Polarity particles and ellipsis: a (somewhat) cross-linguistic perspective

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1 Introduction

- Polarity particles are found in a wide range of languages and stand at the intersection of several productive strands of linguistic research including...

    – The semantics of polar questions.

    – The syntax and semantics of negation.

    – The syntax and semantics of ellipsis.

- Yet prior to the last few years they have received surprisingly little attention in the generative literature. (Notable exceptions: Pope 1972; Laka 1990)

- In this talk, we focus on how polarity particles intersect with the syntax and semantics of ellipsis, arguing that isolated polarity particles are the remnant of a kind of TP ellipsis licensed by Σ (closely related to stripping).

- We present evidence for an ellipsis account, based on data from English (Kramer and Rawlins 2009) and Dutch.

- We then explore how an ellipsis account functions in languages that have a separate particle for responding positively to negative questions (e.g. "doch" in German), and how ellipsis interacts with this kind of 'reversing' response in general.

- Finally, we lay out and justify the assumptions about the syntax of polarity particles that an ellipsis account requires, closing out the discussion by showing that French confirms one of its predictions.

§2: Evidence for ellipsis: English and Dutch
§3: Reversal responses
§4: The Syntax of Sigma
§5: Conclusion

2 Evidence for ellipsis: English and Dutch

2.1 Two puzzles and a solution

Puzzle 1: What is the structure of a polarity particle appearing in isolation as an answer to a polar question (1B), in contrast to one appearing with a full clause (1B′)?

(1) A: Is Alfonso coming to the party?

    B: Yes. / No.

    B′: Yes, he is. / No, he isn't.

- Ellipsis? The isolated polarity particle is the remnant on some kind of ellipsis (Laka 1990; Holmberg 2003; cf. Morgan 1973; Merchant 2004 etc. on "fragment" answers to constituent questions.)

    – (Treat English polarity particles as adverbs (Huddleston and Pullum 2002); see §4.)

(2)
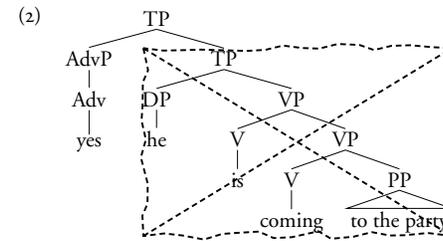
- Nonsentential constituent? isolated polarity particle is a complete constituent with a pro-sentential meaning (cf. Barton 1990; Stainton 1993, 1995, 2004, etc).

(3)

```
AdvP
 |
Adv
 |
yes
```
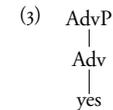
Puzzle 2: the meanings of isolated polarity particles neutralize in the case of an inner negative polar question (Kramer and Rawlins 2009).[1]

(4) A: Is Alfonso coming to the party?

    B: Yes. (= He is coming to the party.)

    B′: No. (= He is not coming to the party.)   } Positive question ⇒ no neutralization

(5) A: Is Alfonso not coming to the party?

    B: Yes. (= He is not coming to the party.)[2]

    B′: No. (= He is not coming to the party.)   } Negative question ⇒ neutralization!

- Neutralization is unexpected. Either...

    – The meaning of "yes" and "no" should stay the same, since positive and negative polar questions have the same meanings on most accounts (Hamblin 1973; Karttunen 1977; Groenendijk and Stokhof 1984, etc.)[3]

    – The meanings should reverse, because of the presence of negation.

One solution for two puzzles: The ellipsis proposal explains negative neutralization.
The gist

- Ellipsis is licensed under semantic identity with an antecedent, using Merchant's 2001 implementation (e-GIVENness).

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[1] We will set aside outer negative polar questions (Ladd 1981; Romero and Han 2004; Romero 2006; Reese 2007 a.o.) for the purpose of this talk, though see Kramer and Rawlins 2009 for an account of their behavior.

[2] There is some variation in how acceptable this response is among English speakers. Our impression is that in a formal elicitation context, some speakers are less likely to accept (5B), but the same speakers may produce and/or accept it in conversational contexts. Some speakers also prefer the related positive particle "yeah", and we hope to address the distribution of "yeah" and its connection to higher-register polarity particles in future work.

[3] There are several accounts that do differentiate positive and negative polar questions; see Büring and Gunlogson 2000; van Rooy and Safarova 2003.

(6) An expression E counts as e-GIVEN iff E has a salient antecedent A, and modulo ∃-type-shifting,
  (i) A entails F-clo(E), and
  (ii) E entails F-clo(A).

- We assume Merchant's 2001 [E] feature triggers ellipsis (PF-deletion/radical de-accenting), and in this case the feature is hosted by the head of the polarity projection Σ (see Laka 1990; Ladusaw 1992 a.o. on high Σ; see Merchant 2003, 2006 for related cases of TP ellipsis.)

(7) **Negative question, positive answer (neutralization)**
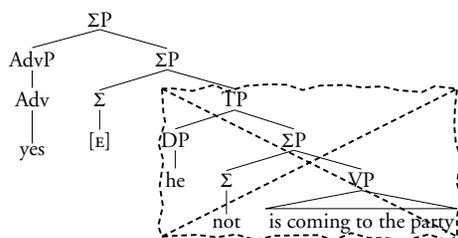
- This straightforwardly explains neutralization.
- The antecedent in (5) contains clausal negation inside its TP – this thus must also appear in the ellipsis site and results in negative meanings for both particles.

A question: If there is ellipsis when polarity particles appear in isolation, then how can (4B′), a negative answer to a positive question, be interpreted as negative? Shouldn't it necessarily be positive since the antecedent is positive?

- Negative concord as the answer. Consider:

(8) A: Did Alfonso go to the party?
    B: No, he didn't.

  – This seems to be an instance of double negation / negative concord in Standard English!

- Proposal: "no", high Σ, and clausal negation ("not") participate in a negative concord agreement relationship that is formalized as the sharing of a negative feature across these heads.
  – Concord idea following Huddleston and Pullum 2002.
  – Cf. Zeijlstra 2004, 2008; Haegeman and Lohndal 2009 for similar accounts of negative concord phenomena.
  – Cf. Pesetsky and Torrego 2007 on feature sharing.
- The shared negative feature only needs to be interpretable at one syntactic location (cf. Brody's 1997 Thesis of Radical Interpretability) = no semantically contentful double negation.
- Assume that high Σ has an unvalued interpretable negative feature and "not" has a valued uninterpretable negative feature. Σ probes downwards and enters into a feature sharing relationship with "not" w.r.t. the negative feature.

(9)
$$\begin{matrix} \Sigma & \dots & not \\ i\_Neg & & u\text{+}Neg \end{matrix} \longrightarrow \begin{matrix} \Sigma & \dots & not \\ i\text{+}Neg \rule[0.5ex]{2em}{0.4pt} & & u\text{+}Neg \end{matrix}$$

- "No" itself also has an unvalued negative feature, and thus also probes downwards, locates Σ as a matching goal, and joins the feature sharing relationship.

(10)
$$\begin{matrix} No & \dots & \Sigma & \dots & not \\ u\text{+}Neg \rule[0.5ex]{2em}{0.4pt} & & i\text{+}Neg \rule[0.5ex]{2em}{0.4pt} & & u\text{+}Neg \end{matrix}$$

- Intended result: the shared, valued negative feature is only interpreted on Σ (with scope over the TP). "Not" in this kind of response (8B) is uninterpretable since it is part of an agreement/concord relationship (aka concord chain).

Back to the point: if there is ellipsis when polarity particles appear in isolation, then how can (4B′) be interpreted as negative? Shouldn't it necessarily be positive since the antecedent is positive?

(4) A: Is Alfonso coming to the party?
    B′: No. (= he is not coming.)

- Since the negation feature on "not" in the ellipsis site is uninterpretable in this case, it is irrelevant for a semantic identity condition on ellipsis (including Merchant's 2001 e-givenness).
- The distribution of the interpretable instance is somewhat more complicated in the general case (see summary trees if you care.)[4]

What is the function of the particle, if polarity carried on Σ?

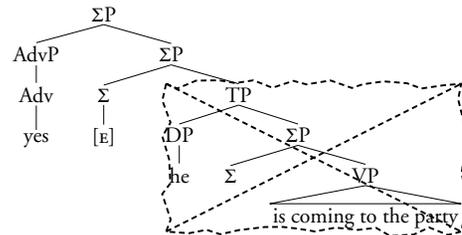- Marks utterance as a response in the sense of Farkas and Bruce 2009.

(11) **Constraint on response particles**
  A response particle is licensed only if would commit the author to the denotation of a sentence radical on the Table or to its complement. (see Farkas and Bruce 2009 (30) for the technical version.)
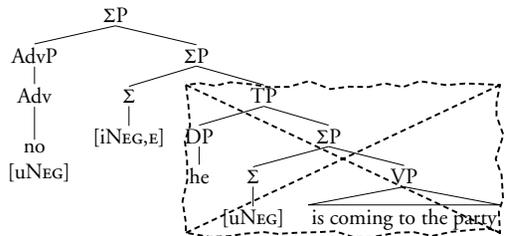
Summary: An ellipsis account can generate the range of responses above and also solves the neutralization puzzle.

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[4]One might wonder what forces "not" to host the ininterpretable feature here. Indeed, in most cases, including an overt negative continuation answering a positive question, which was normalized above for clarity, the lower feature is the interpretable one. This is necessary so that the interpretable Neg feature in a question itself is inside TP. This behavior can be derived from the interaction of two ranked constraints: the dominating one is the identity condition, and the outranked one is a constraint requiring interpretable features to be as low as possible. These interact with the constraint imposed by the presence of "no", that there be an interpretable Neg feature somewhere.
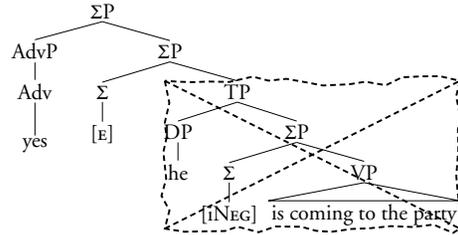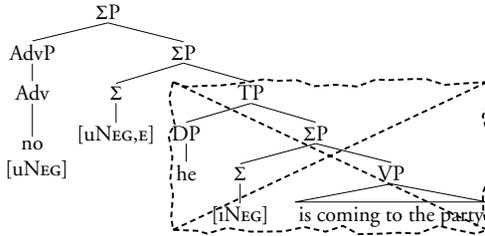
Positive question, positive answer:

```
            ΣP
          /    \
       AdvP      ΣP
        |      /    \
       Adv    Σ      TP
        |     |    /    \
       yes   [E]  DP     ΣP
                  |     /   \
                  he   Σ     VP
                       is coming to the party
```

Negative question, positive answer:
(neutralization)

```
            ΣP
          /    \
       AdvP      ΣP
        |      /    \
       Adv    Σ      TP
        |     |    /    \
       yes   [E]  DP     ΣP
                  |     /   \
                  he   Σ     VP
                    [iNEG] is coming to the party
```

Positive question, negative answer:

```
            ΣP
          /    \
       AdvP      ΣP
        |      /    \
       Adv    Σ      TP
        |   [iNEG,E] /  \
       no         DP     ΣP
      [uNEG]      |     /   \
                  he   Σ     VP
                   [uNEG] is coming to the party
```

Negative question, negative answer:
(neutralization)

```
            ΣP
          /    \
       AdvP      ΣP
        |      /    \
       Adv    Σ      TP
        |   [uNEG,E] /  \
       no         DP     ΣP
      [uNEG]      |     /   \
                  he   Σ     VP
                   [iNEG] is coming to the party
```
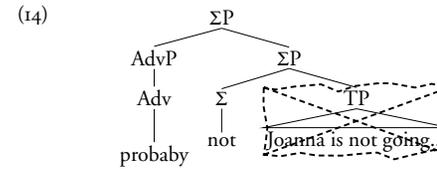
2.2 Neutralization beyond Yes/No

An ellipsis solution makes a strong prediction: negative neutralization will not be limited to polarity particles in response contexts.

- Any clause that contains Σ-licensed TP ellipsis (a sort of stripping; Merchant 2004, 2006) should exhibit negative neutralization.
- NB: must be Σ-licensed TP ellipsis because otherwise there will be no contrast between a "yes"-type response and a "no"-type response to be neutralized.
- Prediction borne out for many instances of this type of ellipsis.

Responding adverbs: adverbs that can mark some degree of certainty about an answer to a question, e.g. "maybe", "probably", "perhaps", "certainly", "definitely", etc.

(12) A: Is Joanna going to the party?   **Positive question, no neutralization**
      B: Probably (so). (= probably she is)
      B′:   Probably not. (= probably she isn't)

(13) A: Is Joanna not going to the party?   **Negative question, neutralization**
      B: Probably (so). (= probably she isn't)
      B′:   Probably not. (= probably she isn't)

- "So"/"not" are the realizations of the Σ head that "probably" is adjoined to.
- (As before, only one NEG feature is interpretable.)

(14)
```
            ΣP
          /    \
       AdvP      ΣP
        |      /    \
       Adv    Σ      TP
        |     |     (Joanna is not going...)
      probaby not
```

Reduced conditionals: conditionals with reduced protases, often used in response contexts.

(15) A: Is Joanna going to the party?   **Positive question, no neutralization**
      B: If so, it will be fun. (= if she is...)
      B′:   If not, it will be fun. (= if she isn't...)

(16) A: Is Joanna not going to the party?   **Negative question, neutralization**
      B: If so, it will be fun. (= if she isn't...)
      B′:   If not, it will be fun. (= if she isn't...)

"Why" questions

(17) A: Joanna is going to the party.   **Positive antecedent, no neutralization**
      B: Why? (= why is she?)
      B′:   # Why not? (= why isn't she?)

- The infelicity of (17B′) follows from ellipsis account.
- Negative "why" question incoherent with positive antecedent.

(18) A: Joanna is not going to the party.   **Negative antecedent, neutralization**
   B: Why? (= why isn't she?)
      B′:   Why not? (= why isn't she?)

Credence ellipsis: Σ-licensed TP ellipsis following a range of attitude verbs; "think", "expect", "suppose", "assume", etc.

(19) A: Is Joanna going to the party?   **Positive question, no neutralization**
      B: I think so. (= I think she is.)
      B′:   I think not. (= I think she isn't.)
      B″:   I don't think so. (= I think she isn't.)

- These examples are complicated by the fact that there is a preference for expression of embedded negation via Neg-raising. (Horn 1978; Gajewski 2005 a.o.)
- Neutralization still occurs regardless:

(20) A: Is Joanna not going to the party?   **Negative question, neutralization**
      B: I think so. (= I think she isn't.)
      B′:   I think not. (= I think she isn't.)
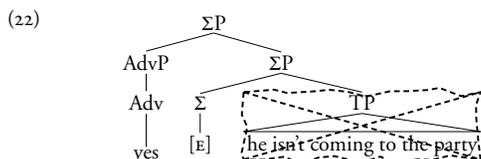   B″:   I don't think so. (= I think she isn't.)

Summary: a non-ellipsis account of "yes"/"no" would crucially miss the generalization that negative neutralization occurs whenever there is Σ-licensed TP ellipsis.

2.3 Further evidence for ellipsis: Agreeing "yes"/"no" in Dutch dialects

As shown earlier, in a non-ellipsis account of "yes" and "no", there is no syntactic structure in an isolated particle response (besides the particle itself).

(21)
```
AdvP
 |
Adv
 |
yes
```
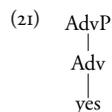
An ellipsis account, however, has an entire TP below Σ that is present during the syntax but deleted at PF.

(22)
```
              ΣP
          ┌────┴────┐
        AdvP        ΣP
          |      ┌───┴───┐
        Adv      Σ       TP
          |      |    [he isn't coming to the party]
        yes     [E]
```

Therefore, the ellipsis account predicts that the particle should be capable of entering into a syntactic relation with something in the elided TP. (Cf. connectivity effects in sluicing and fragment answers; Merchant 2004).

• Not predicted (without much extra work) in a non-ellipsis account, since no TP present.

These predictions initially seem difficult to test.

• "Yes" and "no" do not agree or inflect for case cross-linguistically.

However, in certain Dutch dialects, answer particles can host a subject clitic (van Craenenbroeck 2004).

(23) (Wambeek Dutch, van Craenenbroeck 2004:252)

    A: Kom Marie mergen?
             comes Mary tomorrow

    B: Jui-s   zaai   kom mergen
             Yes-she$_{CLITIC}$ she$_{STRONG}$ comes tomorrow

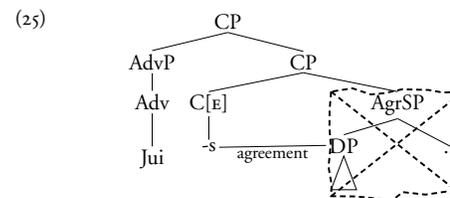The clitic *remains on the particle* even when there is no following clause.

(24) (Wambeek Dutch, van Craenenbroeck 2004:223)

    A: Kom Marie mergen?
             comes Mary tomorrow

    B: Jui-s
             Yes-she$_{CLITIC}$

    B′:   Nieje-s
             No-she$_{CLITIC}$

van Craenenbroeck 2004 argues that the clitic is the realization of a type of subject agreement.

• A head below the particle (C, for JvC) enters into an agreement relation with a subject in Spec,AgrSP (cf. complementizer agreement in these dialects).

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• AgrSP is elided afterwards.

(25)
```
                    CP
              ┌─────┴─────┐
            AdvP          CP
              |       ┌────┴────┐
            Adv     C[E]      AgrSP
              |      |      ┌────┴──── ...
            Jui     -s     DP
                 agreement
```

Regardless of the details of the analysis, it is difficult to see how to generate the subject clitic on the particle in the non-ellipsis account.

• There is no subject to enter into an agreement relation with (or to generate a doubled clitic from)!

• Dutch 'agreeing particles' are thus further evidence for an ellipsis account of answer particles.

2.4 Summary

An ellipsis account of "yes" and "no" has significant analytical advantages.

• A unified account of bare and adjoined answer particles.

• An explanation of negative neutralization and its independent appearance in ellipsis contexts.

• An explanation of the few connectivity effects that are known to exist in this domain.

3 REVERSAL: A CHALLENGE FOR ELLIPSIS

There is an additional, non-neutralizing type of response to a a polar question. In English this takes the form of a positive response to a negative question:

(26)   A: Did Alfonso not go to the party?
       B: No, he DID.

In many other languages this kind of response is marked with a distinct particle (data below).

• We will refer to this kind of response as a 'reversal' (following Pope 1972; Farkas and Bruce 2009).

Pattern 1: In languages that do not have a distinct reverse particle or morpheme, an isolated particle (i.e. a particle with an elided TP) cannot be interpreted as a reversal response.

(27)   A: Did Alfonso not go to the party?
       B: # No. (= no he DID.)
       B: # Yes. (= yes he DID.)

This holds in other languages as well, including Russian and Hebrew.

(28)   Russian (yes = "da", no = "net")[5]

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[5] We give these rough equivalences as a guide only. It should be clear from the Farkas and Bruce 2009 typology that we would not necessarily expect exact equivalents of the English forms in any given language.

A: A   čto, Pasha ne pošel   v knižnyi magazin?
CONJ what, Pasha NEG went.3SG in book   store?
'So, did Pasha not go to the book store?'

B: Net. (#he did. ✓he didn't.)

B′:   Da. (#he did. ✓he didn't.)

B″:   Net, počemu, pošol! (= No, why, he went!) (with special intonation)

(29) Hebrew (yes = "lo", no = "ken")

A: Alfonso lo   halax la-mesiba?
Alfonso NEG went to-the.party?
'Did Alfonso not go to the party?'

B: Lo. (#he did. ✓he didn't.)

B′:   Ken. (#he did. #he didn't.)

B″:   Lo, hu KEN halax
    No, he yes want.
    'No, he DID go.'

(Note prominence on "ken" in Hebrew data.)

Pattern 2:   Many languages use a different particle for reversal in a negative context.[6]

(30) German (yes = "ja", no = "nein")

A: Kommt Oskar nicht aufs   Fest?
comes   Oskar not   to.the party?
'Did Oskar come to the party?'

B: Doch, er kommt.
DOCH, he came
'On the contrary, he did come.'

(31) French (yes = "oui", no = "non")

A: Oscar ne vient pas à la soirée?
Oscar not went not to the party?

B: Si, il vient.
SI he came
'On the contrary, he did come.'

(32) Icelandic (yes = "já", no = "nei") (Laka 1990:158)

A: Er hann ekki heima?
He is   not home?
'Is he not home?'

B: Jú, er hann.
JÚ he is.
'On the contrary, he is.'

(33) Lebanese Arabic (yes = "eh", no = "laʔ")

A: Ma raaħ   Alfonso ʕa l-ħafleh?
not went.3SM Alfonso to the-party?
'Did Alfonso not go to the party?'

B: Mbalaa, raaħ
MBALAA went.3sm
'On the contrary, he did.'

In these languages, in contrast to English/Russian/Hebrew, it is always possible to respond with a plain reverse particle.

(34) German

A: Kommt Oskar nicht aufs Fest?

B: Doch. (= he did come.)

(35) French

A: Oscar ne vient pas à la soirée?

B: Si. (= he did come)

(36) Icelandic (Laka 1990:158)

A: Er hann ekki heima?
He is   not home?
'Is he not home?'

B: Jú. (= he is.)

(37) Lebanese Arabic

A: Ma raaħ   Alfonso ʕa l-ħafleh?
not went.3SM Alfonso to the-party?
'Did Alfonso not go to the party?'

B: Mbalaa. (= he did go.)

- Several languages use a complex (multi-morphemic) marker of reversal (Farkas 2009; Farkas and Bruce 2009; Farkas (to appear)); these will not be our focus here, but same generalization holds:
  - (Other complications in both cases...)

(38) Romanian (yes = "da", no = "nu") (Farkas and Bruce 2009 ex. 45)

A: Ana nu a plecat?
'Did Ana not leave?'

B: Ba da, (a plecat)

    'You're wrong, she did.'

(39) Hungarian (yes = "igen", no = "nem") (Farkas 2009 ex. 38)

A: Mari nem ment el?
Mari no   left   PART
'Didn't Mari leave / Did Mari not leave?'

B: De (igen). (Elment.)
but yes   PART.left
'Yes, she did leave.'

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[6]The choice of "on the contrary" in translations is not meant to be deep or significant, just convenient.

Puzzle 1: There is a clear correlation between the lack of a special reverse particle and the inability to use a plain particle for a reverse reading (new generalization). How to explain this?

Puzzle 2: A plain reverse particle presents a challenge for an ellipsis account.

- Would expect interpretable negation in ellipsis site because of antecedent & identity condition on ellipsis...
- But response has a positive interpretation, and continuation is always morphologically positive.

(40) # Doch sie kommt nicht.

Can reversals of either type be handled in an ellipsis account, and if so, how?

- Solution to puzzle 1 (§3.1): reversals in English (and, we hope, other such languages) recruit a general mechanism in the language to convey the appropriate meaning.
- Solution to puzzle 2 (§3.2): reverse particles mark covert double negation.

3.1 English reversals as corrections

Kramer and Rawlins 2009: English reversal marked by intonational contour that must be hosted by "do".

- Ambiguous "no": iRev or iNeg.

(41) A: Did Alfonso not go to the party?
       B: No, he DID.

Problematic in light of cross-linguistic generalization.

- Languages that lack reverse particles use negative particle, always with overt continuation.
- No morphological marking of reversal on Neg. No reverse particle that requires continuation.
- Doesn't explain apparent generalization about intonational marking.

New proposal: languages that lack reverse particle must recruit other systems to express similar meaning. English an instance.

- B response above is not an answer per se, but a correction (specific kind of denial/correcting assertion).
- Intonational marking follows from general properties of corrections.
- Following Farkas's 2009 notion of an "echo assertion." (In fact, we provide a formal connection to echo questions.)
- Use of "no" predicted (though not exactly explained).
- Unification of above ex. with a wide range of data:

(42) A: Did Alfonso not go to the party?
       B: No, JOANNA didn't go.

(43) A: Alfonso didn't go to the party.
       B: No, he DID.

For better or worse, focus on English.

Corrections

- Corrections: a species of denials.

(44) **Some core properties of (English) corrections** (van Leusen 2004; see also Asher and Gillies 2003; Asher and Lascarides 2003 ch. 8 a.o.)
     a. The context must provide an antecedent.
     b. The correction denies the antecedent (often marked with "no").
     c. The correction is parallel with the antecedent up to focus (contrastive topic) marking.

- Farkas and Bruce 2009: denials in general marked with "no".

Implement these properties in the following (novel) way, basically following Artstein's 2002 account of echo questions:

(45) **Constraints on corrections**
     a. A correction must be GIVEN relative to antecedent/preceding discourse (Schwarzschild 1999).
     b. The ordinary denotation of a correction must be incompatible with its antecedent.

- GIVENness: entailment when focused elements are replaced by variables and existentially closed. (I.e. F-clo(S) is entailed.)
    – Cf. focus algorithm in Asher and Gillies 2003; Asher and Lascarides 2003.
- Focus on argument:

(46) A: Alfonso didn't go to the party.
       B: No, JOANNA didn't go. $\Rightarrow \exists X : X$ didn't go to the party

- Focus on low Σ:

(47) A: Alfonso went to the party.
       B: No, Alfonso DIDN'T go. $\Rightarrow \exists O \in D_{\langle\langle st\rangle\langle st\rangle\rangle} : O(\text{Alfonso did go to the party})$

(48) A: Alfonso didn'g go to the party.
       B: No, Alfonso DID go. $\Rightarrow \exists O \in D_{\langle\langle st\rangle\langle st\rangle\rangle} : O(\text{Alfonso did go to the party})$

- (Assume that O is drawn from scale for Σ...)

Corrections to questions: Well known that corrections can target speaker assumptions (e.g. presuppositions).

- Assume: corrections can target speaker assumptions signaled by question bias. (Alternatively, target top element on Table.)

(49) A: Didn't Alfonso go to the store?
       B: No, BILL went to the store.

- Büring and Gunlogson 2000; van Rooy and Safarova 2003: polar questions can signal a weak bias in the direction of their polarity.[7]
    – B&G: positive polar question compatible only with positive compelling contextual evidence.

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[7]This idea makes the interesting and correct prediction that corrections aren't possible with an alternative "or not" question.

- English reversal examples such as (41) involve corrections targeting the negative bias signaled by question.

    (41) A: Did Alfonso not go to the party?
           B: No, he DID.

- Intonational contour marks item to be corrected as above – low Σ.
  - Correction must be GIVEN (relative to bias).
  - Effectively identical to declarative polarity correction examples above.
- Presence of correction/denial "no"?
  - Used as a diagnostic for corrections in this literature, but not explained.
  - Clear difference from answer "no": no interaction with Σ system.
  - Unified analysis? Does Farkas and Bruce's 2009 treatment of denial "no" cover this case?
  - Metalinguistic polarity particle?
- Where are constraints on corrections encoded?

Takeaway messages:
- English accomplishes reversal by using a very general correction mechanism – correction focus on Neg.
- Partly unified treatment of corrections and echo questions.
  - E.g. echo assertions, following Farkas 2009.

3.2 Decomposing reverse particles

We have argued for an account where components of response marking are morpho-syntactically decomposed.
- Properties distributed across particle itself, high and low Σ.
- Allows for unified account of complicated set of data.
- Explains connections between answer particles and Σ-stripping.

As we saw above, reverse answer particles are a problem for this account.
- Arguments for decomposing them remain.
- Difficult to reconcile with ellipsis account of decomposition.

Arguments for decomposition:
- Reverse particles compatible with ellipsis (in every language).
- If a language has reverse particles, and uses answer particles in Σ-stripping contexts, can use reverse particle. (Full set of data in the next section.)

    (50) A: N'est-il   pas venu à la soirée?
                NEG'has-he NEG come to the party
                'Did he not come to the party?'
           B: Je crois que si.
                I think that SI
                'I think he did.'

- I.e. reversal is not a property of responses per se.

The problem (again): overt reversal continuations are always positive – difficult to reconcile with identity condition in elliptical case.

The proposal: Covert iRev feature in Neg will allow identity condition to be satisfied, while particle marks a second iRev feature.
- Negative meaning to both.[8]
- May look like a hack. (May be a hack!)
- Syntactic implementation of Farkas and Bruce's 2009 proposal: +/reverse particle negates an already negative sentence radical on the table.
- Idea also suggested by Holmberg 2003 (also in the context of an ellipsis account): " the effect of [French] *si* is to neutralize the negation recovered along with the IP recovered from the preceding negative question."
- Justification: grammaticalization of correction in lang.s like English, which necessarily involves overtly positive morphology.

Note: this is easy to implement for the elliptical case. Our theory predicts double negative meaning if reverse particle has negative meaning.
- The problem is the overt continuations, which must be positive.
- Feature [iRev] in low Σ must have negative meaning with $\emptyset$ morphology.
- Rev exempt from constraint on Neg that just one instance is interpretable.

    (51)

Adv (*Doch*)	...	Σ($\emptyset$)	...	Σ($\emptyset$)
i+Rev ———————		u+Rev ———————		i+Rev

    (52) $[\![\textbf{iNeg}]\!] = [\![\textbf{iRev}]\!] = \lambda p_{\langle st \rangle} . \lambda w_s . \neg p(w)$

- (Note: the main problem in writing a denotation would be avoided if we were to have a structure that represents the polarity of a sentence radical.)

4 THE SYNTAX OF Σ

Goals of this section:
- Lay out and justify our assumptions about the syntax of polarity and polarity items like "yes" and "no" in English.
- Explore a prediction about the analysis that is fulfilled in French.

4.1 Polarity and clause structure: two Σs

There is evidence in English for a polarity projection (what we are calling low ΣP) between TP and vP.
- It hosts negative elements like "not" as well as positive elements like emphatic "so" (Laka 1990).

    (53) a.   Alfonso will not go to the party.
           b.   Alfonso will SO go to the party!
           c.   Alfonso did not go to the party.
           d.   Alfonso did SO go to the party!

---

[8]A version of this idea was suggested to us at NELS by Patrick Grosz.

(54)

```
        TP
       /  \
      T    ΣP
      |   /  \
    will  Σ   vP
          |   /  \
         not  go to the party
```
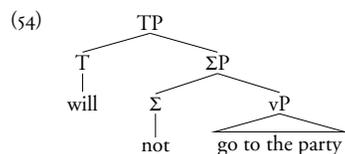
However, it has often been argued that universally there is a high polarity projection (also called ΣP) between CP and TP (see e.g. Laka 1990; Ladusaw 1992; Zanuttini 1997; Holmberg 2003).

- This is the projection "yes" and "no" adjoin to.

(55)

```
        CP
       /  \
      C    ΣP
          /  \
       AdvP   ΣP
        |    /  \
       yes  Σ    TP
```
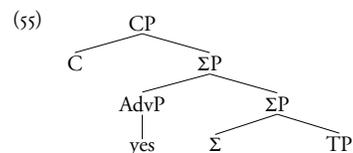
Do we need both? Yes, there is evidence for high ΣP in English from the responding adverb data seen before. (Also, reduced conditionals, credence ellipsis, "why" questions.)

(56) A: Will Melisande go to the party?   **So/not as high Σ**
      B: Maybe so.
      B′:   Maybe not.

- The exact same set of polarity elements ("so" and "not") that are associated with low Σ, and to have them be the realization of a different category (e.g. C) misses a generalization.
- If "so"/"not" were in low Σ, they would be elided along with the rest of the TP.[9]

There is also some evidence from English for the specific placement of high ΣP below CP, namely "so"/"not" follow elements in the CP domain:

(57) A: Is Melisande going to the party?
      B: If so, it will be good times.
      B′:   If not, it will be good times.

(58) A: Alfonso is not going to the party.
      B: Why not?

Upshot: both a high and a low ΣP are present in English, and can be realized as "so"/"not".

4.2   The syntax of "yes" and "no"

We have been assuming that "yes" and "no" are adverbs (following Huddleston and Pullum 2002), and are adjoined to high ΣP. Why? What are the cross-linguistic possibilities?

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[9]Alternatively, "so"/"not" could be merged in low Σ and raise to a position above TP (i.e. outside the ellipsis site). However, because of the Head Movement Constraint, this would require "so"/"not" to move through T as well, effectively picking up whatever T happens to be present and raising with it out of the ellipsis site. However, we never find T elements (e.g. modals) with responding adverbs (A: Will Melisande go to the party? B: * Maybe so will), so a head raising analysis cannot be correct.

- (Some competing hypotheses: they are heads of Σ, of C, or of some other projection e.g. Farkas's 2009 PolP.)
- "Yes" and "no" are not typical overt realizations of (low or high) Σ.
- They are adverb-like in their...
    - Optionality.
    - Lack of inflection, arguments, or modifiers.
    - Morphosyntactic independence from other heads in the clausal skeleton (cf. English negation "n't").
    - Ability to re-order with other adverbs, and around whole sentence.

(59) A: Is Alfonso a jerk?
      B: Yes, frankly, he's really annoying.
      B′   Frankly, yes, he's really annoying.

(60) Alfonso is a jerk, yes.

- "Yes" and "no" can also co-occur with a high Σ in certain kinds of responses, indicating that they are not the realization of the Σ itself.

(61) A: Is Alfonso going to Santa Cruz?   **With a responding adverb**
      B: Yes, probably so.
      B′:   No, probably not.

(62) A: Is Melisande going to campus?   **With a remnant / stripping**
      B: No, not today.

However, "yes" and "no" do not typically co-occur with an overt Σ head like "not" or "so".

(63) A: Is Melisande going to the party?
      B: * No, not.
      B′: * Yes, so.

We will not develop a full account of this contrast here, but intuitively...

- The presence of both response particles and Σs in cases like (63) seems redundant – they have very similar features qua lexical items.
- So, (63) could possibly be ruled out by some principle restricting redundancy, e.g. a version of Giusti's 2002 *Principle of economy of lexical insertion* where a functional projection (e.g. ΣP) is licensed by realizing a head or specifier (adjunct in this case).
- The question then becomes how to rule back in (61) and (62), which we must set aside pending further investigation of Σ-licensed TP ellipsis, stripping, and pseudo-stripping (cf. Depiante 2000)

A little Basque: Additional evidence for a case where response particles are not Σ heads comes from Basque (Laka 1990).

(64)   a.   (Bai,) badakit.
             Yes   yes.it.know.I
       b.   (Ez,) ezdakit.
             No   no.it.know.I

- Under Laka's analysis, the verbal prefixes "ba-" and "ez-" are realizations of a positive and negative high Σ.
- The verb raises to high Σ.
- This requires the response particles to be elsewhere in the structure, e.g. adjoined to Σ.
- N.B. the response particles are optional.

Finally, CP: There is yet another hypothesis that should be ruled out about the syntax of "yes" and "no": that they are somewhere within the CP projection (adjoined, specifier, head).

- Laka: English "yes" and "no" are in C.
- van Craenenbroeck 2004: Dutch particles are in Spec,CP.

However, this cannot be the case in English since "yes" and "no" can appear below complementizers like "if" and "that".

(65) a. I think that yes, Alfonso should go to the party.
     b. I think that yes, you not enjoying [facebook games] comes down to your personality and expectations of a game.

(66) a. Do you think the war in Iraq is a good idea? If yes, vote Republican; if no, vote Democratic.
     b. Any family history of sleep problems? If yes, please describe.

- (Caveat: we do not believe that this last batch of data works in quite the same way as others...)

Conclusion: "yes" and "no" are adverbs adjoined to ΣP, and not the realization of a Σ head.

4.3 Case study: French

Why are answer particles distinct from Σ? Would we always expect this?

- Prediction: if a language uses Σ heads as response particles, we should find them in embedded Σ-licensed TP ellipsis.
- Prediction borne out in French.

(67) A: Est-il venu à la soirée?
        has-he come to the party
        'Did he come to the party?'
     B: Je crois que oui. / Je crois que non.
        I believe that yes. / I believe that no.
        'I think so. / I think not.'

(68) A: N'est-il pas venu à la soirée?
        NEG'has-he NEG come to the party
        'Did he not come to the party?'
     B: Je crois si. / Je crois que non.
        I think SI / I think that not.
        'I think he did / I think he didn't'

(69) A: Est-il venu à la soirée?

     B: Peut-être que oui. / Peut-être que non.
        maybe that yes / maybe that no
        'maybe so. / maybe not.

(70) A: N'est-il pas venu à la soirée?
     B: Peut-être que si. / Peut-être que non.
        maybe that SI / maybe that no
        'Maybe he did. / Maybe he didn't.'

- Similar pattern in reduced conditionals (except there is a gap for "si si").[10]

The upshot: no adverbial polarity particles in French (and, perhaps, many other languages: e.g. Spanish, Italian, Greek, ...?)

- Like English: German, Dutch, ... (see Merchant 2003)
- Lots more cross-linguistic investigation needed...
- Further evidence for decomposing polarity and response systems.

5 Conclusion

We have developed:

- An ellipsis account of isolated polarity particles.
- An ellipsis account of English negative neutralization.
- Two kinds of solutions to the problems reversal responses present to the ellipsis account (correction focus & double negative meaning)
- An explicit account of "yes"/"no", and their interaction with "so"/"not".
- The beginnings of what we hope will be a large cross-linguistic investigation of the syntax of polarity particle systems.

Final comments and further directions:

- Ways in which a language can fail to have negative neutralization:
  - Can have a gap for positive response to negative question (e.g. Hebrew.)
  - Can use a third particle instead (many languages).
  - We'd expect there to be languages with a reverse particle that also neutralize with their "yes" – do they exist?
- Certain languages can respond to polar questions using just a finite verb (e.g. Irish: McCloskey 1991, Finnish: Holmberg 2001, 2003).
  - Analyses of these responses have involved ellipsis.
  - We look forward to further connecting our work with this strand of research on the responses to polar questions.

---

[10]Note that the situation in French is much more complicated. Some cases that we have analyzed as Σ-stripping in English work differently, e.g. "pourquoi pas / why not". Stripping also uses the lower negative system in French, which we have little to say about. (Merchant 2003, 2006) However, it seems that pseudo-stripping in French uses answer particles, as reported by Farkas 2009. (if that is indeed what it is; Farkas describes it as VP ellipsis but it is exactly parallel to Depiante's 2000 Spanish pseudo-stripping)

- – Prediction: if a V raises high enough, it will be left behind.
- Farkas and Bruce 2009: unified account of polarity particles across different antecedent types.
  - – Negative neutralization for other sorts of antecedents?

(71) A: Alfonso isn't going to the store.   (Declarative)
      B: Yeah. (= he isn't.)
      B′: No. (= he isn't.)

(72) A: Alfonso isn't going to the store?   (Rising declarative)
      B: Yes/yeah. (= he isn't.)
      B′: No. (= he isn't.)

(73) A: Don't talk to Alfonso.   (Imperative)
      B: Ok. (= I won't.)
      B′: No. (= I won't.)

- Finally, our account does not necessarily predict that *all* languages should use ellipsis in polarity particles. It does predict that a language without polarity particle ellipsis would...
  - – Have no neutralization of responses to a negative question (§2).
  - – Be capable of using a regular (non-reverse) particle for a 'reversal' response (§3).
  - – Such a language does exist: Amharic!
  - – Is there independent evidence for a lack of TP-ellipsis in Amharic? TBD!

Other Σ-licensed TP ellipsis?

- Depiante's 2000 pseudo-stripping: deletion of IP following leftward movement of remnant; "si"/"no" inserted to support high Σ.

(74) Ana leyó El Quijote pero María no
      Ana read El Quijote but Maria not
      'Ana read El Quijote but not Maria.'

(75) Ana no leyó El Quijote pero María sí
      Ana not read El Quijote but Maria yes
      'Ana didn't read El Quijote but Maria did.'

- French tag questions.
  - – Function of a tag: display a polarity marker; not much else needed.
  - – English strategy – use VP ellipsis.
  - – Prediction: a language doesn't really need anything more than Σ to fulfill this function. Why not use Σ-licensed TP ellipsis instead?
  - – Even better – what if this happens in a language without adverbial polarity particles?

(76) Il est nerveux ce matin,   non?
      he is nervous this morning, no
      'He is nervous this morning, isn't he?'

(77) Il n'est pas nerveux ce matin,   si?
      he not.is not nervous this morning, sɪ
      'He is not nervous this morning, is he?'

(78) Il est nerveux ce matin,   oui?
      He is nervous this morning, yes
      'He is nervous this morning, is he?'

(79) Il n'est pas nerveux ce matin,   non?
      he not.is not nervous this morning, no
      'He is not nervous this morning, isn't he?'

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