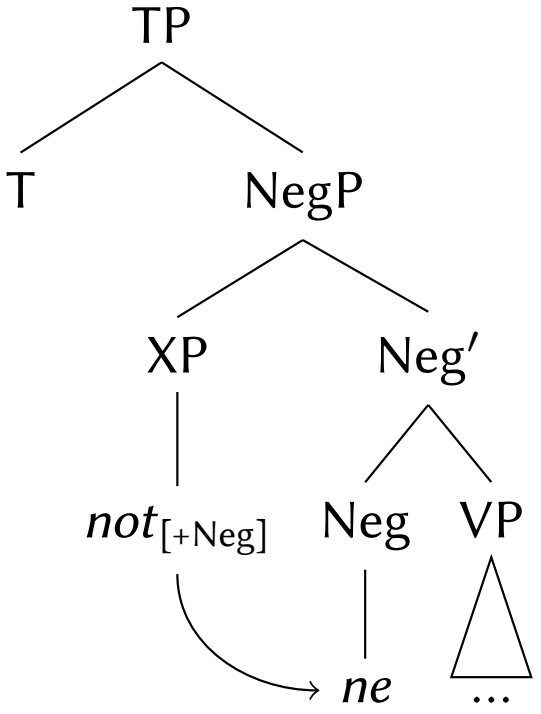

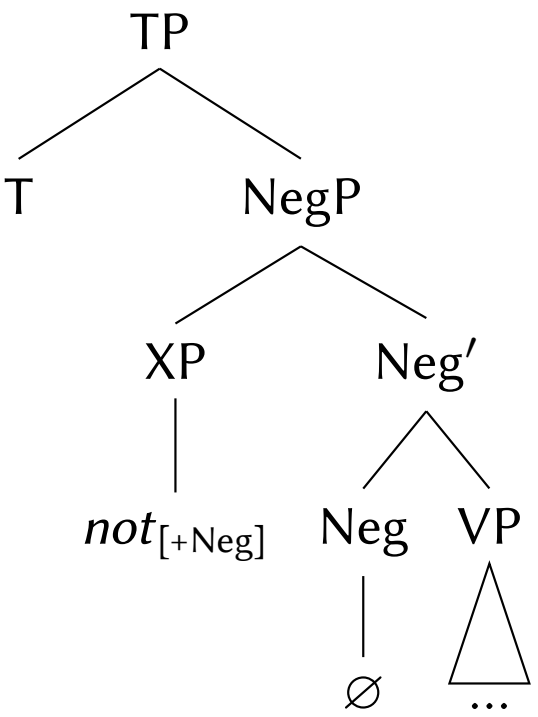

Wallage's evidence

- 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

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(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

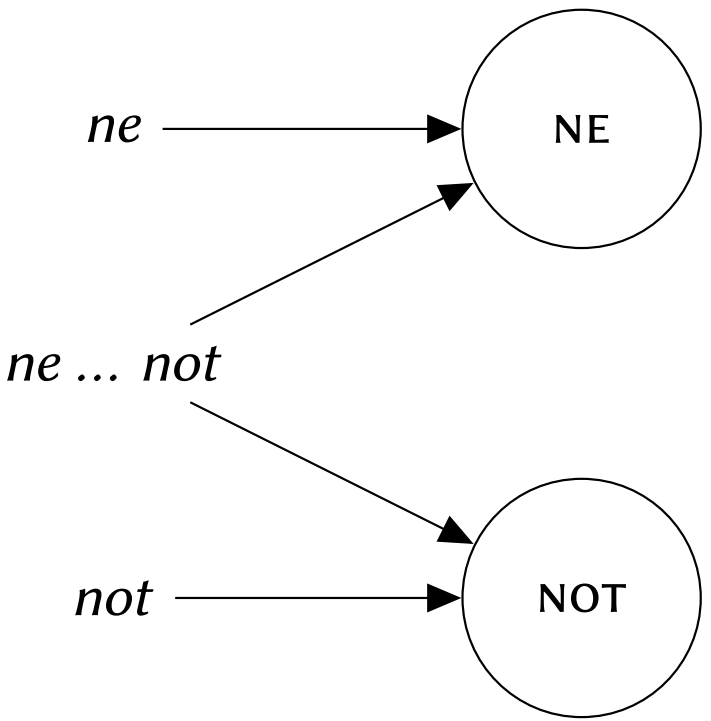
- There is a fundamental disagreement between Frisch and Wallage about the grammatical structures at play in the change from *ne* to *not*
- This can be summarized by the question: are there two atomic units (*ne* and *not*) interacting during this change, or three (those two plus *ne ... not*)?
- We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

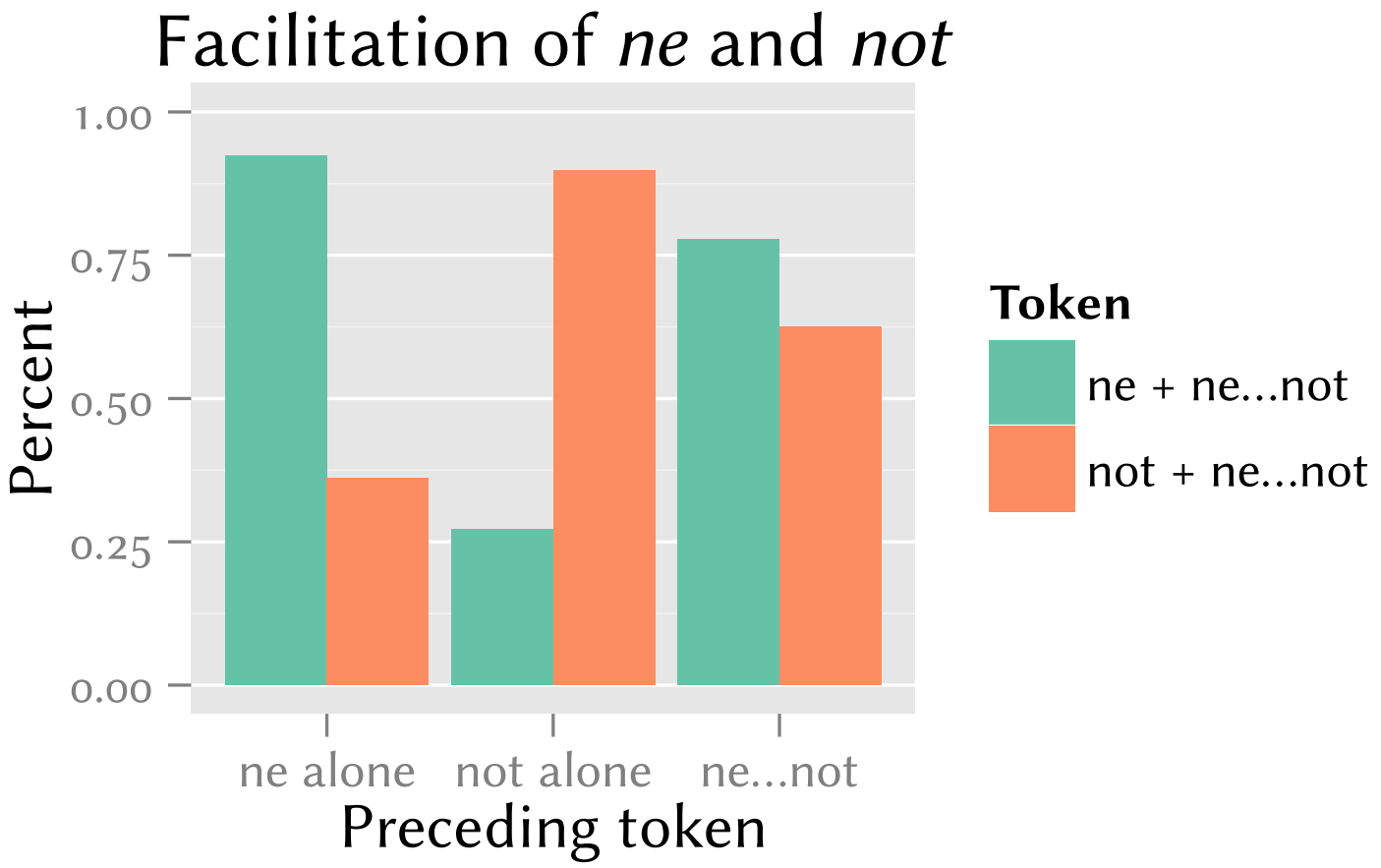
Two-atom prediction

- 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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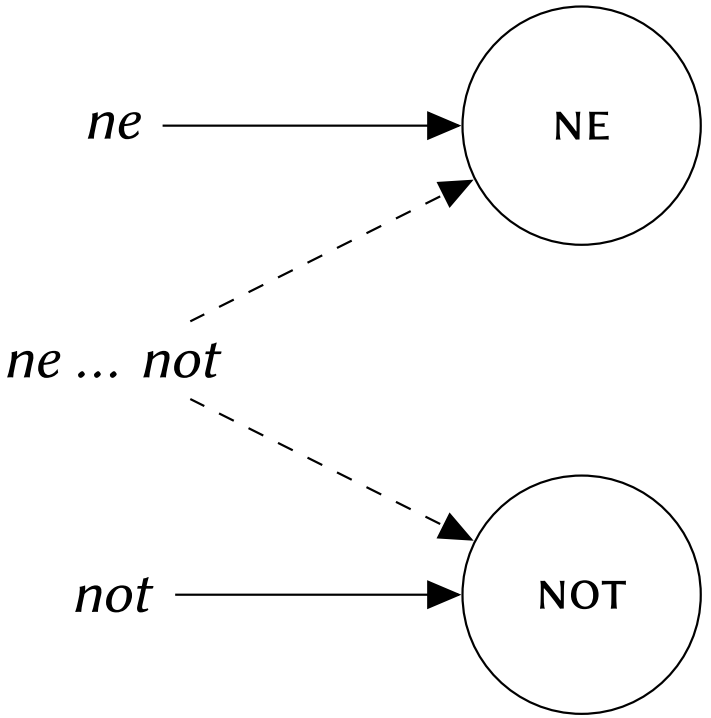
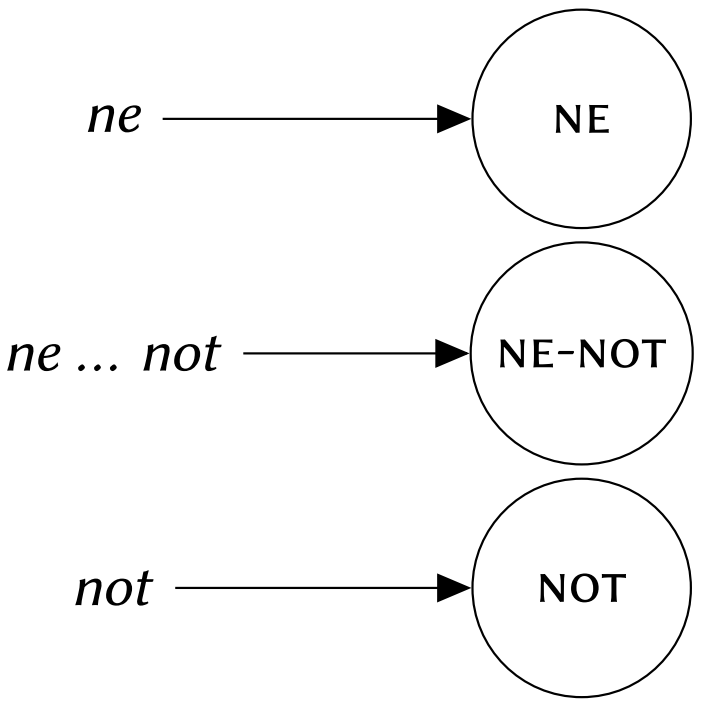


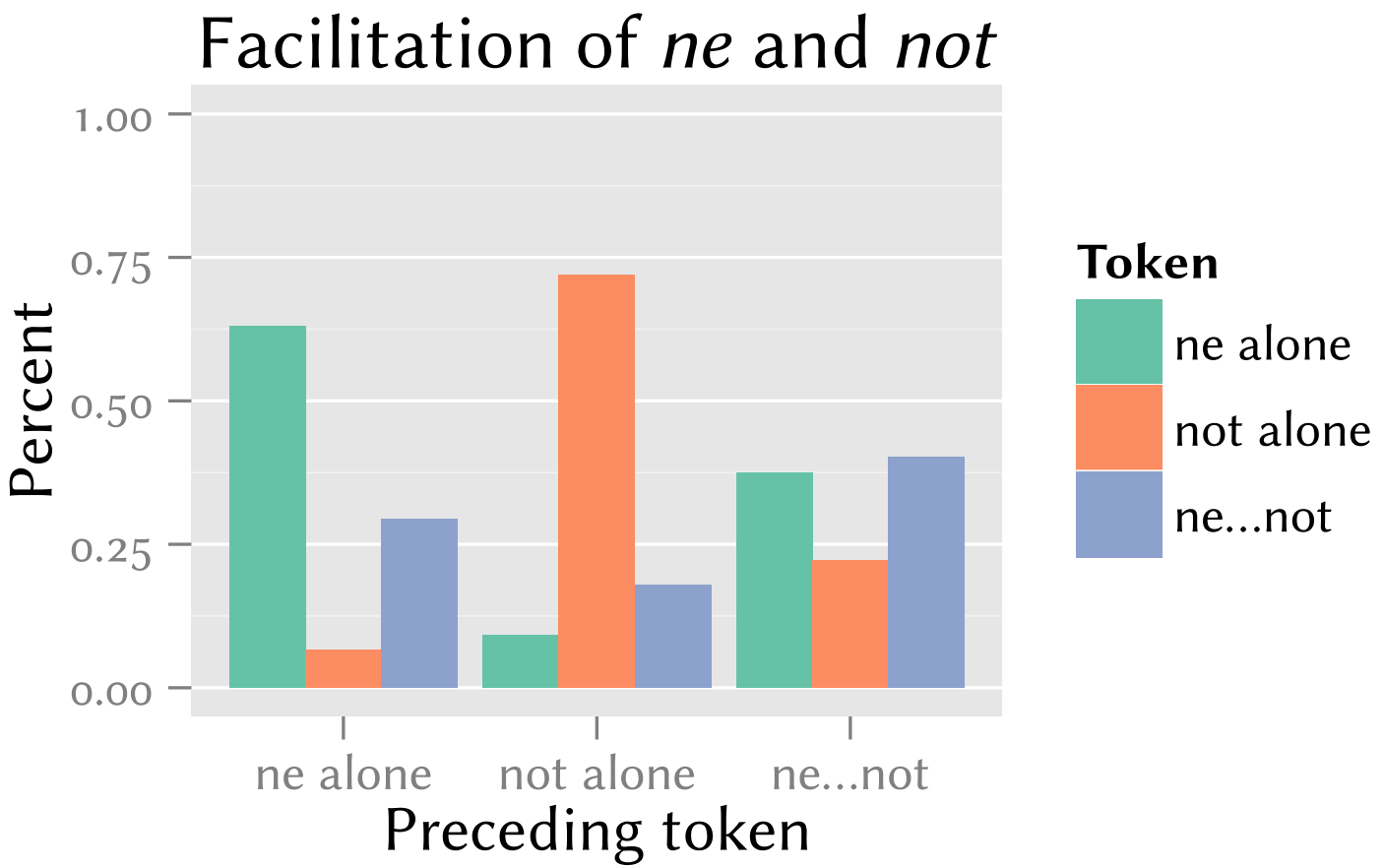
Three-atom prediction

- 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.



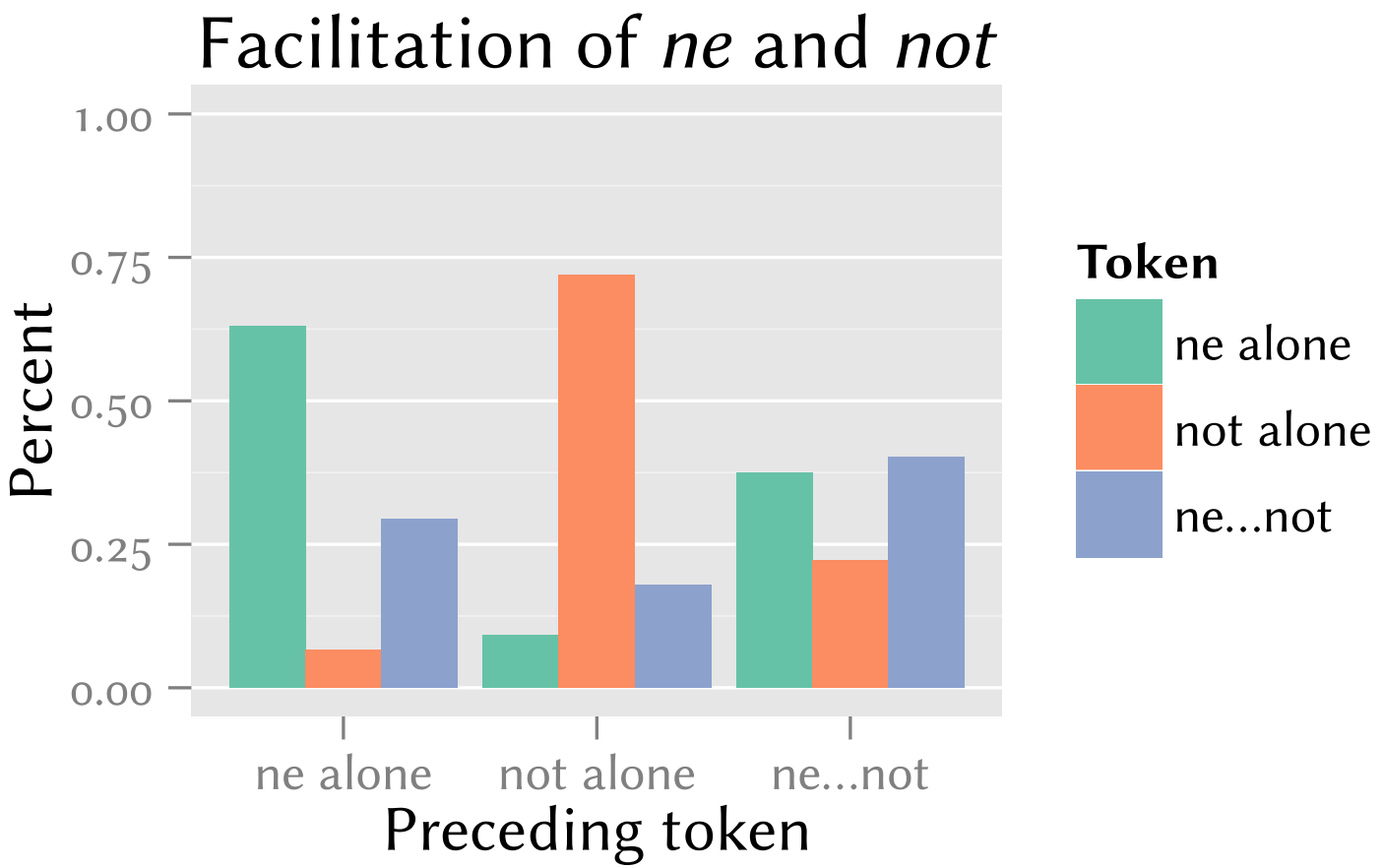
Three-atom prediction: maybe

- This prediction is partially borne out



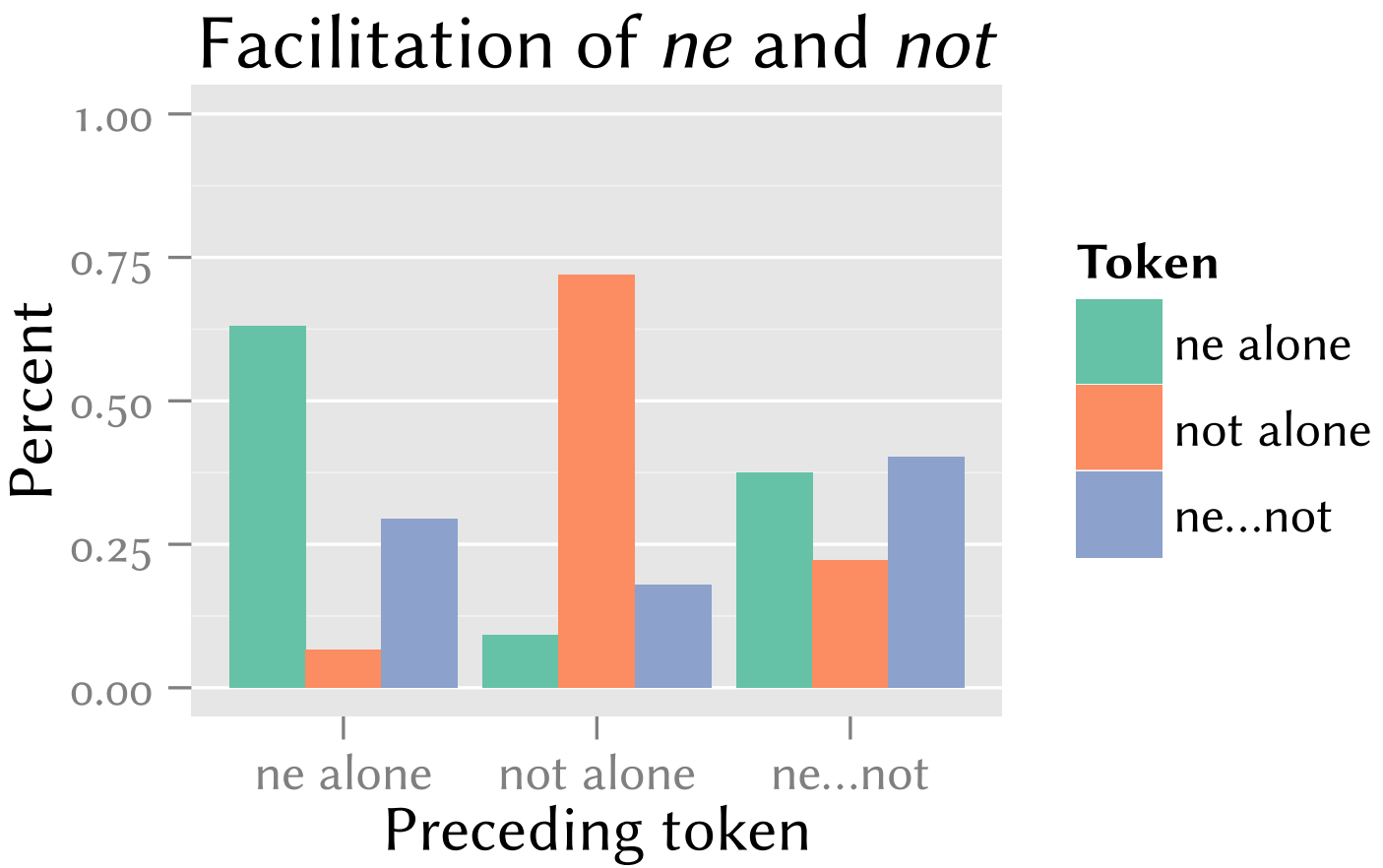
Three-atom prediction: maybe

- 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



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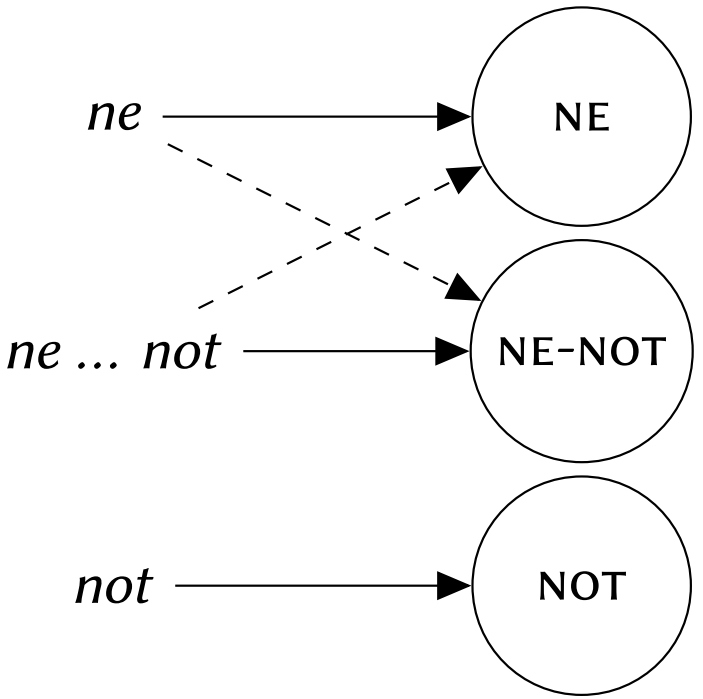
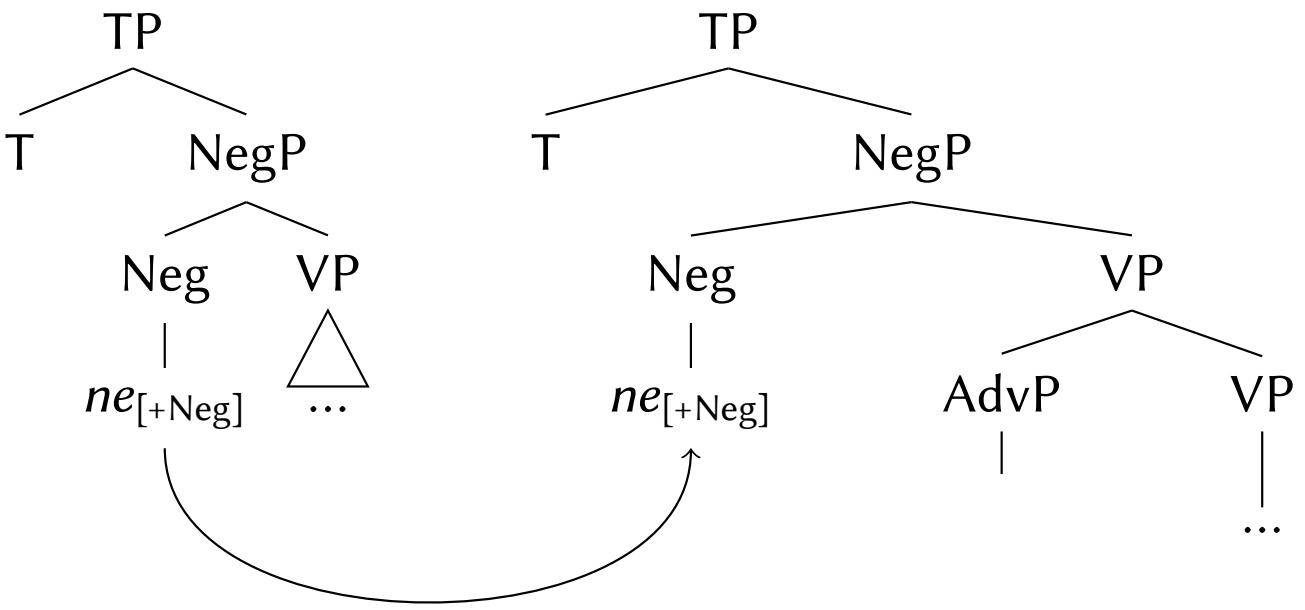


Three atom prediction: yes?

- 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



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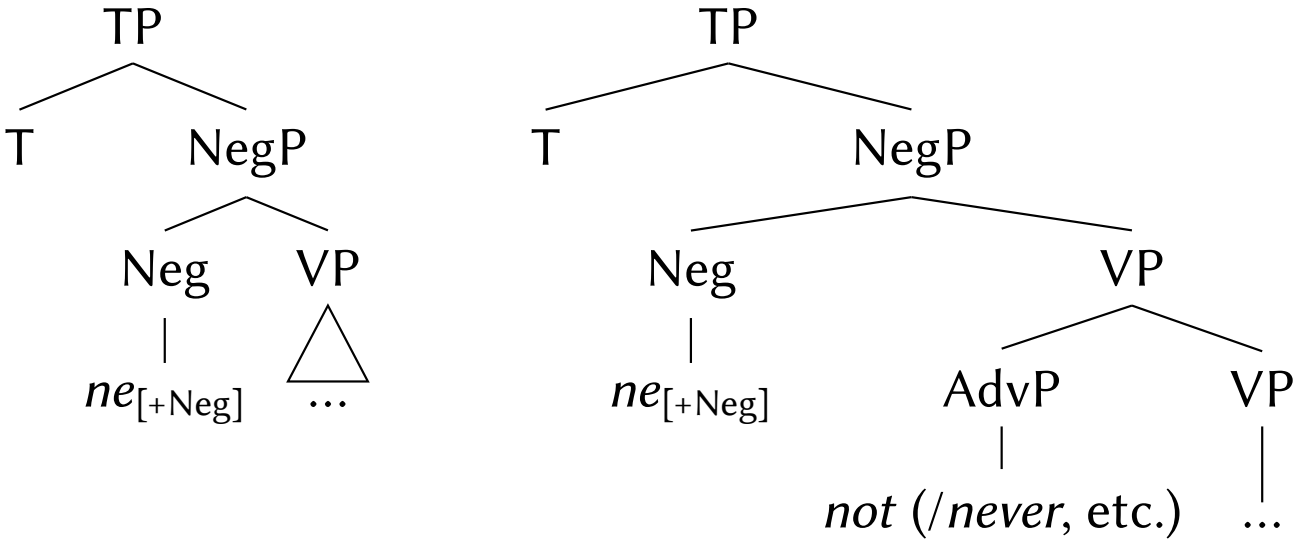
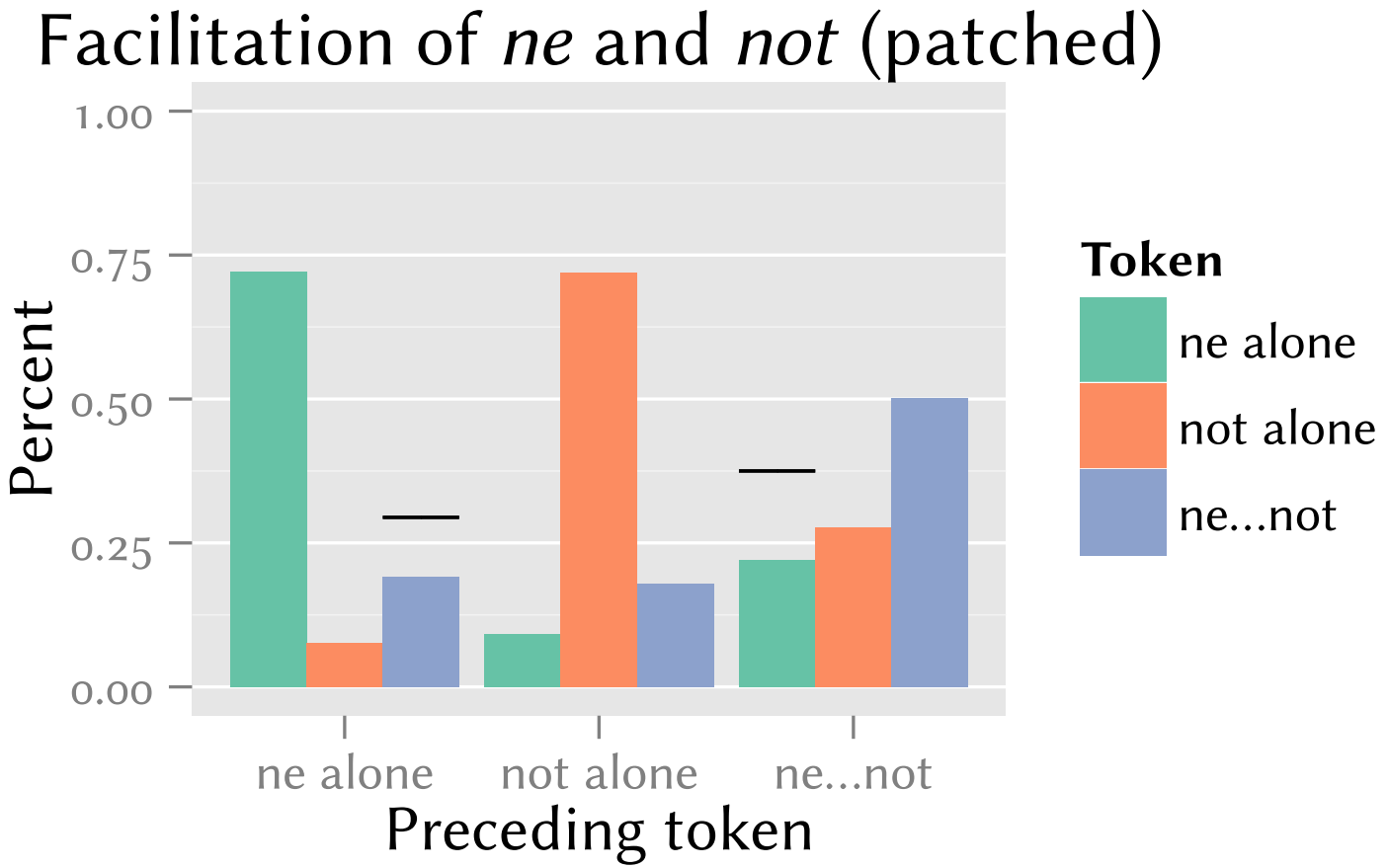


Testing the patch

- 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*

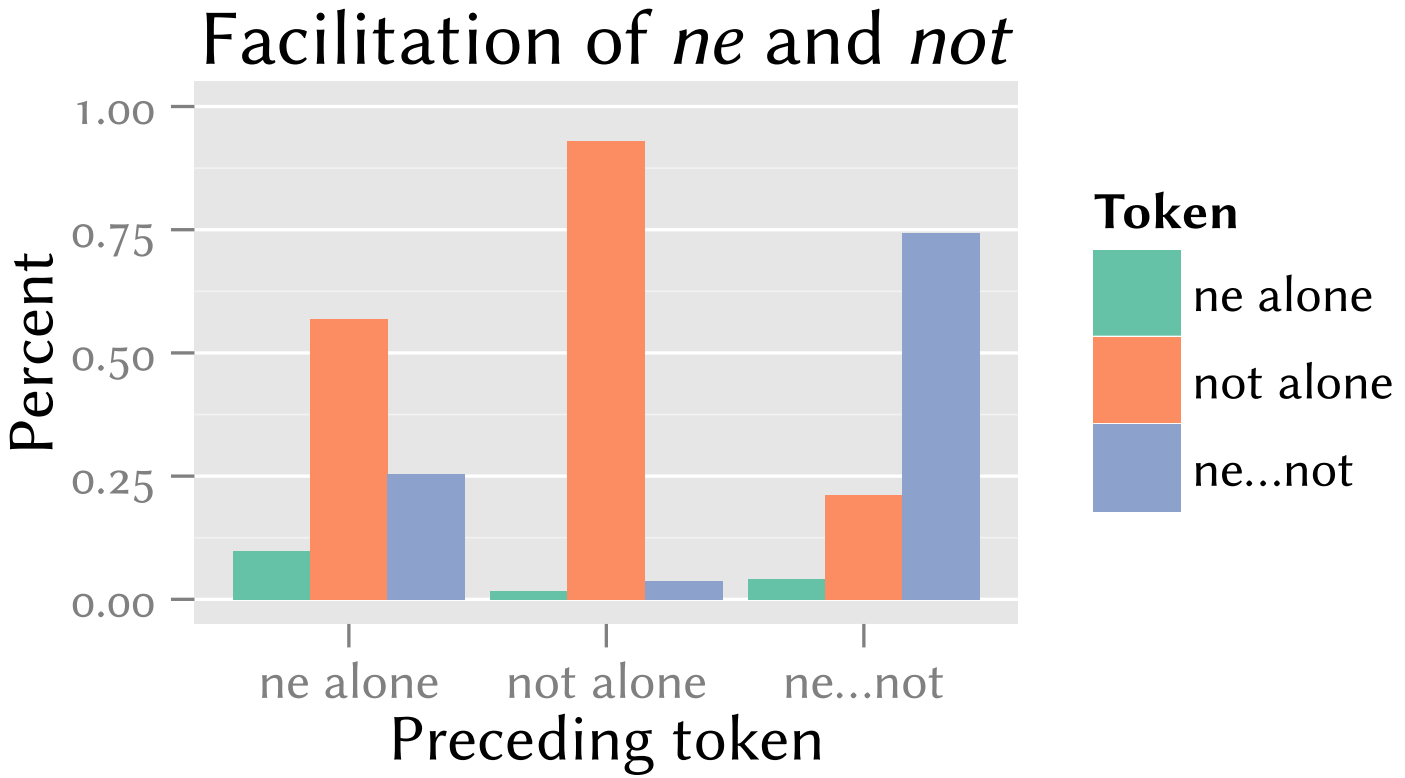
Testing the patch

- Frisch's formula: N(*ne* with adverbial *not*) = N(*ne* with preverbal *not*) ÷ 0.16



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

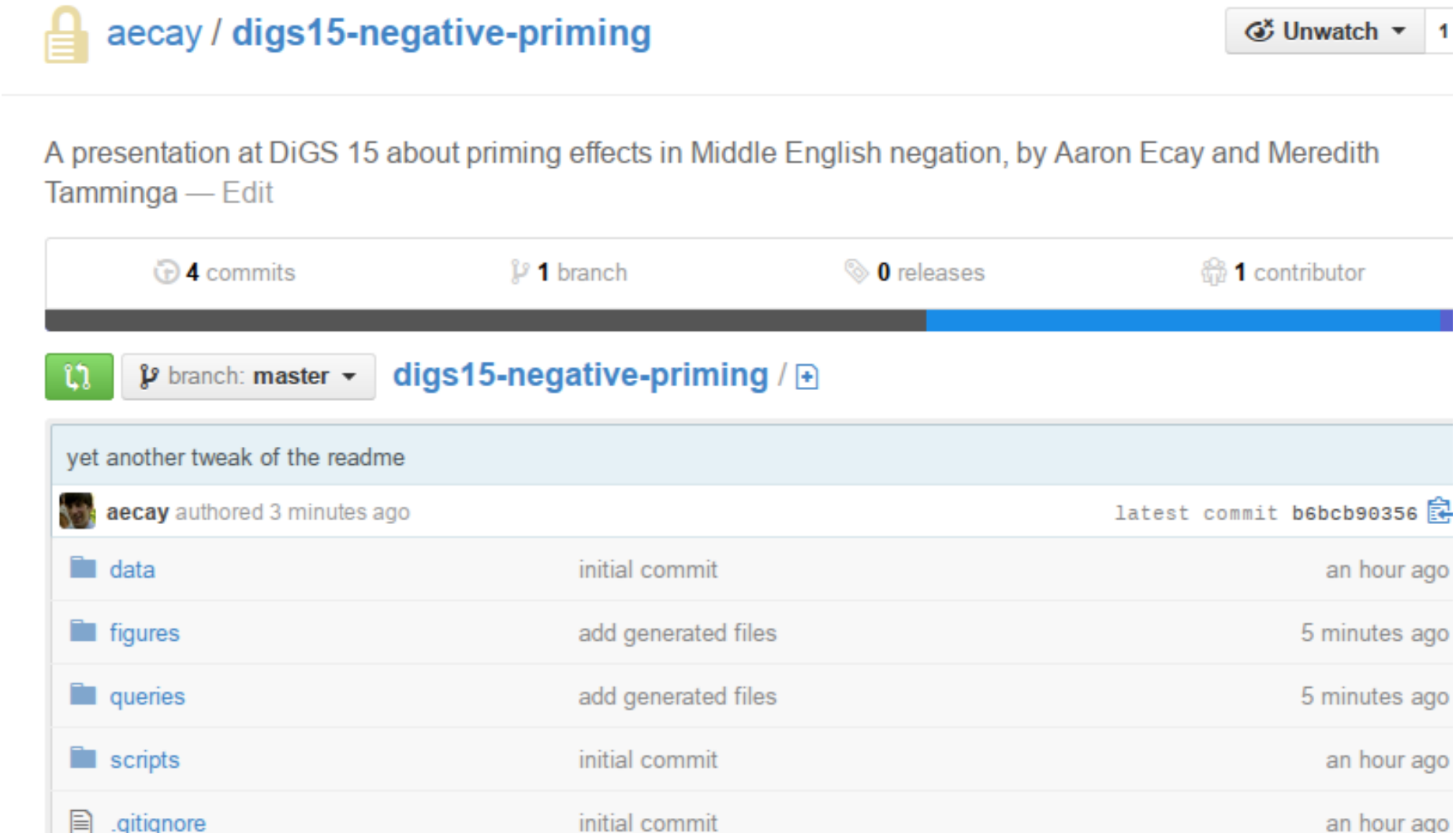
Acknowledgments

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`



Questions

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