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The polarity of clauses embedded under neg-raising predicates[1]

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)

- *think* and *sure* have similar meanings: often analyzed as doxastic necessity modals.

- But in (*B*) and (*C*), they behave differently under negation.

    - *not think* in (*B*) expresses "*Opinionatedness*"
    - *not sure* in (*C*) expresses the opposite.

- Standardly, *think* is analyzed as a "neg-raising predicate" (NR-predicate), *sure* is not (see 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 <u>*NR-inferences*</u> (the strengthened readings of NR-predicates).[2]

(2)   a. **Low-negation accounts**: negation is underlyingly in the subordinate clause, but raises in the overt syntax to the matrix clause. Negation is interpreted in its base position (Fillmore 1963, Collins and Postal (2014, 2017, 2018a), etc.)

      b. **High-negation accounts**: negation appears and is interpreted in its surface position: 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, etc.)

(3)   a. **Low-negation accounts**: $[_{MatrixCP} ... [\text{NR-PRED} [_{Subord.CP} ... \text{NEG} ...]]]$

      b. **High-negation accounts**: $[_{MatrixCP} ... [\text{NEG} [... [\text{NR-PRED} [_{Subord.CP} ...]]]]]$

- A key distinction between the two accounts: *is the subordinate clause negated?*

    - Low-negation accounts say <u>yes</u>: (3a)
    - High-negation accounts say <u>no</u>: (3b)

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[1]With thanks to Dylan Bumford, Omri Mayraz, Todd Snider, and four SuB reviewers for helpful comments

[2]We do not exclude the possibility that both mechanisms are active in a single grammar, as Zeijlstra 2017 and Collins and Postal 2018a assume.

- To argue for a high-negation account like (3b), we must show that there is a constituent [NR-PRED [$_{CP}$ ...]], where the embedded CP excludes negation.

- This talk argues this evidence comes from *"multi-dimensional" operators* — operators which place their scope in not-at-issue content.

- Assume a multi-dimensional operator **OP** which modifies the NR-predicate:

(4)   a. **Low-negation accounts**: [$_{MatrixCP}$ ... [**OP** [NR-PRED [$_{Subord.CP}$ ... NEG ...]]]]

        b. **High-negation accounts**: [$_{MatrixCP}$ ... [NEG [... [**OP** [NR-PRED [$_{Subord.CP}$ ...]]]]]]

- The two accounts predict different material is placed in the <u>not-at-issue content</u>:

  - **Low-negation account**: [NR-PRED [$_{Subord.CP}$ ... NEG ...]]
  - **High-negation account**: [NR-PRED [$_{Subord.CP}$ ...]]

- In (4a), negation is placed into the not-at-issue content.

- In (4b), negation is excluded from the not-at-issue content. Furthermore, negation cannot target the not-at-issue content (assuming that not-at-issue content projects through negation).

- This paper tests these predictions with respect to two operators with these properties:

  - *as*-clauses (such as "*as Chris claimed*")
  - temporal adverbials like *anymore*.

- In both cases, the not-at-issue content is *not negated*

  - consistent with the high-negation account
  - not consistent with the low-negation account.

- As Jacobson 2018 showed with ellipsis, multi-dimensional operators are a valuable probe into the position and behavior of negation.

- Roadmap

  §2: *as*-clauses and NR-predicates

  §3: how the high-negation account can incorporate these observations

  §4: interclausal licensing of NPIs

  §5: temporal adverbials and NR-predicates

  §6: licensing NPIs (including temporal adverbials) in the matrix clause

  §7: conclusion
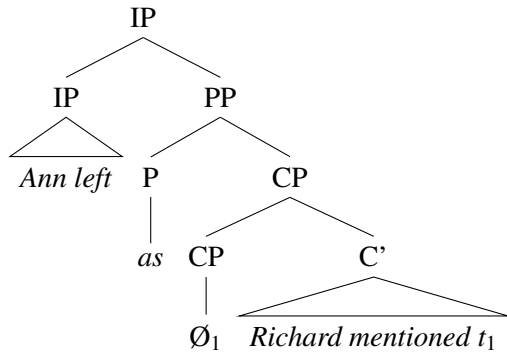
2   *as*-clauses

- Potts 2002 proposes English *as*-clauses are PPs with the following properties:

  - The P '*as*' selects for a CP-sized clause containing null-operator movement to Spec,CP.
  - Adjoins (left or right) to VP or IP (i.e., a propositional constituent[3]).
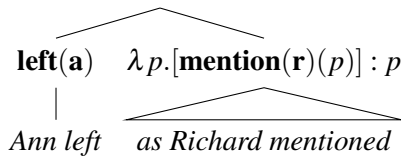 - The semantic content of the *as*-clause is determined by its syntactic sister.

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[3]assuming the VP-internal subject hypothesis (Koopman and Sportiche 1991)

(5)

$\Longrightarrow$ Richard mentions that <u>Ann left</u>

- An *as*-clause is a propositional identity function, adding the content of the *as*-clause as not-at-issue content:[4]

(6)

$[\mathbf{mention(r)(left(a))}] : \mathbf{left(a)}$

- Potts observes that right-branching *as*-clauses create ambiguities when attached to negated clauses.
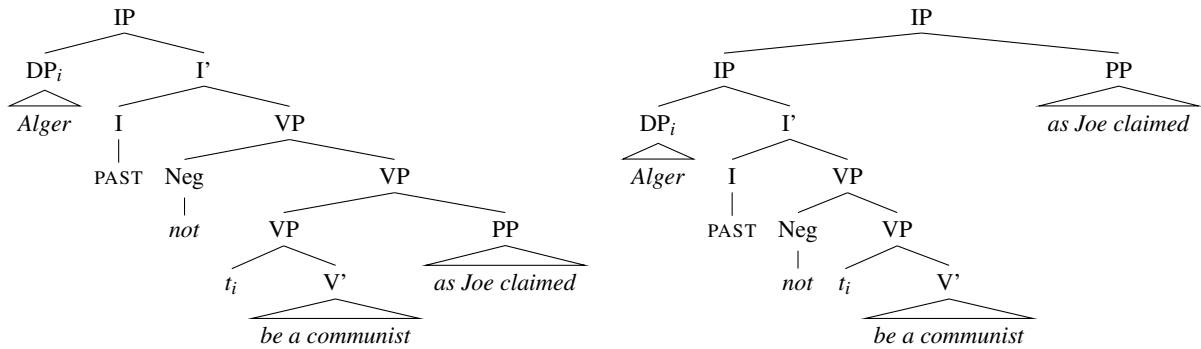
(7) Alger was not a communist, as Joe claimed.

- $\rightsquigarrow$ Joe claimed: <u>Alger was a communist.</u>
- $\rightsquigarrow$ Joe claimed: <u>Alger was not a communist.</u>

- The ambiguity has a structural explanation:

  - (7) can be parsed with the *as*-clause right adjoined above or below negation, such as in (8).

(8)

- The structural ambiguity leads to the two different interpretations.

- In (9), but not in (10), negation is incorporated into the content of the *as*-clause.

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[4]The paper assumes a three-valued semantics, with a Weak Kleene semantics for connectives. $[\![Y]\!] = \#$ iff $[\![\neg Y]\!] = \#$. "$[Y] : Z$" is read as "Y is a definedness condition for Z". If $[\![Y]\!] = \top$, then $[\![[Y] : Z]\!] = [\![Z]\!]$, else $[\![[Y] : Z]\!] = \#$. The definition follows Coppock and Beaver's (2015) for their $[\![\partial(Y) \wedge Z]\!]$. Most importantly, $[\![\neg([Y] : Z)]\!] = [\![[Y] : \neg Z]\!]$. See Coppock and Beaver 2015:p432.

(9) $[\textbf{claim}(\textbf{b})(\neg\textbf{left}(\textbf{a}))] : \neg\textbf{left}(\textbf{a})$ $\Longrightarrow$ Bill's claim: "Ann didn't leave"

        $\neg\textbf{left}(\textbf{a})$ $\lambda p[\textbf{claim}(\textbf{b})(p)] : p$

     $\neg$ $\textbf{left}(\textbf{a})$ *as Bill claimed*

    not *Ann left*
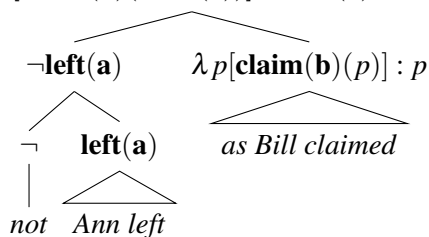
(10) $[\textbf{claim}(\textbf{b})(\textbf{left}(\textbf{a}))] : \neg\textbf{left}(\textbf{a})$ $\Longrightarrow$ Bill's claim: "Ann left"

   $\neg$ $[\textbf{claim}(\textbf{b})(\textbf{left}(\textbf{a}))] : \textbf{left}(\textbf{a})$

  not $\textbf{left}(\textbf{a})$ $\lambda p[\textbf{claim}(\textbf{b})(p)] : p$

    Ann left   *as Bill claimed*
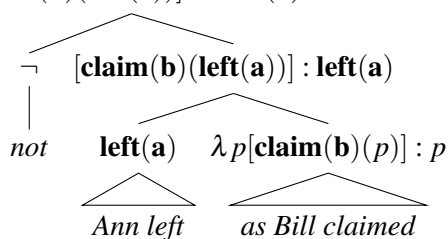
- NB: *as*-clauses do not simply incorporate their sister's content with *either positive or negative polarity*. They are sensitive to the polarity of their host.

(11) Alger was a communist, as Joe claimed.

- $\rightsquigarrow$ Joe claimed: <u>Alger was a communist.</u>
- $\not\rightsquigarrow$ Joe claimed: <u>Alger was not a communist.</u>

- We also don't analyze negation as a variable-scope-taking operator to account for the ambiguity.

  - Ladusaw 1988: negation/adverbs have fixed scope: (12-13) adapted from McCloskey 1997.

(12) a. A fiat isn't necessarily reliable.

    b. A fiat necessarily isn't reliable.

(13) a. Shelley always doesn't do her homework.   example adapted

    b. Shelley doesn't always do her homework.

  - McCloskey 1997: the surface position of negation rigidly determines its NPI-licensing properties. If negation could covertly take scope, we might expect (14b) to be acceptable.

(14) 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: *left-adjoined* as-*clauses*.

- Here the attachment site can be inferred from linear position: the structure is no longer ambiguous.[5]

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[5]There is a worry that (17) 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, (17) can be embedded (15a). Slifts resist being embedded (15b), following Koev 2017.

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

    b. ??I realized that Alger didn't, Mary said, like Jazz.

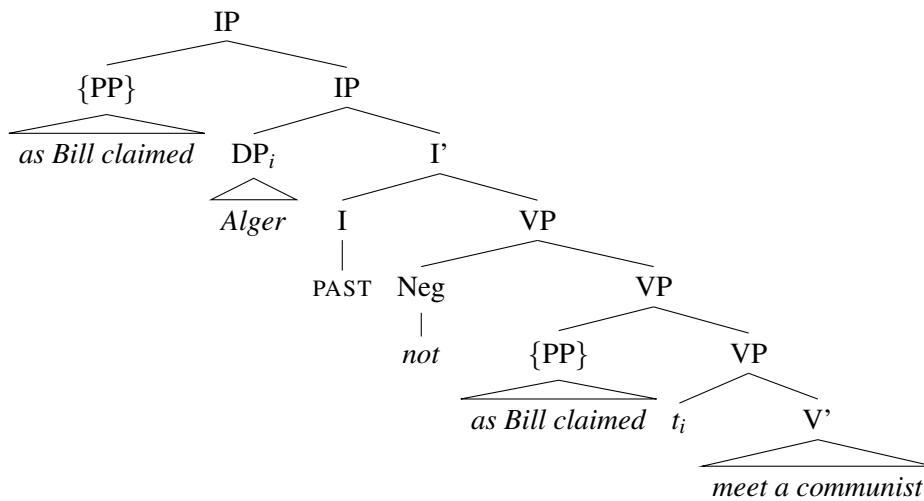(16) As Joe claimed, Alger did not meet a communist.

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

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

- $\leadsto$ Joe claimed Alger met a communist.
- $\not\leadsto$ 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 (16-17).

(18)

```
                    IP
          ┌─────────┴─────────┐
        {PP}                  IP
    ─────┴─────        ┌──────┴──────┐
  as Bill claimed    DP_i           I'
                    ──┴──      ┌─────┴─────┐
                   Alger       I           VP
                               │      ┌─────┴─────┐
                             PAST    Neg          VP
                                      │      ┌─────┴─────┐
                                     not    {PP}         VP
                                          ───┴───    ┌────┴────┐
                                      as Bill claimed t_i       V'
                                                          ───────┴───────
                                                           meet a communist
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- Due to their rigidity, *as*-clauses provide a valuable diagnostic for the position and scope of negation.
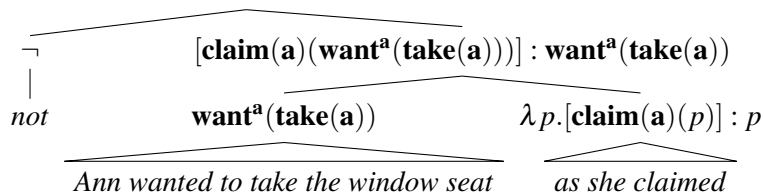
2.1 *as*-clauses and neg-raising

- With neg-raising predicates, we observe two relevant readings. The attitude is held with respect to a negated or non-negated complement.

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

    a. $\leadsto$ Ann's claim: "I want to take the window seat"   *'Positive claim' reading*

    b. $\leadsto$ Ann's claim: "I want to not take the window seat"   *'Negative claim' reading*
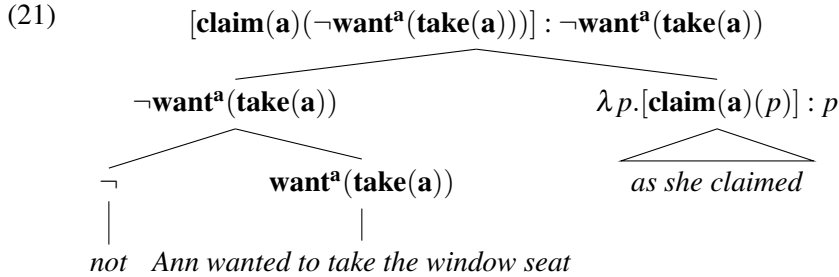
- The 'positive claim' reading shows that *as*-clauses can scope under negation but over the NR-predicate.

    – The <u>high-negation approach</u> makes this scoping, [*not* $\prec$ *as-clause* $\prec$ *NR-pred*], possible

- In (20), negation cannot target the definedness condition. Only the asserted content is negated. This derives the 'positive claim' reading.

(20) $[\mathbf{claim(a)(want^a(take(a)))}] : \neg\mathbf{want^a(take(a))}$

```
          ┌──────────────────────────┴──────────────────────────┐
          ¬            [claim(a)(want^a(take(a)))] : want^a(take(a))
          │             ┌────────────────────────┴────────────────────────┐
         not        want^a(take(a))                    λp.[claim(a)(p)] : p
              ──────────┴──────────                   ────────┴────────
         Ann wanted to take the window seat            as she claimed
```

5

Ann's claim: "Window seat please!"

- In (21), *as*-clause scopes over negation. Negation is included in the content of the *as*-clause.

  - This derives the 'negative claim' reading.

(21) $[\mathbf{claim}(\mathbf{a})(\neg\mathbf{want}^{\mathbf{a}}(\mathbf{take}(\mathbf{a})))] : \neg\mathbf{want}^{\mathbf{a}}(\mathbf{take}(\mathbf{a}))$

      $\neg\mathbf{want}^{\mathbf{a}}(\mathbf{take}(\mathbf{a}))$ $\lambda p.[\mathbf{claim}(\mathbf{a})(p)] : p$

     $\neg$ $\mathbf{want}^{\mathbf{a}}(\mathbf{take}(\mathbf{a}))$ *as she claimed*

      not   *Ann wanted to take the window seat*
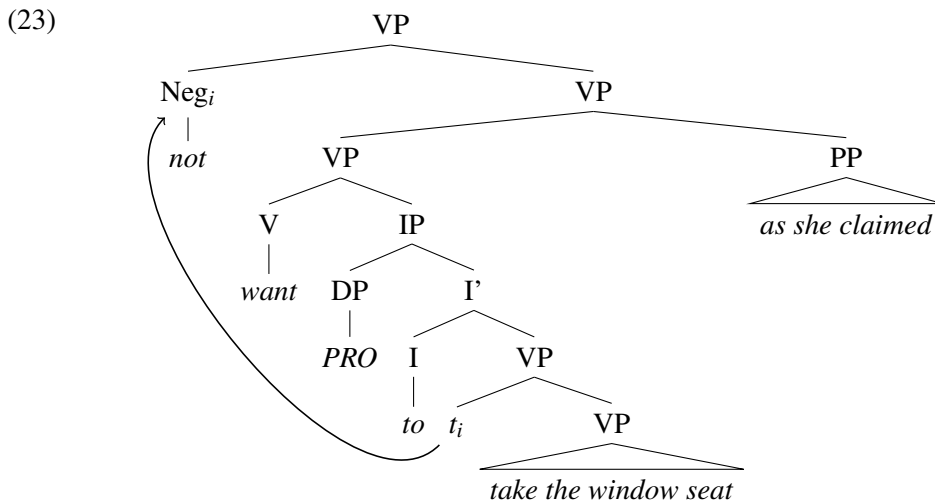
Ann's claim: "No window seat!"

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

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

     a. ⤳ Ann's claim: "I want to take the window seat"   *'Positive claim' reading*

     b. ↛ Ann's claim: "I want to not take the window seat"   *'Negative claim' reading*

- The *high-negation approach* permits a constituent whose interpretation includes the NR-predicate and its complement clause *with positive polarity*, e.g., "$\mathbf{want}(\mathbf{a})(\mathbf{take}(\mathbf{a}))$" in (20).

- The *low-negation approach* does not permit this constituent as the subordinate clause is negated.

  - Negation is reconstructed into the embedded clause in an NR-structure.

  - The *as*-clause scopes over the negation, incorrectly ruling out the positive claim reading.

(23)

              VP

   Neg_i VP

    not   VP   PP

      V   IP   *as she claimed*

     want   DP   I'

        PRO   I   VP

          to t_i VP
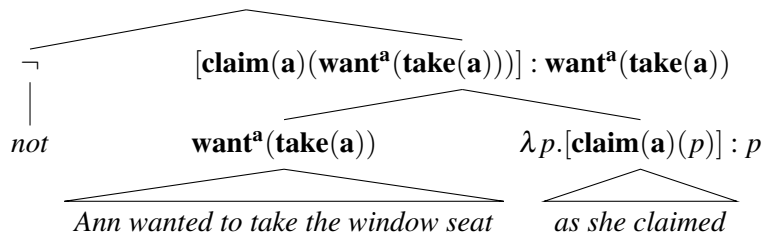
             take the window seat

2.2 NR-readings and NPIs

- *Low negation theories* can derive the *Positive Claim Reading* ("Ann claims: I want the window seat") so long as negation is merged in the high position.

- With no additional mechanism for deriving NR-inferences besides movement of negation, negation is interpreted in its surface position scoping over the attitude predicate <u>with no NR-inference</u>.

(24) $[\textbf{claim}(\textbf{a})(\textbf{want}^{\textbf{a}}(\textbf{take}(\textbf{a})))] : \neg\textbf{want}^{\textbf{a}}(\textbf{take}(\textbf{a}))$

              $\neg$ $[\textbf{claim}(\textbf{a})(\textbf{want}^{\textbf{a}}(\textbf{take}(\textbf{a})))] : \textbf{want}^{\textbf{a}}(\textbf{take}(\textbf{a}))$

              |

      not $\textbf{want}^{\textbf{a}}(\textbf{take}(\textbf{a}))$ $\lambda p.[\textbf{claim}(\textbf{a})(p)] : p$

        Ann wanted to take the window seat   *as she claimed*

                       ⤳ Ann's claim: "Window seat please!"
                       ⤳ Ann has no desire for the window seat.

- Low Negation accounts derive:

  - the *positive claim* inference by attaching negation high, and

  - the *opinionated* inference by attaching negation low.

- Thus, the *Positive Claim Reading* should be mutually exclusive with the *Opinionatedness Reading*

(25) **Low Negation theories predictions**:
Ann didn't want to take the window seat, as she claimed.

Reading 1 ⤳ Ann's claim: "I want to take the window seat"	*Positive claim*
⤳ Ann has no desire for the window seat.	~~*Opinionatedness*~~
Reading 2 ⤳ Ann's claim: "I want to not take the window seat"	~~*Positive claim*~~
⤳ Ann has a desire to not take the window seat.	*Opinionatedness*
Reading 3 (ruled out) ⤳ Ann's claim: "I want to take the window seat"	*Positive claim*
⤳ Ann has a desire to not take the window seat.	*Opinionatedness*

- Intuitively, (25) 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. (26) is compatible with Ann's being opinionated.

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

|	
⤳ Ann's claim: "I want to take the window seat"	*Positive claim*
⤳ Ann has a desire to not take the window seat.	*Opinionated*

- NB: Collins and Postal's (Collins and Postal 2017) version of the Low Negation account with an additional two negative operators in the matrix clause does not resolve this issue.

- According to certain Low Negation theories (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.

(27)   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.

(28)   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 theories assume the strong NPI is licensed due to negation being reconstructed downstairs.

(29)
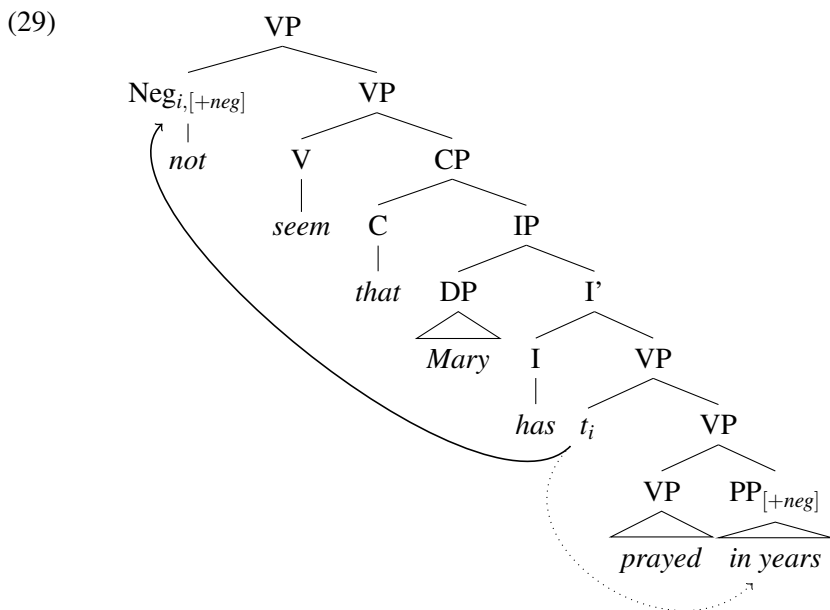
- But even with a strong NPI in the embedded clause, *as*-clauses are still able to take scope over the embedded clause with positive polarity.

- We can simultaneously get both a (i) positive claim inference and (ii) an opinionatedness inference.

(30) [*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.

        ⤳ John's claim "it's probable that she breathed a word about it".   *Positive claim inference*
        ⤳ It's probable that she didn't say anything.   *Opinionatedness inference*

    b. It isn't, as John claimed, probably that she breathed a word about it.

        ⤳ John's claim "it's probable that she breathed a word about it".   *Positive claim inference*
        ⤳ It's probable that she didn't say anything.   *Opinionatedness inference*

(31) [*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.

    ⤳ John's claim "I think she has prayed at some point".   *Positive claim inference*

    ⤳ John believes she hasn't prayed in a long time.   *Opinionatedness inference*

b. John doesn't, as he claimed, think that Mary has prayed in years.

    ⤳ John's claim "I think she has prayed at some point".   *Positive claim inference*

    ⤳ John believes she hasn't prayed in a long time.   *Opinionatedness inference*

- The Low Negation theory 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.

- The evidence presented here points to negation being attached high.

3 The excluded middle assumption

- A class of High Negation theories of NRI assume that negation scopes over the attitude predicate.

- Starting with Bartsch 1973, the NRI is derived by an *opinionatedness assumption*, either encoded as a (soft) presupposition (Gajewski 2007, Anvari et al. 2018) or a grammaticalized scalar implicature (Romoli 2013, Xiang 2013).

- In short, a NR-predicate implies the truth of the prejacent is settled in the relevant modal base.

- Here, following Gajewski, we can encode the opinionatedness assumption as a (soft) presupposition.

(32)   *want* ⤳ $\lambda p.\lambda x.[\mathbf{want}^x(p) \vee \mathbf{want}^x(\neg p)] : \mathbf{want}^x(p)$

- For readability, we can abbreviate the opinionatedness assumption like so.

(33)   *want* ⤳ $\lambda p.\lambda x.[\mathbf{opn}^x_{\mathbf{want}}(p)] : \mathbf{want}^x(p)$

(34) $[\text{Ann}_i \text{ wants } [\textit{PRO}_i \text{ to swim}]] \rightsquigarrow [\mathbf{opn}^{\mathbf{a}}_{\mathbf{want}}(\mathbf{swim}(\mathbf{a}))] : \mathbf{want}^{\mathbf{a}}(\mathbf{swim}(\mathbf{a}))$
                                  $\rightsquigarrow \mathbf{want}^{\mathbf{a}}(\mathbf{swim}(\mathbf{a}))$

(35) $[\text{Ann}_i \text{ doesn't want } [\textit{PRO}_i \text{ to swim}]] \rightsquigarrow [\mathbf{opn}^{\mathbf{a}}_{\mathbf{want}}(\mathbf{swim}(\mathbf{a}))] : \neg\mathbf{want}^{\mathbf{a}}(\mathbf{swim}(\mathbf{a}))$
                                  $\rightsquigarrow \mathbf{want}^{\mathbf{a}}(\neg\mathbf{swim}(\mathbf{a}))$

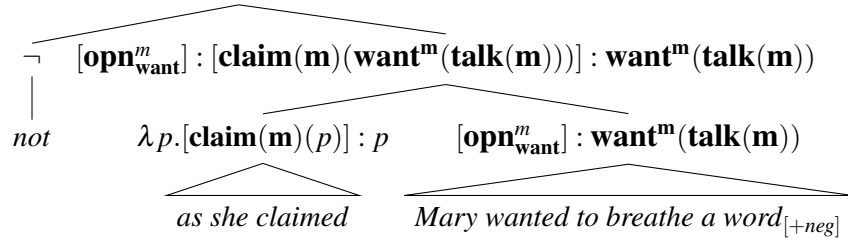- (35) expands as below, showing that the inference simply follows the schema: $p \vee q, \neg p, \therefore q$

(36)   a. *Not-at-issue:* $\mathbf{want}^{\mathbf{a}}(\mathbf{swim}(\mathbf{a})) \vee \mathbf{want}^{\mathbf{a}}(\neg\mathbf{swim}(\mathbf{a}))$ $p \vee q$

      b. *At-issue*: $\neg\mathbf{want}^{\mathbf{a}}(\mathbf{swim}(\mathbf{a}))$ $\neg p$

      c. *Inference*: $\mathbf{want}^{\mathbf{a}}(\neg\mathbf{swim}(\mathbf{a}))$ $\therefore q$

- Under this account, we can derive *Opinionatedness* (the presupposition of the NR-predicate) and the *Positive Claim inference* (negation excluded from the *as*-clause content).[6]

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[6]The $\mathbf{opn}^{\mathbf{m}}_{\mathbf{want}}$ presupposition is also incorporated into the content of Mary's claim but this is excluded for space.

(37) $[\textbf{opn}^m_{\textbf{want}}] : [\textbf{claim}(\textbf{m})(\textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m})))] : \neg\textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m}))$

$$\neg \quad [\textbf{opn}^m_{\textbf{want}}] : [\textbf{claim}(\textbf{m})(\textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m})))] : \textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m}))$$

not $\lambda p.[\textbf{claim}(\textbf{m})(p)] : p$ $[\textbf{opn}^m_{\textbf{want}}] : \textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m}))$

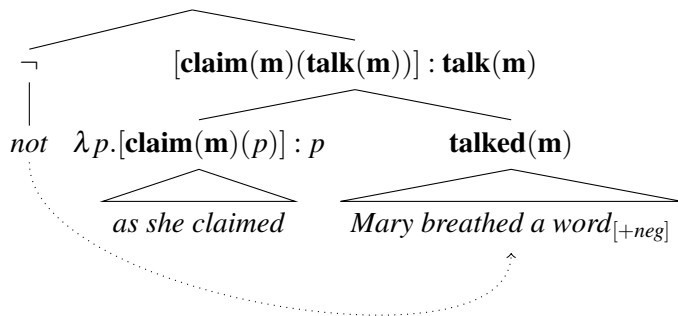*as she claimed*   *Mary wanted to breathe a word*$_{[+neg]}$

- NPIs like *in years* and *breathe a word* are understood as having existential meanings.

- They have syntactic licensing requirements, notated by a $_{[+neg]}$ feature: must be c-commanded by an appropriate licensor.
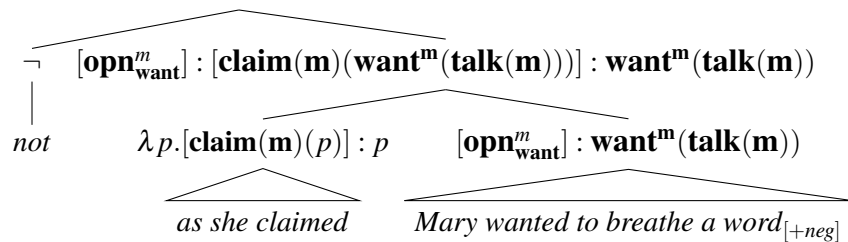
(38)   a. *breathe a word*$_{[+neg]} \rightsquigarrow \lambda x.\exists y[\textbf{talk}(y)(x)]$ (abbreviated as $\lambda x.\textbf{talk}(x)$ above)
      b. *in years*$_{[+neg]} \rightsquigarrow \lambda p.\lambda t.\exists t' \prec t[p(t')]$

- If an *as*-clause intervenes between the NPI and its licensor, its non-negated meaning is incorporated into the content of the *as*-clause.

- As the content of the *as*-clause is **not** syntactically realized, the positive meaning of the NPI can arise without any violation of its syntactic licensing requirement.

(39) $[\textbf{claim}(\textbf{m})(\textbf{talk}(\textbf{m}))] : \neg\textbf{talk}(\textbf{m})$

$$\neg \quad [\textbf{claim}(\textbf{m})(\textbf{talk}(\textbf{m}))] : \textbf{talk}(\textbf{m})$$

not $\lambda p.[\textbf{claim}(\textbf{m})(p)] : p$ $\textbf{talked}(\textbf{m})$

as she claimed   *Mary breathed a word*$_{[+neg]}$

(40) $[\textbf{opn}^m_{\textbf{want}}] : [\textbf{claim}(\textbf{m})(\textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m})))] : \neg\textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m}))$

$$\neg \quad [\textbf{opn}^m_{\textbf{want}}] : [\textbf{claim}(\textbf{m})(\textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m})))] : \textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m}))$$

not $\lambda p.[\textbf{claim}(\textbf{m})(p)] : p$ $[\textbf{opn}^m_{\textbf{want}}] : \textbf{want}^\textbf{m}(\textbf{talk}(\textbf{m}))$

as she claimed   *Mary wanted to breathe a word*$_{[+neg]}$

- Finally, a brief word about proposals which assume that High-Negation and Low-Negation derivations of NRIs co-exist in a single grammar (Collins and Postal 2018a; CP18).

- CP18 assume two paths to NRIs:

     a. negation can attach high, deriving an NRI with the opinionatedness presupposition

     b. negation can also attach low, deriving an NRI with movement (plus reconstruction)

- We can also probe this theory with *as*-clauses.

- If the grammar made path (b) available, we would expect (41) to be ambiguous: the *Negative Claim* reading derived by (moved) low negation. But it is ruled out.[7]

(41) George didn't think that, as Mary claimed, the children had left.

        ↝ Mary claimed the children had left. *Positive claim*

        ↝̸ Mary did not claim the children had left. *Negative claim*

- We find that the unambiguous *Positive Claim* reading persists even with strict NPIs, providing evidence against combined High and Low Negation approaches.

(42)   a. George didn't think that, as Mary claimed, the children had prayed in years.
        ↝ Mary claimed the children prayed.

    b. George didn't think that, as Richard suspected, the children had breathed a word about it.
        ↝ Richard suspected the children talked.

4   Is neg-raising necessary for interclausal NPI licensing?

- Under this account, negation remains in the matrix clause, so how does it license the strong NPI?

- Horn 2014 argues that NR-predicates are not a necessary condition for licensing strong NPIs inter-clausally. They can be licensed across non-NR-predicates too. (*γ* denotes web example)

(43)   a. I don't <u>know</u> that Santa comes around these parts <u>until Christmas Eve</u>.   Horn 2014

    b. I can't <u>say</u> I've cooked myself a full meal <u>in weeks</u>, if not months.   Horn 2014

    c. I'm not <u>sure</u> he's done <u>a damn thing</u> to correct it.   Hoeksema 2017

    d. Crowne Plaza Hawkesbury Valley: Lovely setting but not <u>sure</u> would stay again <u>until renovated</u>[γ]

    e. not <u>sure</u> I realized <u>until today</u> how much I really love little charm necklaces![γ]

    f. What if I'm not <u>sure</u> I can come <u>until just before the class</u>?[γ]

- NB: these verbs express *non-opinionatedness*: they are not behaving semantically like NR-predicates.

- A syntactic account may say that negation here can exceptionally move across a non-NR predicate.

- But 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.

(44)   a. He told me he didn't know of any specialists and gave <u>no</u> indication that he would <u>lift a finger</u> to try to find any for me.

    b. Dave was totally circumspect, and we had <u>no</u> concern that he would <u>breathe a word</u> of it to anyone.

    c. "We <u>haven't</u> found any evidence he's done <u>a damn thing</u>," said Wright.

---

[7]A 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 theory derives the observation in (41) without this extra stipulation. Such a stipulation also leaves it unexplained why PPIs are licensed in NR-embedded clauses, see (47).

- Based on a corpus study, Hoeksema observes that 37/40 NPIs, including CP14's strict NPIs (e.g., *in years*, *until*, *in years*) are attested embedded under both neg-raising and non-neg-raising predicates.

- Non-neg-raising predicates which allow interclausal strict NPIs are always non-factive. NB: non-factivity is not sufficient: verbs of communication (*claim*, *state*, *mention*) fail to license interclausal NPIs.

(45)
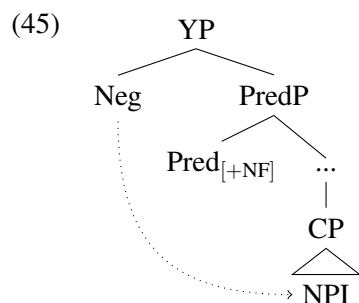
- More work is needed to refine the class of non-NR predicates which license interclausal NPIs, termed by Collins and Postal 2018b *cloud of unknowing predicates*.

- Hoeksema also points out that PPIs are licensed under negated NR-predicates.

(46) a. We <u>don't</u> believe the shooters are <u>still</u> in the building.

   b. The cops <u>don't</u> think they did <u>something</u> wrong.

   c. I <u>don't</u> think the plane has <u>already</u> landed.

- For negation-movement accounts, the contrast between (46) and (47) is unexplained.

(47) a. *We believe the shooters are <u>not still</u> in the building.

   b. *The cops think they <u>didn't</u> do <u>something</u> wrong.

   c. *I think the plane has <u>not already</u> landed.

- Interim summary:

  – Data suggests non-factive predicates which are not NR-predicates, can license interclausal NPIs.

  – Further, negation-movement accounts of NPI licensing are left to explain
    i. why they are licensed across relative clause boundaries.
    ii. why PPIs are licensed under NR-predicates.

5   Temporal adverbs

- *as*-clauses, scoping between negation and an NR-predicate, are insightful for theories of neg-raising:

  – the NR-predicate (plus its complement) is placed in the <u>not-at-issue</u> content

  – negation can only target at-issue content

  – therefore, using *as*-clauses, we can observe the meaning of the NR-predicate absent negation.

- We can extend this kind of argumentation to other operators which

  a. scope in the configuration (48), and

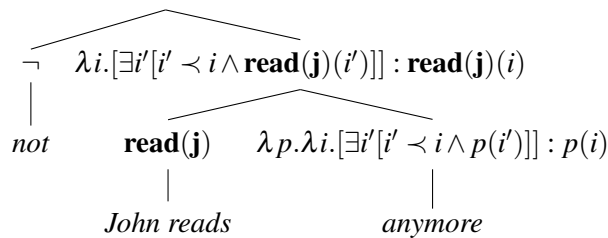 b. place their scope in not-at-issue content.

(48) [... [NEG [... [OP [... VP]]]]]

- An operator with these properties: *anymore*.

  - An NPI (in many varieties of English), so must be licensed by higher negative element.
  - Presupposes its scope has occurred at some point in the past.

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

- *anymore* takes scope over a proposition p:

  - Presupposes p took place before the evaluation time (hence forth *backshifting*)
  - Negation targets p, but not the presupposition.

(50) $\lambda i.[\exists i'[i' \prec i \wedge \mathbf{read}(\mathbf{j})(i')]] : \neg\mathbf{read}(\mathbf{j})(i)$ (John doesn't read anymore)

$$
\begin{array}{c}
\neg \qquad \lambda i.[\exists i'[i' \prec i \wedge \mathbf{read}(\mathbf{j})(i')]] : \mathbf{read}(\mathbf{j})(i) \\
| \\
not \qquad \mathbf{read}(\mathbf{j}) \qquad \lambda p.\lambda i.[\exists i'[i' \prec i \wedge p(i')]] : p(i) \\
| \\
\textit{John reads} \qquad \textit{anymore}
\end{array}
$$

- When *anymore* combines with a NR-predicate:

  - It can scope over the NR-predicate
  - The backshifted presuppositional content has *positive polarity*.

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

  $\rightsquigarrow$ John wants to not take the window now.   *Opinionatedness*
 $\rightsquigarrow$ John wanted to take the window seat before.   *Backshifting positive claim*

- Low-negation theories derive the *Opinionatedness* inference with negation in the lower clause. So, why is the *Backshifted* content not negated?

- If negation is in the higher clause, the readings in (51) fall out naturally.

(52) $\lambda i.[\mathbf{opn}^{\mathbf{j}}_{\mathbf{want}}] : [\exists i'[i' \prec i \wedge \mathbf{want}^{\mathbf{j}}(\mathbf{take}(\mathbf{j}))(i')]] : \neg\mathbf{want}^{\mathbf{j}}(\mathbf{take}(\mathbf{j}))(i)$

$$
\begin{array}{c}
\neg \qquad \lambda i.[\mathbf{opn}^{\mathbf{j}}_{\mathbf{want}}] : [\exists i'[i' \prec i \wedge \mathbf{want}^{\mathbf{j}}(\mathbf{take}(\mathbf{j}))(i')]] : \mathbf{want}^{\mathbf{j}}(\mathbf{take}(\mathbf{j}))(i) \\
| \\
not \qquad [\mathbf{opn}^{\mathbf{j}}_{\mathbf{want}}] : \mathbf{want}^{\mathbf{j}}(\mathbf{take}(\mathbf{j})) \qquad \lambda p.\lambda i.[\exists i'[i' \prec i \wedge p(i')]] : p(i) \\
| \\
\textit{John wanted to take the window seat} \qquad \textit{anymore}
\end{array}
$$
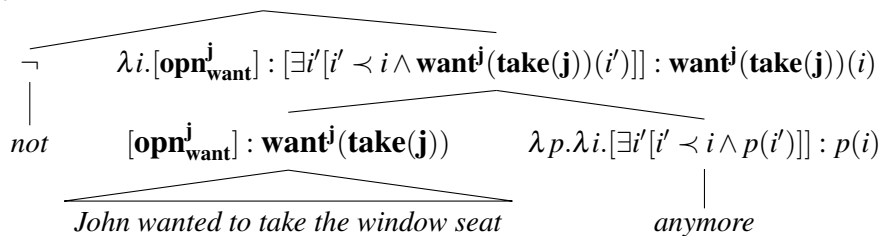
- Low negation accounts, like CP14, can say that high-negation structures like (52) are also possible.

- But under those accounts, low negation is forced by strict NPIs.

- Even with strong NPIs, the *Backshifted* presupposition of *anymore* still has positive polarity.[8]

(54) a. Sue doesn't want her to breathe a word about it anymore.

      ⤳ Now, Sue wants her to not talk.   *Opinionatedness*

      ⤳ In the past, Sue wanted her to talk.   *Backshifted positive claim*

    b. Sue doesn't think Mary has prayed in years anymore.

      ⤳ Now, Sue thinks that she hasn't prayed.   *Opinionatedness*

      ⤳ In the past, Sue thought she had prayed.   *Backshifted positive claim*

- These data are understandable under the scoping in (52):

  - 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

- (51-54) are additionally problematic for the low-negation account:

  - *anymore* (in many dialects) is an NPI,
  - 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 (55).

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

- Whatever supposedly rules out (55) 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*:

(56) 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's postponed either.

    c. Kim doesn't seem to be happy, and Sandy doesn't seem to be happy either.

- Another class of examples: the "judge" argument of NR-evidentials like *seem* and *appear*.

  - The judge argument, in the matrix clause, can be an NPI.
  - Thus it must be licensed by negation in the matrix clause.
  - Negation in the subordinate clause will fail to license these NPs.

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[8]The syntactic parses in (54) 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. (53a-b) demonstrate the same point as above, allowing *Opinionatedness* and *Backshifted positive claim* simultaneously, though the left-adjunction rules out any low attachment site of the adverb.

(53) 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.

(57)   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 were going to show up].

- (58) are some naturally occurring examples of this construction:

(58)   a. it did not appear to anyone [that this girl was a child who ought to be withheld on those grounds].$^\gamma$

    b. it should not appear to anyone [that we wish to claim more than is our due]$^\gamma$

    c. It does not appear to anyone [that God is in charge]$^\gamma$

    d. you will not sound to anyone [like you have a foreign accent]$^\gamma$

- Low negation theories could say negation is merged in the matrix clause in the examples in (58).

- 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.[9]

(59)   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].

- High negation theories allow matrix clause NPIs to be licensed, and license the subordinate clause NPIs across the non-factive predicate.[10]

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: *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 high-negation accounts of NR-inferences.

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[9]cf. Hoeksema 2017 who hedges on this point.

[10]Collins and Postal's 2017 Low Negation theory which assumes covert double negation in the matrix clause doesn't resolve this issue, as double negation is generally not sufficient to license NPIs.

(60)   a. ??No student didn't breathe a word about it.

    b. ??Mary didn't not pray in years.

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