

The polarity of clauses embedded under neg-raising predicates¹

James N. COLLINS — *University of Hawai‘i at Mānoa*

Abstract. Neg-raising inferences, whereby negated attitude predicates like *dont want to p* are strengthened to mean *want to not p*, have previously been derived assuming that negation is underlyingly positioned within the embedded clause, and undergoes movement into the matrix clause, being interpreted via reconstruction. These kinds of accounts contrast with accounts assuming that negation is interpreted in its surface position, and the neg-raising inference is derived via semantic/pragmatic inferential mechanisms, such as a homogeneity presupposition, without the use of movement. This paper constructs an argument for the latter approach based on the interpretation of *multi-dimensional* adverbial operators, i.e., adverbs with a not-at-issue meaning component, within neg-raising sentences. The paper suggests that such operators are invaluable tools for diagnosing the position and behavior of negation.

Keywords: neg-raising, not-at-issue content, negation, *as*-clauses, temporal adverbs, NPIs

1. Introduction

- (1) Do you think Donald Trump will end up serving his full term as president, or not?
- a. Think Donald Trump will end up serving his full term as president.
 - b. Do not think Donald Trump will end up serving his full term as president.
 - c. Not sure (Public Policy Polling, May 16, 2017)

The complement clause-embedding attitude predicates *think* and *sure* have similar meanings: they are often analyzed as doxastic necessity modals. But in (1b) and (1c), they behave differently when negated. *not think* in (1b) expresses *opinionatedness*. By choosing (1b) you intuitively are doxastically committed to the falsity of the embedded clause. The negated predicate *not sure* in (1c), on the other hand, expresses non-commitment.

Standardly, *think* is analyzed as a “neg-raising predicate” (NR-predicate), while *sure* is not (see, e.g., Horn 1978). Negated NR-predicates like *not think that p* are strengthened to mean *think that not p*. I contrast two classes of accounts deriving the strengthened readings of NR-predicates, or *NR-inferences*.

The first type of account assumes negation is underlyingly in the subordinate clause, but raises in the overt syntax to the matrix clause. Negation is interpreted via reconstruction into its base position or some position within the scope of the attitude predicate (Fillmore 1963; Collins and Postal 2014, 2017, 2018a; Anvari et al. 2018, etc.). Throughout, I refer to these accounts as **low negation accounts**.

According to the second type of account, negation appears and is interpreted in its surface position, i.e., the matrix clause. NR-inferences are derived via semantic/pragmatic mechanisms and/or the lexical semantics of the NR-predicate (Bartsch 1973; Gajewski 2007; Romoli 2013; Staniszewski 2018, etc.). Throughout I refer to these types of accounts as **high negation accounts**. (2) is a schematization of these contrasting accounts.²

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²We also must consider the possibility that the strategies in (2) can co-exist within a single grammar, as proposed

- (2) a. **Low-negation accounts:** $[MatrixCP \dots [NR-PRED [Subord.CP \dots NEG \dots]]]$
 b. **High-negation accounts:** $[MatrixCP \dots [NEG [\dots [NR-PRED [Subord.CP \dots]]]]]$

A key distinction between the two accounts: low negation accounts analyze the embedded clause as being negated, while high negation accounts do not. Thus the high negation account in (2b) predicts that there is a constituent $[NR-PRED [CP \dots]]$, consisting of the attitude plus the embedded clause which excludes negation.

This paper argues that evidence for such a constituent comes from what I refer to as *multi-dimensional operators*, that is, operators which add their scope as part of the not-at-issue content. Assume such a multi-dimensional operator **OP** modifies the NR-predicate. The two contrasting accounts are sketched in (3).

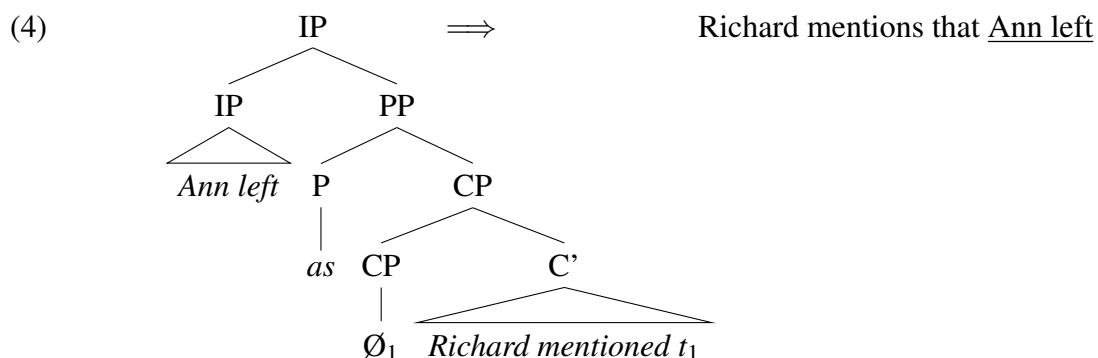
- (3) a. **Low-negation:** $[MatrixCP \dots [OP [NR-PRED [Subord.CP \dots NEG \dots]]]]$
 b. **High-negation:** $[MatrixCP \dots [NEG [\dots [OP [NR-PRED [Subord.CP \dots]]]]]]$

In (3a), negation is placed into the not-at-issue content. But in (3b), negation is excluded from the not-at-issue content. Furthermore, not-at-issue content by definition ‘projects’ through negation.³ Thus in (3b), the scope of the operator in the not-at-issue content will not be negated. This paper tests these predictions with respect to two multi-dimensional operators: (i) *as*-clauses, such as “*as Chris claimed*”, and (ii) temporal adverbials like *anymore*.

This evidence, together with comparable evidence from ellipsis phenomena from Jacobson 2018 forms an argument for the high negation account of NR-inferences. Further, the paper makes the broader claim that multi-dimensional operators are invaluable tools for diagnosing the position and behavior of negation.

2. *as*-clauses

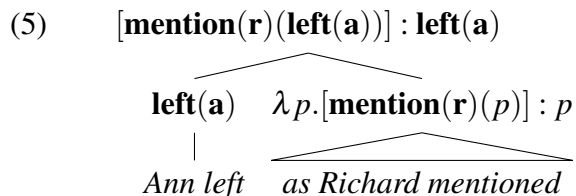
The first sort of multi-dimensional operators under discussion are parenthetical *as*-clauses. Potts 2002 proposes that English *as*-clauses are PPs. The P ‘*as*’ selects for a CP-sized clause, which contains null-operator movement to Spec,CP. The *as*-clause adjoins (left or right) to a VP- or IP-sized constituent. Assuming the VP-internal subject hypothesis (Koopman and Sportiche 1991), these are constituents with propositional meanings. The semantic content of the *as*-clause is determined via composition with its syntactic sister.



by Zeijlstra (2018), Collins and Postal (2018a), and Crowley (2019).

³By not-at-issue content, I am conflating a related but potentially diverse class of phenomena, what Tonhauser et al. (2013) refer to as ‘projective content’.

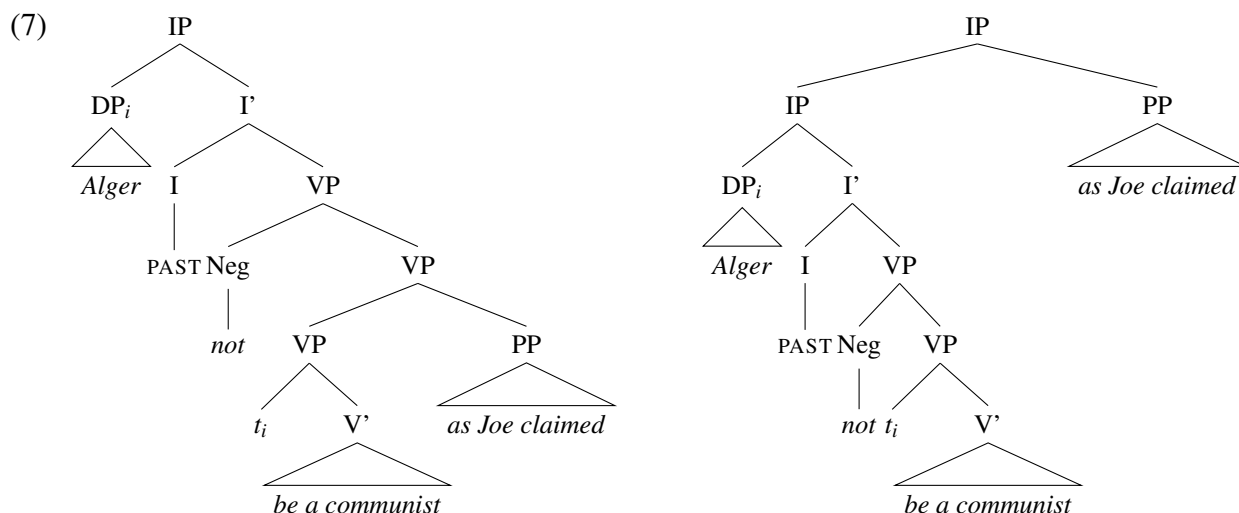
Semantically, an *as*-clause is an identity function on propositions. Additionally, it determines that the content of the *as*-clause is part of the not-at-issue content.⁴



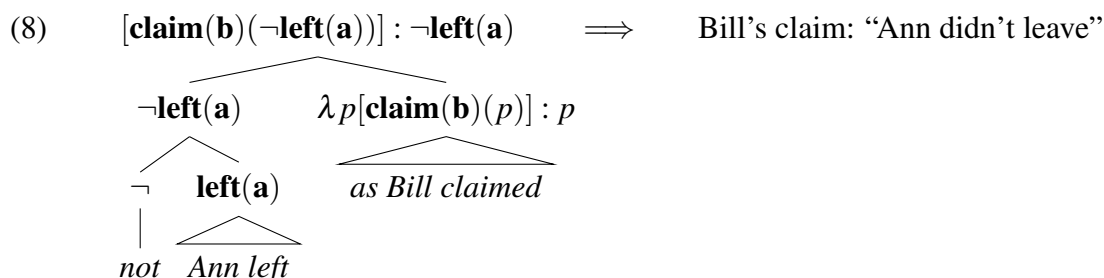
Potts observes that right-branching *as*-clauses create ambiguities when attached to negated clauses.

- (6) Alger was not a communist, as Joe claimed.
 a. \rightsquigarrow Joe claimed: Alger was a communist.
 b. \rightsquigarrow Joe claimed: Alger was not a communist.

The ambiguity has a structural explanation: (6) can be parsed with the *as*-clause right adjoined above or below negation, as in (7).

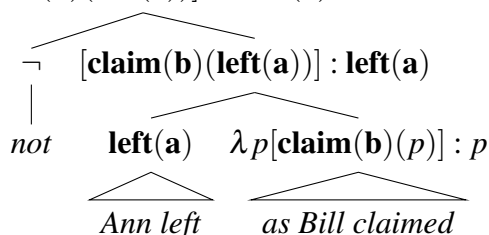


The structural ambiguity leads to the two different interpretations. In (8), but not in (9), negation is incorporated into the content of the *as*-clause.



⁴The paper assumes a three-valued semantics, with a Weak Kleene semantics for connectives, such that $\llbracket Y \rrbracket = \#$ iff $\llbracket \neg Y \rrbracket = \#$. “[Y] : Z” is read as “Y is a definedness condition for Z”. If $\llbracket Y \rrbracket = T$, then $\llbracket [Y] : Z \rrbracket = \llbracket Z \rrbracket$, else $\llbracket [Y] : Z \rrbracket = \#$. The definition follows Coppock and Beaver’s (2015) for their $\llbracket \partial(Y) \wedge Z \rrbracket$. Most importantly, the definedness condition “projects through” negation: $\llbracket \neg([Y] : Z) \rrbracket = \llbracket [Y] : \neg Z \rrbracket$. See Coppock and Beaver 2015:p432.

(9) $[\text{claim}(\mathbf{b})(\text{left}(\mathbf{a}))] : \neg \text{left}(\mathbf{a}) \implies$ Bill's claim: "Ann left"



We can immediately discount any potential analysis of *as*-clauses which assumes that they simply incorporate their sister's content with *either positive or negative polarity*. (10) below demonstrates that *as*-clauses are sensitive to the polarity of their host.

- (10) Alger was a communist, as Joe claimed.
- a. \rightsquigarrow Joe claimed: Alger was a communist.
 - b. $\not\rightsquigarrow$ Joe claimed: Alger was not a communist.

We also don't analyze negation as a variable-scope-taking operator to account for the ambiguity. Ladusaw 1988 argues that both negation and certain adverbs have fixed scope. See (11)–(12), adapted from McCloskey 1997, in which the relative scope of the adverb and negation is strictly determined by linear order. If negation were able to take exceptional wide scope, we would wrongly predict that the (b) sentences are ambiguous.

- (11) a. A fiat isn't necessarily reliable.
 b. A fiat necessarily isn't reliable.
- (12) a. Shelley doesn't always do her homework.
 b. Shelley always doesn't do her homework.

McCloskey 1997 also notes that the surface position of negation rigidly determines its NPI-licensing properties. If negation could covertly take scope, we might expect (13b) to be acceptable.

- (13) a. Which of the kids doesn't anybody like?
 b. *Which of the kids does anybody not like?

Potts' key evidence for a surface-structural approach to *as*-clause ambiguity comes from left-adjoined *as*-clauses. Here, according to Potts, the attachment site of the *as*-clause can be inferred from linear position. Thus, the structure is no longer ambiguous.⁵

- (14) As Joe claimed, Alger did not meet a communist.
- a. $\not\rightsquigarrow$ Joe claimed Alger met a communist.
 - b. \rightsquigarrow Joe claimed Alger did not meet a communist.

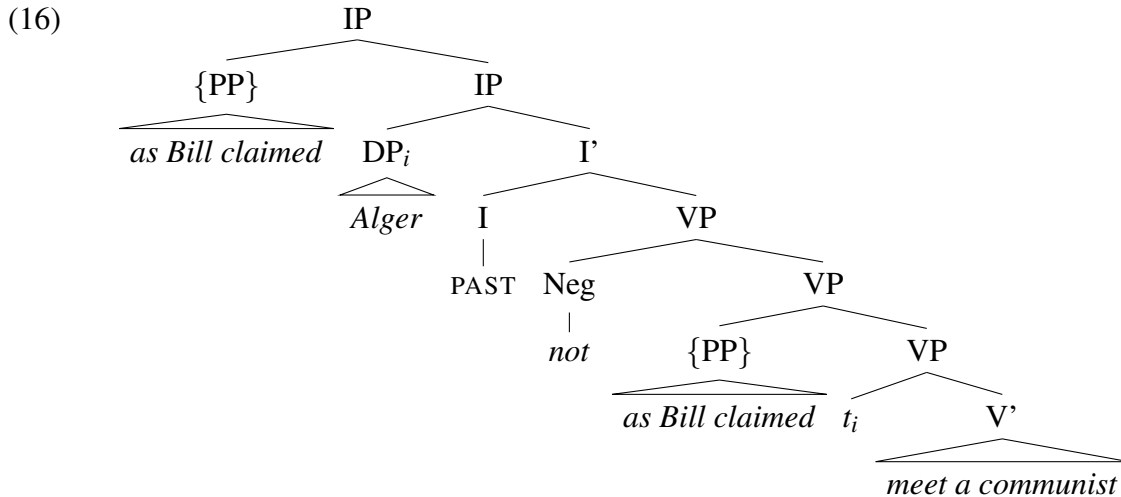
(15) Alger did not, as Joe claimed, meet a communist.

⁵There is a worry that (15) maybe be parsed as a slift, with "Joe claimed" embedding the entire constituent, thus incorporating negation into the content of the claim. To alleviate this, (15) can be embedded as in (ia). Slifts resist being embedded (ib), following Koev 2017.

- (i) a. I realized that Alger did not, as Joe claimed, meet a communist.
 b. ??I realized that Alger didn't, Mary said, like Jazz.

- a. \rightsquigarrow Joe claimed Alger met a communist.
- b. $\not\rightsquigarrow$ Joe claimed Alger did not meet a communist.

Depending on the height of attachment, the *as*-clause adjoins above or below negation, accounting for the interpretations in (14)–(15).



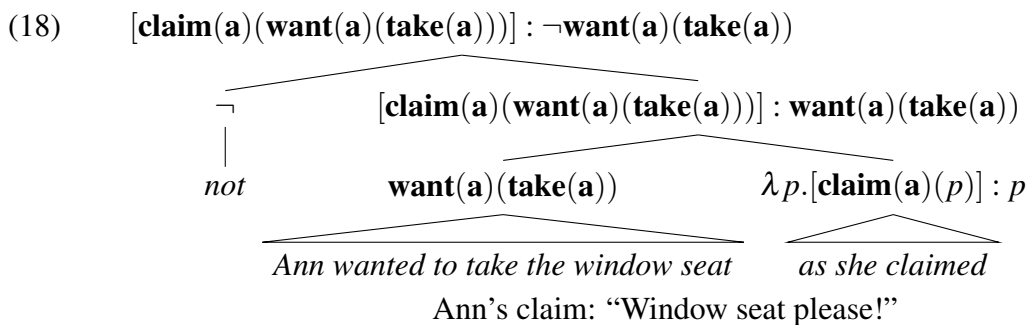
Due to their rigidity, *as*-clauses provide a valuable diagnostic for the position and scope of negation.

2.1. *as*-clauses and neg-raising

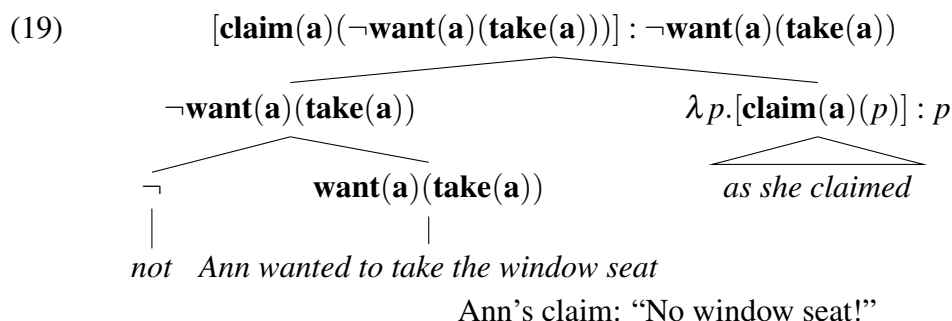
When *as*-clauses are combined with neg-raising predicates, we observe two relevant readings. The attitude is held with respect to a negated or non-negated complement.

- (17) Ann didn't want to take the window seat, as she claimed.
- a. \rightsquigarrow Ann's claim: "I want to take the window seat" *Positive Claim Inference*
 - b. \rightsquigarrow Ann's claim: "I want to not take the window seat" *Negative Claim Inference*

The 'positive claim' reading shows that *as*-clauses can scope under negation but over the NR-predicate. The high-negation approach makes this scoping, $[not \prec as\text{-}clause \prec NR\text{-}pred]$, possible. (18) demonstrates how the high negation account predicts this: negation cannot target the definedness condition. Only the asserted content is negated, deriving the 'positive claim' reading.



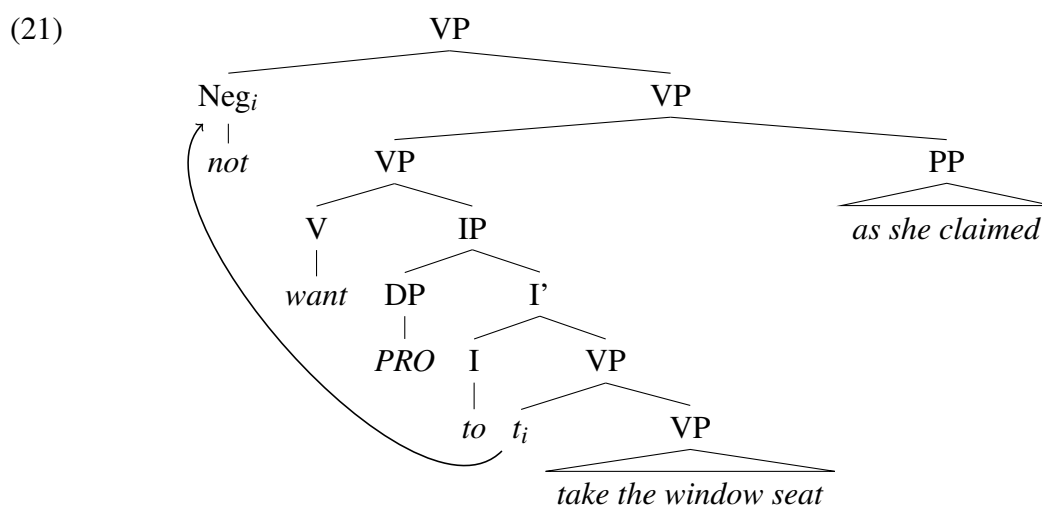
In contrast, the negative claim reading obtains when the *as*-clause scopes over negation, as in (19). Here, negation is included in the content of the *as*-clause.



In accordance with Potts 2002, *left*-adjoining the *as*-clause under negation, as in (20), forces the scoping in (18).

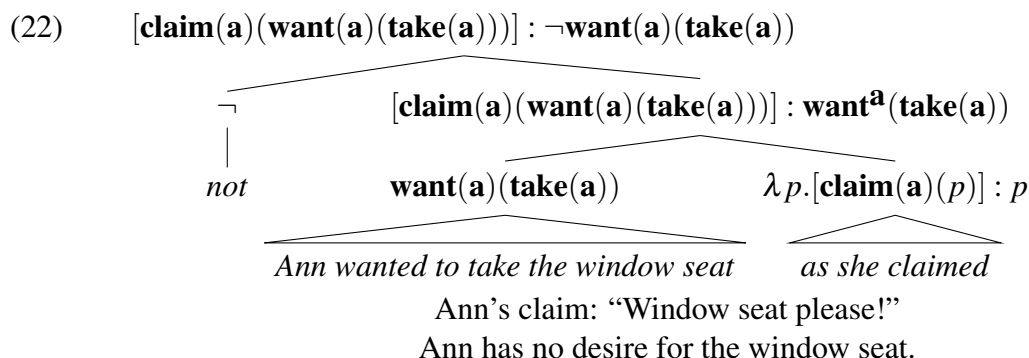
- (20) Ann didn't, as she claimed, want to take the window seat.
- a. \rightsquigarrow Ann's claim: "I want to take the window seat" *Positive Claim Inference*
 - b. $\not\rightsquigarrow$ Ann's claim: "I want to not take the window seat" *Negative Claim Inference*

The high negation account permits a constituent whose interpretation includes the NR-predicate and its complement clause with positive polarity, such as "**want(a)(take(a))**" in (18). The low negation account does not permit this constituent as the subordinate clause is negated under such accounts. Negation is reconstructed below the attitude in an NR-structure. The *as*-clause scopes over the negation, incorrectly ruling out the positive claim reading. (21) sketches a low negation account of a NR-structure, with an *as*-clause.



Low negation accounts can derive the Positive Claim Inference ("Ann claims: I want the window seat") so long as negation is merged in the high position, higher than the attitude predicate, or alternative, if negation fails to reconstruct. With no additional mechanism for deriving NR-inferences besides movement of negation (plus reconstruction), negation is interpreted in the matrix position scoping *above* the attitude predicate, thus not deriving any NR-inference.⁶

⁶Approaches assuming that the low negation and high mechanisms for NR-inferences co-exist (Zeijlstra 2018; Collins and Postal 2018a; Crowley 2019) allow an NR-inference here and so do not encounter this issue.



Low negation accounts derive the Positive Claim Inference by attaching negation high, and the NR-Inference by attaching negation low. Thus, the Positive Claim Inference should be mutually exclusive with the NR-Inference.

(23) **Low negation accounts' predictions:**

Ann didn't want to take the window seat, as she claimed.

a. *Reading 1* \rightsquigarrow Ann's claim: "I want to take the window seat"

\rightsquigarrow Ann has no desire for the window seat.

(*Positive Claim, NR*)

b. *Reading 2* \rightsquigarrow Ann's claim: "I want to not take the window seat"

\rightsquigarrow Ann has a desire to not take the window seat.

(~~*Positive Claim*~~, *NR*)

c. *Reading 3* (ruled out) \rightsquigarrow Ann's claim: "I want to take the window seat"

\rightsquigarrow Ann has a desire to not take the window seat.

(*Positive Claim, NR*)

But intuitively, (23) does not preclude *Reading 3* (i.e., Ann's positive claim does not preclude her being opinionated), contra the low negation accounts. This is more clear using the left-adjoined *as*-clause. Intuitively, (24) is compatible with Ann's being opinionated.

(24) Ann didn't, as she claimed, want to take the window seat.

a. \rightsquigarrow Ann's claim: "I want to take the window seat"

Positive Claim

b. \rightsquigarrow Ann has a desire to not take the window seat.

NR-Inference

Collins and Postal's (2017) version of the low negation account with an additional two negative operators in the matrix clause, sketched in (25), does not resolve this issue. The NR-inference is derived via the inclusion of an embedded-clause negation (which is rendered phonologically null by the matrix clause negations). Attaching the *as*-clause above the attitude in such a structure will derive a Negative Claim Inference, thus *Reading 3* above remains ruled out.

(25) **Double-negation account:**

$[\text{MatrixCP} \dots [\text{NEG} [\text{NEG} [\text{NR-PRED} [\text{Subord.CP} \dots \text{NEG} \dots]]]]]]]$

2.2. NR-readings and NPIs

According to certain low negation accounts (e.g., Collins and Postal 2014, 2017, 2018a, b), strong NPIs diagnose the presence of negation underlyingly in the subordinate clause. Lakoff 1969 states that strong NPIs cannot be licensed by negation across a clause boundary. In (26)

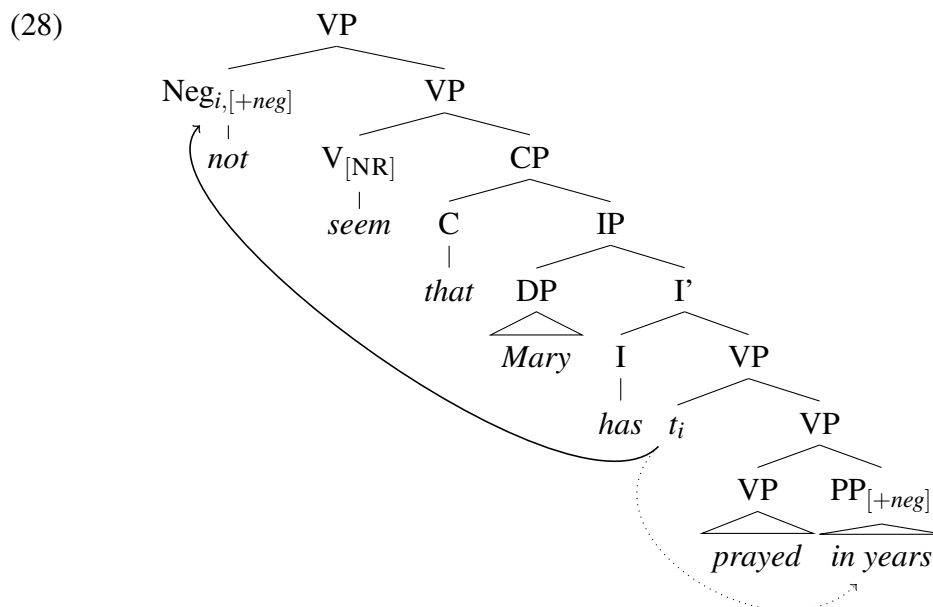
are judged as not acceptable, as in each case a strong NPI is separated from its potential licenser by a clause boundary.

- (26) a. ??It's not certain that writers can help smiling at that.
 b. ??He didn't claim that he will get there until after the game.
 c. ?*I didn't realize that Mary has prayed in years.

However, such NPIs are acceptable embedded under a neg-raising predicate.

- (27) a. They don't think that writers can help smiling at that. (adapted from Horn 1978)
 b. It's not likely that he will get there until after the game.
 c. I don't suppose that I need mention this again.
 d. She doesn't want to breathe a word about this.

Low negation accounts assume the strong NPI is licensed due to negation being reconstructed downstairs.



But even with a strong NPI in the embedded clause, *as*-clauses are still able to take scope over an embedded clause with positive polarity. We can simultaneously get both (i) a positive claim inference and (ii) an opinionatedness inference.

- (29) [Context: John is a liar. He said Mary was likely to be gossiping about his drug habits, even though he knows it's most likely that she's been keeping it a secret.]
- a. It isn't probable that she breathed a word about it, as John claimed.
 (i) \rightsquigarrow John's claim "it's probable that she breathed a word about it".
 (ii) \rightsquigarrow It's probable that she didn't say anything.
 (Positive Claim, NR)
- b. It isn't, as John claimed, probable that she breathed a word about it.
 (i) \rightsquigarrow John's claim "it's probable that she breathed a word about it".
 (ii) \rightsquigarrow It's probable that she didn't say anything.
 (Positive Claim, NR)

- (30) [Context: John is a liar. He has been telling everyone that Mary is deeply religious, even though she has not practiced any religion for a very long time.]
- a. John doesn't think that Mary has prayed in years, as he claimed.
- (i) \rightsquigarrow John's claim "I think she has prayed at some point".
- (ii) \rightsquigarrow John believes she hasn't prayed in a long time.
(Positive Claim, NR)
- b. John doesn't, as he claimed, think that Mary has prayed in years.
- (i) \rightsquigarrow John's claim "I think she has prayed at some point".
- (ii) \rightsquigarrow John believes she hasn't prayed in a long time.
(Positive Claim, NR)

The low negation account predicts these simultaneous inferences should not be possible. The positive claim inference requires negation to attach high. The presence of the NPI and the opinionatedness inference both require negation to attach low. But the evidence presented here points to negation being attached high.

3. The excluded middle assumption

A class of high negation accounts assume that negation scopes over the attitude predicate and, starting with Bartsch 1973, that the NR-Inference is derived by an *opinionatedness assumption*, either encoded as a (soft) presupposition (Gajewski 2007) or as a grammaticalized scalar implicature (Romoli 2013, Xiang 2013). In short, a NR-predicate implies that the truth of the prejacent is settled in the relevant modal base. Here, following Gajewski, we can encode the opinionatedness assumption as a presupposition.

$$(31) \quad \text{want} \rightsquigarrow \lambda p. \lambda x. [\mathbf{want}(x)(p) \vee \mathbf{want}(x)(\neg p)] : \mathbf{want}(x)(p)$$

For readability, we can abbreviate the opinionatedness assumption like so:

$$(32) \quad \text{want} \rightsquigarrow \lambda p. \lambda x. [\mathbf{opn}(\mathbf{want})(x)(p)] : \mathbf{want}(x)(p)$$

The at-issue content has the effect of denying one of the disjuncts contributed by the opinionatedness assumption. The opinionatedness assumption together with the at-issue content gives rise to the following inferences via disjunctive syllogism. (34) shows how the account gives rise to an NR-Inference.

$$(33) \quad [\text{Ann}_i \text{ wants } [PRO_i \text{ to swim}]] \rightsquigarrow [\mathbf{opn}(\mathbf{want})(\mathbf{a})(\mathbf{swim}(\mathbf{a}))] : \mathbf{want}(\mathbf{a})(\mathbf{swim}(\mathbf{a})) \\ \models \mathbf{want}(\mathbf{a})(\mathbf{swim}(\mathbf{a}))$$

$$(34) \quad [\text{Ann}_i \text{ wants } [PRO_i \text{ to swim}]] \rightsquigarrow [\mathbf{opn}(\mathbf{want})(\mathbf{a})(\mathbf{swim}(\mathbf{a}))] : \neg \mathbf{want}(\mathbf{a})(\mathbf{swim}(\mathbf{a})) \\ \models \mathbf{want}(\mathbf{a})(\neg \mathbf{swim}(\mathbf{a}))$$

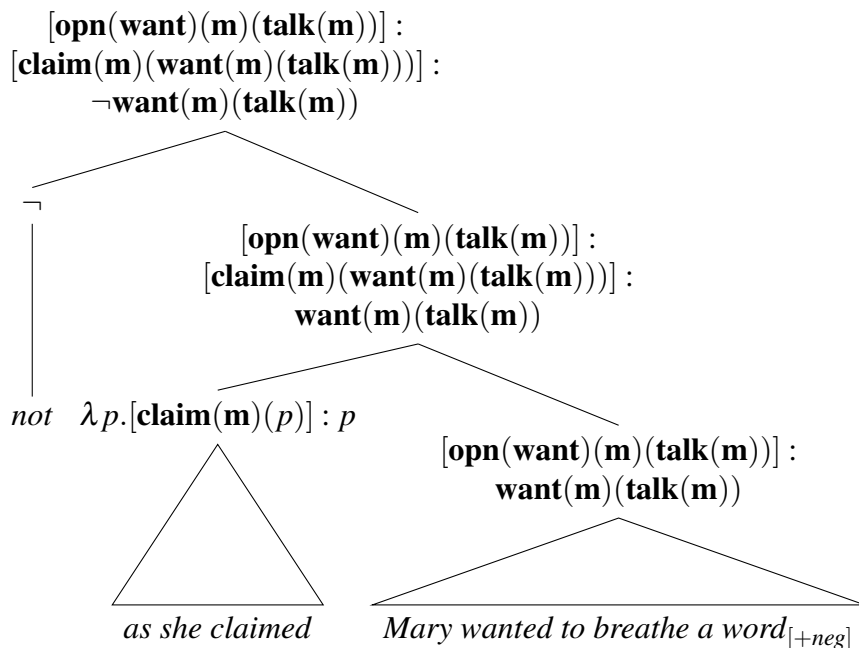
(34) expands as below, showing that the inference simply follows the schema: $p \vee q, \neg p, \therefore q$

$$(35) \quad \begin{array}{ll} \text{a. Not-at-issue: } \mathbf{want}(\mathbf{a})(\mathbf{swim}(\mathbf{a})) \vee \mathbf{want}(\mathbf{a})(\neg \mathbf{swim}(\mathbf{a})) & p \vee q \\ \text{b. At-issue: } \neg \mathbf{want}(\mathbf{a})(\mathbf{swim}(\mathbf{a})) & \neg p \\ \text{c. Inference: } \mathbf{want}(\mathbf{a})(\neg \mathbf{swim}(\mathbf{a})) & \therefore q \end{array}$$

Under this account, we can derive the NR-Inference, via the **opn**-presupposition of the NR-predicate, and the Positive Claim Inference, as negation excluded from the *as*-clause content.⁷

⁷The **opn(want)(m)(p)** presupposition is also incorporated into the content of Mary's claim but this is excluded

(36)



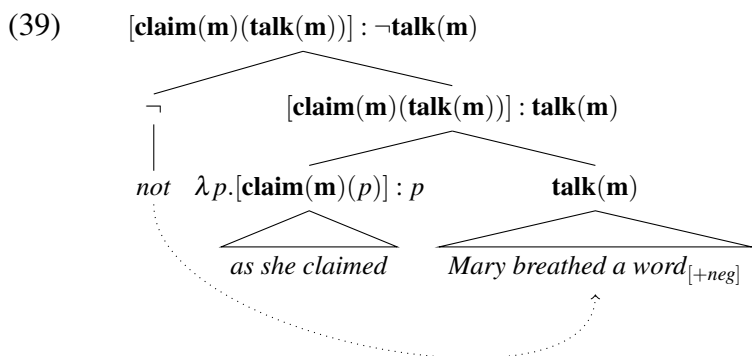
NPIs like *in years* and *breathe a word* are understood as having existential meanings. They have syntactic licensing requirements, notated by a $_{[+neg]}$ feature. They must be c-commanded by an appropriate licenser.

- (37) a. *breathe a word* $_{[+neg]}$ $\rightsquigarrow \lambda x. \exists y [\text{talk}(y)(x)]$ (abbreviated as $\lambda x. \text{talk}(x)$ above)
 b. *in years* $_{[+neg]}$ $\rightsquigarrow \lambda p. \lambda t. \exists t' < t [p(t')]$

The syntacticization of the account explains why NPIs are blocked from constituents preposed to the left of negation.

- (38) a. Mary doesn't believe she has smoked in years.
 b. *That she has smoked in years, Mary doesn't believe.
 c. *That she has smoked in years isn't believed by Mary.

If an *as*-clause intervenes between the NPI and its licenser, its non-negated meaning is incorporated into the content of the *as*-clause. As the content of the *as*-clause (e.g., **talk(m)** below) is **not** present in the syntactic structure of the *as*-clause, the positive meaning of the NPI can arise without any violation of its syntactic licensing requirement.



for space. The NPI VP *breathe a word* is simply translated as **talk**; see (37a) below.

Finally, a brief word about accounts which assume that high negation and low negation derivations of NR-Inferences co-exist in a single grammar (Collins and Postal 2018a (CP18), Crowley 2019). CP18 assumes there are two paths to NR-Inferences: (i) negation can attach high, deriving an NR-Inference using the opinionatedness presupposition, or (ii) negation can also attach low, deriving an NR-Inferences using movement plus reconstruction.

We can also probe this theory with *as*-clauses. If the grammar made path (ii) available, we would expect (40) to be ambiguous: the *Negative Claim* reading derived by (moved) low negation. But it is ruled out.⁸

- (40) George didn't think that, as Mary claimed, the children had left.
- a. \rightsquigarrow Mary claimed the children had left. *Positive Claim Inference*
 - b. $\not\rightsquigarrow$ Mary did not claim the children had left. *Negative Claim Inference*

We find that the unambiguous *Positive Claim* reading persists even with strict NPIs, providing evidence against the “dual paths” approach to NR-Inferences.

- (41) a. George didn't think that, as Mary claimed, the children had prayed in years.
 \rightsquigarrow Mary claimed the children prayed.
- b. George didn't think that, as Richard suspected, the children had breathed a word about it.
 \rightsquigarrow Richard suspected the children talked.

4. Is neg-raising necessary for interclausal NPI licensing?

Under the high negation account, negation is in the matrix clause. So how does it license the strong NPI? Horn 2014 argues that the attitude's status as an NR-predicate is not a necessary condition for licensing strong NPIs inter-clausally. Such NPIs can be licensed across non-NR-predicates too, as in the following examples (? denotes example pulled from the web).

- (42) a. I can't say I've cooked myself a full meal in weeks, if not months. (Horn 2014)
- b. I'm not sure he's done a damn thing to correct it. (Hoeksema 2017)
- c. Crowne Plaza Hawkesbury Valley: Lovely setting but not sure would stay again until renovated ?
- d. not sure I realized until today how much I really love little charm necklaces! ?
- e. What if I'm not sure I can come until just before the class? ?

Crucially, these examples express *non-opinionatedness*: the attitudes are not behaving semantically like NR-predicates. An account assuming that tautoclausal negation is necessary for strong NPIs is forced to say here that negation here can exceptionally move across a non-NR predicate, but this would entail that negation here does not reconstruct, in order to derive the non-opinionatedness (see the discussion in Collins and Postal 2018b).

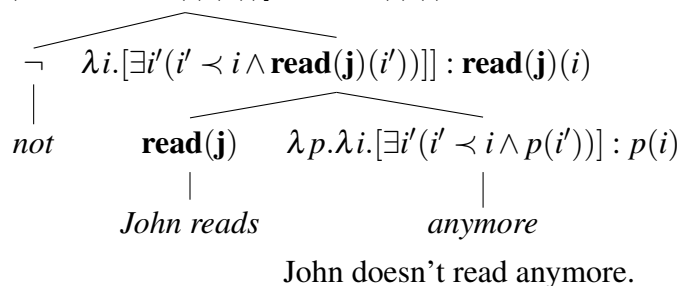
Hoeksema 2017 additionally shows strong NPIs are licensed in relative clauses, supposedly islands for movement. Thus a mechanism for interclausal licensing of strong NPIs is independently necessary.

⁸A possible counterpoint to this observation is to invoke a principle proposed in Seuren 1974 that for negation to undergo movement, it must be the highest scoping element in the clause. The high negation account derives the observation in (40) without this extra stipulation. Such a stipulation also leaves it unexplained why PPIs are licensed in NR-embedded clauses, see (45).

(47) *anymore* $\rightsquigarrow \lambda p.\lambda i.[\exists i'(i' \prec i \wedge p(i'))] : p(i)$

In short, *anymore* takes scope over a proposition p . It presupposes p took place before the evaluation time (henceforth *backshifting*). Negation targets p , but not the presupposition.

(48) $\lambda i.[\exists i'(i' \prec i \wedge \mathbf{read(j)}(i'))] : \neg \mathbf{read(j)}(i)$



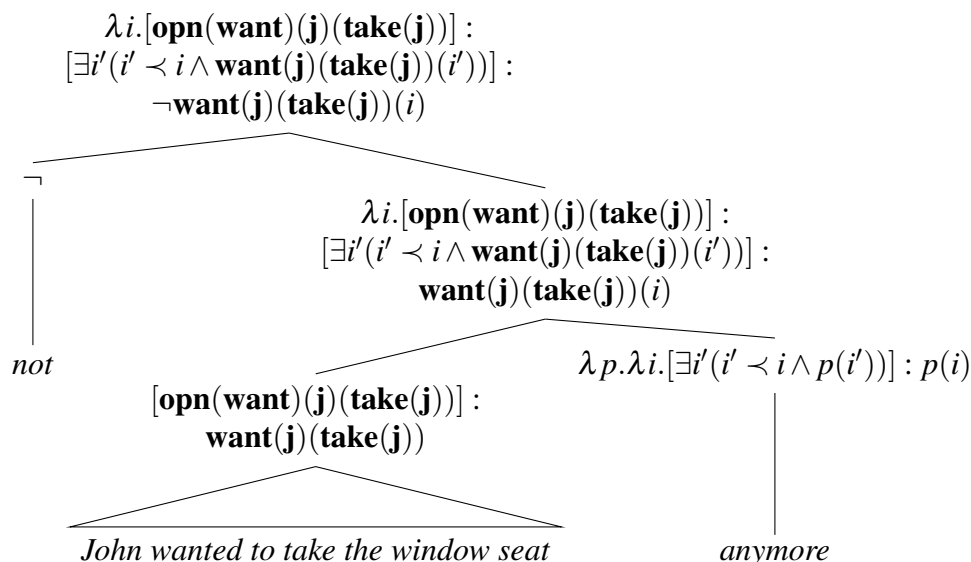
When *anymore* combines with a NR-predicate, it can scope over the NR-predicate and its complement clause, but below negation. It is possible that in this configuration, the backshifted presuppositional content has *positive polarity*.

(49) John doesn't want to take the window seat anymore.

- a. \rightsquigarrow John wants to not take the window now. *NR-Inference*
- b. \rightsquigarrow John wanted to take the window seat before. *Positive Backshifted Inference*

Low negation accounts derive the NR-Inference with negation in the lower clause. So, why is the backshifted content not negated? On the other hand, under high negation accounts, negation is in the higher clause. Thus, the readings in (49) fall out naturally.

(50)



Low negation accounts, like CP14, can say that high-negation structures like (50) are also possible, though mutually exclusive with a NR-Inference. But under those accounts, low negation is forced by strict NPIs.

Even with strong NPIs, the backshifted presupposition of *anymore* still has positive polarity,

not predicted by the low negation accounts.⁹

- (51) a. Sue doesn't want her to breathe a word about it anymore.
(i) \rightsquigarrow Now, Sue wants her to not talk. *NR-Inference*
(ii) \rightsquigarrow In the past, Sue wanted her to talk. *Positive Backshifted Inference*
b. Sue doesn't think Mary has prayed in years anymore.
(i) \rightsquigarrow Now, Sue thinks that she hasn't prayed. *NR-Inference*
(ii) \rightsquigarrow In the past, Sue thought she had prayed. *Positive Backshifted Inference*

These data are understandable under the scoping in (50). Negation is not underlyingly in the subordinate clause under a NR-predicate. NR-inferences emerge through pragmatic mechanisms like an excluded middle inference. NPIs like *breathe a word* and *in years* have an existential semantics, which must be negated in the asserted content, but can be non-negated in not-at-issue content.

6. Licensing NPIs upstairs

(49)–(51) are additionally problematic for the low negation account. *anymore* is an NPI in many dialects of English, thus it must be licensed by a wider scoping negative element.

If negation is in the lower clause (e.g., licensing the NPIs *breathe a word* and *in years*), then how is *anymore* licensed upstairs? Prince 1976 argues that a low negation account is preferable due to the unacceptability of (52). The NPI in the matrix clause *at all* is supposed to be unacceptable as negation is underlyingly low and so cannot license the higher NPI.

- (52) *I don't at all think that John will leave until next week. (Prince's judgement)

But in my judgement, (52) is acceptable. (53) provides some web examples of *at all* licensed in the matrix clause of an NR-structure, contra Prince 1976 and Crowley 2019 which shares Prince's judgement.

- (53) a. I don't at all think that we should banish these motivational phrases⁷
b. But, of course, we don't at all think that this fact renders your belief unjustified⁷
c. I don't at all think that Kavanaugh and Cosby are comparable⁷
d. I don't at all think that begging is as rife to-day as it was five years ago in Dublin⁷

In any case, whatever supposedly rules out (52) in Prince's and Crowley's judgements isn't a general property of NPIs. We find a variety of NPIs licensed in the matrix clause of NR-structures. For example, additive *either*:

- (54) a. Kim doesn't want to leave, and I don't want to leave either.
b. Kim doesn't believe the exam is postponed, and I don't believe it is either.

Another class of examples: the “judge” argument of NR-evidentials like *seem*, *appear*, and *look like*. The judge argument, in the matrix clause, can be an NPI. Thus it must be licensed by

⁹The syntactic parses in (51) is somewhat obscured as *anymore* strongly prefers to be right-adjoined. Switching *anymore* for the near paraphrase *any longer* opens up the possibility of left-adjunction. (ia)–(ib) demonstrate the same point as above, allowing the NR-Inference and the Positive Backshifted Inference simultaneously (cf. Homer 2015; Staniszewski 2018 on *no longer*). Left-adjunction rules out any analysis involving a low attachment site for the adverb.

- (i) a. Sue doesn't any longer believe that Jane will breathe a word about it.
b. Sue doesn't any longer think that Mary has prayed in years.

negation in the matrix clause. Negation in the subordinate clause will fail to license these NPs.

- (55) a. It didn't seem to anyone else [that Chef Matsumoto prepared the best gelato].
 b. It didn't appear to a single person there [that the performers would show up].

(56) are some naturally occurring examples of this construction.

- (56) a. it should not appear to anyone [that we wish to claim more than is our due]^γ
 b. It does not appear to anyone [that God is in charge]^γ
 c. you will not sound to anyone [like you have a foreign accent]^γ
 d. it doesn't look to anyone [like anything meaningful can possibly emerge from the seemingly endless random groups of data]^γ

Low negation accounts could say negation is merged in the matrix clause in the examples in (56). But these theories assume negation is merged low in the presence of strict NPIs. However, strict NPIs in the subordinate clause do not preclude NPI judge arguments in the matrix clause, contra low negation theories.¹⁰

- (57) a. It didn't seem to anyone present [that John would lift a finger to help].
 b. It didn't appear to a single member of the jury [that Ann had paid taxes in years].

The acceptability of the matrix clause NPIs falls out directly from the high negation account.¹¹

The adjunction-site of *anymore* is obscured by its right-attachment. The Hebrew adverb *ba-xayim* 'in-life' linearly precedes the embedded clause, avoiding this confusion. I propose *ba-xayim* is an NPI temporally restricting its scope to the 'lifetime' of an individual as in (58). **life**(*x*) denotes a temporal interval beginning at *x*'s birth/creation and ending at the time of evaluation.

- (58) *ba-xayim* $\rightsquigarrow \lambda P.\lambda x.\lambda i.\exists i'[i' \subseteq [\mathbf{b}_x, i] \wedge P(x)(i')]$

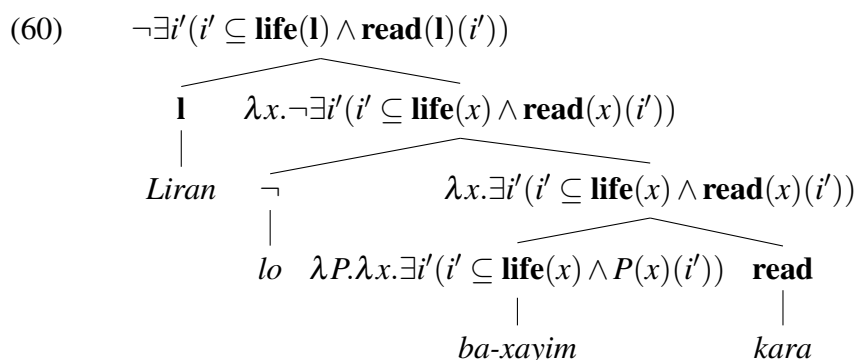
(60) sketches the basic structure of (59). I'm assuming that the Hebrew verb undergoes head-movement to a position below negation, but is interpreted under reconstruction, thus the structure in (60).

- (59) *Liran lo kara ba-xayim.*
 Liran not read in-life
 Liran never read in his life.

¹⁰cf. Hoeksema 2017 who hedges on this point.

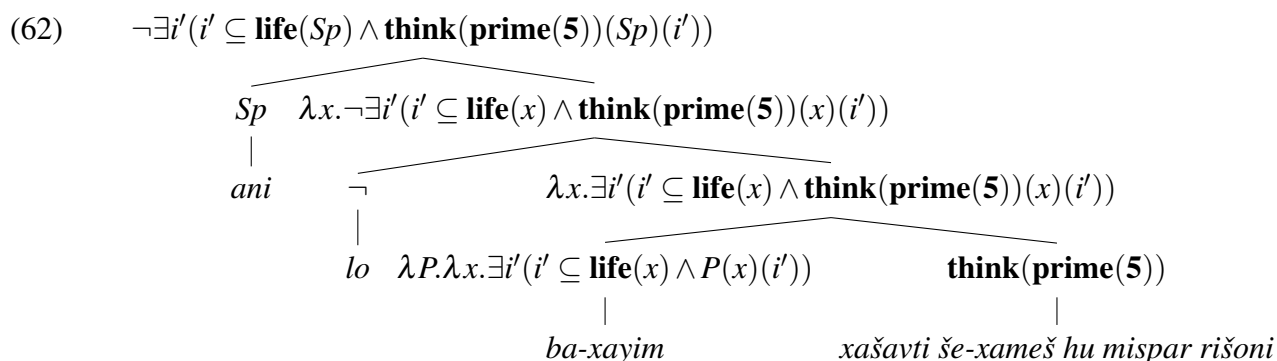
¹¹Collins and Postal's (2017) low negation account which assumes covert double negation in the matrix clause doesn't resolve this issue, as double negation is generally not sufficient to license NPIs.

- (i) a. ??No student didn't breathe a word about it.
 b. ??Mary didn't not pray in years.



Like *anymore*, *ba-xayim* must be licensed by a wider scoping non-UE expression. In (61), *ba-xayim* temporally restricts the NR-predicate *xašavti* ‘I thought’, but not the embedded predicate, which is a predicate whose truth is by nature not temporally restricted. Thus *ba-xayim* is most appropriately analyzed as being attached within the matrix clause. As *ba-xayim* is an NPI, it must be licensed by a higher negation. Low negation accounts of the neg-raising inference in (61) assume that the negative element *lo* is interpreted in the embedded clause. Thus, it is unclear how it both licenses and scopes over the matrix NPI *ba-xayim*.

- (61) *ani lo xašavti ba-xayim [še-xameš hu mispar rišoni].*
 1SG not think.1SG.PAST in-life COMP-five 3M.SG number prime
 I didn't ever believe that 5 is a prime number.



The same principle applies in (63), in which the embedded clause contains a strong NPI, *inkof estba*. Low negation accounts assume negation must be interpreted low in order to license the lower NPI, but are thus left to explain how the matrix NPI is licensed.

- (63) *ani lo xašavti ba-xayim [še-Yossi inkof etsba lema'an-i].*
 1SG not believed in-life COMP-Y. lift finger for-me
 I never believed that Yossi would lift a finger for me.

Under high negation accounts of NR-inferences, it is expected that matrix NPIs are licensed.

7. Summary

The high negation and low negation accounts of NR-inferences come apart when we look at operators with a not-at-issue meaning component: in this paper, *as*-clauses and temporal adverbs. The study highlights the importance of multi-dimensional operators as a probe into compositional properties of various structures involving negation (cf. Jacobson's (2018) study of ellipsis). As not-at-issue content projects through operators like negation, we can use it

strategically to examine content in the absence of negation. This strategy leads us to favor the high-negation accounts of NR-inferences.

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