Polarity particles in an inquisitive discourse model[*]

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1 Introduction

- Analysis of *yes* and *no* presented yesterday:

    - *yes* presupposes a unique highlighted alternative and confirms it
    - *no* presupposes one or more highlighted alternatives and rejects them all

- Both *yes* and *no* are **anaphoric** in the sense that they presuppose one or more highlighted alternatives

- We refer to these highlighted alternatives as **antecedent possibilities**

- This analysis of *yes* and *no* accounts for:

    - The basic fact that *yes* and *no* cannot be used/interpreted in 'out of the blue' contexts
    - The distribution of *yes* and *no* in responses to various types of disjunctive questions and assertions

- However, as soon as we consider responses to **negative** questions and assertions, the analysis does not make the right predictions anymore.

- For instance, **both** *yes* and *no* can be used in a confirming response to a negative assertion (see Brasoveanu, Farkas, and Roelofsen, 2011, for experimental evidence):

    (1)   A: Sam didn't call.
            B: Yes, he didn't. / No, he didn't.

- The account developed so far wrongly predicts that *no* cannot be used here.

- More generally, it wrongly predicts that *no* can never be used in a **confirming** response.

- Similarly, it wrongly predicts that *yes* can never be used in a **reversing** response:

    (2)   A: Sam didn't call.
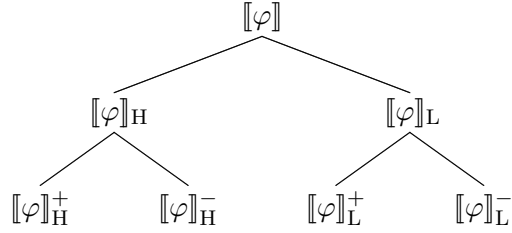   B: Yes, he DID. / No, he DID.

- Our aims for today:

  - Extend the analysis of polarity particles developed so far to account for responses to negative questions[1] and assertions, incorporating and further developing ideas from Farkas and Bruce (2010) and Farkas (2010, 2011)
  - Explore consequences for disjunctive questions and assertions (especially with negation)
  - Provide additional evidence for the account from languages other than English

2 Positive and negative possibilities

- Consider the following contrast:

  (3) Susan didn't pass the exam.   (4) Susan failed the exam.
       a. Yes, she didn't pass.   a. Yes, she failed.
       b. No, she didn't pass.   b. *No, she failed.

- (3) and (4) are entirely **equivalent** in the system developed so far:

  - They express exactly the same proposition
  - They highlight exactly the same possibility

- Still, they do not license the same polarity particle responses.

- This contrast can only be accounted for semantically if our notion of meaning is fine-grained enough—that is, if propositions have enough structure—to reflect the relevant difference between (3) and (4).

- Basic idea:

  - Propositions are sets of possibilities, as before
  - Possibilities may be highlighted or not, as before
  - But now, possibilities may also be **positive** or **negative**
  - Negative possibilities are those that are introduced by negative clauses; all other possibilities are positive.
  - So: $[\![(3)]\!]$ consists of a **negative** possibility, while $[\![(4)]\!]$ consists of a **positive** possibility
  - Polarity phrases presuppose positive/negative antecedents,
    just like pronouns presuppose masculine/feminine antecedents
  - Polarity particles in English do **double duty**:
    * They may signal whether the antecedent possibilities are **confirmed** or **rejected**
    * or whether the antecedent possibilities are supposed to be **positive** or **negative**

$$
\begin{array}{ccccc}
 & & [\![\varphi]\!] & & \\
 & \diagup & & \diagdown & \\
 & [\![\varphi]\!]_{\mathrm{H}} & & [\![\varphi]\!]_{\mathrm{L}} & \\
\diagup & & \diagdown & \diagup & \diagdown \\
[\![\varphi]\!]_{\mathrm{H}}^{+} & & [\![\varphi]\!]_{\mathrm{H}}^{-} & [\![\varphi]\!]_{\mathrm{L}}^{+} & [\![\varphi]\!]_{\mathrm{L}}^{-}
\end{array}
$$

3   Introducing negative possibilities

- <u>Notation</u>

  - $[\![\varphi]\!]$ = the proposition expressed by φ

  - $[\![\varphi]\!]_{\mathrm{H}}$ = the possibilities in $[\![\varphi]\!]$ that are highlighted
  - $[\![\varphi]\!]_{\mathrm{L}}$ = the possibilities in $[\![\varphi]\!]$ that are not highlighted ('lowlighted')

  - $[\![\varphi]\!]_{\mathrm{H}}^{+}$ = the possibilities in $[\![\varphi]\!]_{\mathrm{H}}$ that are positive
  - $[\![\varphi]\!]_{\mathrm{H}}^{-}$ = the possibilities in $[\![\varphi]\!]_{\mathrm{H}}$ that are negative
  - $[\![\varphi]\!]_{\mathrm{L}}^{+}$ = the possibilities in $[\![\varphi]\!]_{\mathrm{L}}$ that are positive
  - $[\![\varphi]\!]_{\mathrm{L}}^{-}$ = the possibilities in $[\![\varphi]\!]_{\mathrm{L}}$ that are negative

- Negative possibilities are introduced by sentential negation

- <u>The semantic contribution of sentential negation</u>

  - $[\![\mathrm{not}\ \varphi]\!]_{\mathrm{H}}^{-} = \{\ \overline{\bigcup [\![\varphi]\!]}\ \}$
  - $[\![\mathrm{not}\ \varphi]\!]_{\mathrm{H}}^{+} = [\![\mathrm{not}\ \varphi]\!]_{\mathrm{L}}^{+} = [\![\mathrm{not}\ \varphi]\!]_{\mathrm{L}}^{-} = \emptyset$

  In words:

  - $[\![\mathrm{not}\ \varphi]\!]$ consists of a single negative highlighted possibility: the complement of $\bigcup [\![\varphi]\!]$

- <u>Examples</u>

  - $[\![\text{Susan failed the exam}]\!]$ consists of a single [H,+] possibility
  - $[\![\text{Susan did not pass the exam}]\!]$ consists of a single [H,−] possibility

  - In both cases, the possibility involved consists of all worlds where Susan failed
  - However, in one case this possibility is positive, in the other it is negative

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[1]We will restrict our attention here to *low* negation polar questions (e.g., *Did Peter not call?*). High negation polar questions (e.g., *Didn't Peter call?*) seem to pattern with positive polar questions.

4 PolP: absolute and relative polarity features

- We will not directly specify the semantics of *yes* and *no*

- Rather, we think of these polarity **particles** as **realizing** certain polarity **features**

- Polarity features are hosted by a syntactic node which we will refer to as **PolP**

- There are **two relative polarity features**: [SAME] and [REVERSE]

- And there are also **two absolute polarity features**: [+] and [−]

- PolP always hosts one relative polarity feature and one absolute polarity feature

- Thus, in total there are four possible feature combinations in PolP:

  - [SAME,+]
  - [SAME,−]
  - [REVERSE,+]
  - [REVERSE,−]

- <u>To be specified</u>:

  - The semantics of these four possible feature combinations in PolP
  - Feature realization rules:
    * which particles can realize which features, and
    * given a certain feature combination, which features are to be realized

- Together, this will yield an account of the distribution and interpretation of *yes* and *no*

4.1 Interpretation of feature combinations in PolP

- [SAME,+]

  - presupposes that there is a unique [H,+] alternative on the Table[2]
  - if this presupposition is met, it *confirms* the unique [H,+] alternative

- [SAME,−]

  - presupposes that there is a unique [H,−] alternative on the Table
  - if this presupposition is met, it *confirms* the unique [H,−] alternative

- [REVERSE,+]

  - presupposes that there is at least one [H,−] alternative on the Table
  - if this presupposition is met, it *rejects* all the [H,−] alternatives on the Table

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[2]We assume a discourse model that combines the basic architecture of (Farkas and Bruce, 2010) with inquisitive semantics. In this model, a discourse context includes a stack of propositions, representing the proposals under consideration. This stack of propositions is called the Table. For convenience, we refer to alternatives that are contained in the *first* proposition on the Table simply as 'alternatives on the Table.'

- [REVERSE,−]

    - presupposes that there is at least one [H,+] alternative on the Table
    - if this presupposition is met, it *rejects* all the [H,+] alternatives on the Table

- Thus, the different polarity phrases are characterized by:

    - the polarity of the antecedent possibilities (positive or negative)
    - the relationship between the antecedent and the response (confirming or reversing)
    - the polarity of the response (positive or negative)

antecedent	relation	response	features
+	confirming	+	[SAME,+]
−	confirming	−	[SAME,−]
−	reversing	+	[REVERSE,+]
+	reversing	−	[REVERSE,−]

4.2 Realization rules

- <u>Which particles can be used to realize which features?</u>

    - [SAME] and [+] can be realized by *yes*
    - [REVERSE] and [−] can be realized by *no*

- Thus, polarity particles in English do **double duty**

    - they are used to realize both absolute and relative polarity features

- The use of one particle for [SAME] and [+], and another particle for [REVERSE] and [−] is common cross-linguistically (see Pope, 1976)

- <u>Given a certain feature combination, which features are to be realized?</u>

    Features that are more **marked** have higher 'realization needs'

    (5) a. [−] is marked relative to [+]
         b. [REVERSE] is marked relative to [SAME]
         c. the absolute polarity of a [REVERSE,+] or [REVERSE,−] response is marked because it *contrasts* with the polarity of the antecedent

- <u>Overview of main predictions</u>

    (6) a. [SAME,+] can only be realized by *yes*
         b. [REVERSE,−] can only be realized by *no*
         c. [SAME,−] can be realized by *yes* or *no*
         d. [REVERSE,+] can be realized by *yes* or *no*

(7) a. In the case of [SAME,−] we expect a preference for *no* over *yes* because [−] is more marked than [SAME] (this is corroborated in Brasoveanu *et al.*, 2011)

  b. In the case of [REVERSE,+] **both features have high realization needs**; across languages we see different strategies to satisfy these needs

- In English, [REVERSE,+] polarity phrases must be accompanied by a clause with 'verum focus,' reflecting the contrastive positive polarity of the response:

(8) A: Peter didn't call.
  B: Yes, he DID. / No, he DID.

- Plausibly, the accompanying clause is obligatory because polarity particles themselves cannot carry the appropriate contrastive stress

- The full paradigm:

(9) A: Peter called. / Did Peter call?
  B: Yes, he did. / *No, he did.   [SAME,+]

(10) A: Peter called. / Did Peter call?
  B: *Yes, he didn't. / No, he didn't.   [REVERSE,−]

(11) A: Peter didn't call. / Did Peter not call?
  B: Yes, he didn't. / No, he didn't.   (preference for *no*)   [SAME,−]

(12) A: Peter didn't call. / Did Peter not call?
  B: Yes, he DID. / No, he DID.   (contrastive stress obligatory)   [REVERSE,+]

- Explanation of the division of labor between *yes* and *no*:

  – The fact that *yes* is used for [SAME] and [+], while *no* is used for [REVERSE] and [−], and the fact that this division of labor is common cross-linguistically, is not surprising given that [SAME] and [+] are the unmarked features, while [REVERSE] and [−] are the marked ones

4.3 Interim conclusions

- Main puzzle for the day has been solved: our account of polarity particles has been extended in such a way that it deals appropriately with negative questions and assertions

- Crucial elements of the extended account:

  – A distinction between positive and negative possibilities   (semantic refinement)
  – A distinction between absolute and relative polarity features   (syntactic refinement)

- In the remainder of the talk, we will consider additional support for the account, based on:

  – Disjunctive questions and assertions involving negation
  – Polarity particle systems in languages other than English

5 Disjunctive questions and assertions

- Consider the following two alternative questions:

  (13) Did Susan pass the exam, or did she fail?
     a. *Yes, she did. / *No, she did.
     b. *Yes, she didn't. / *No, she didn't.

  (14) Did Susan pass the exam, or didn't she?
     a. **Yes, she did.** / *No, she did.
     b. *Yes, she didn't. / **No, she didn't.**

- Alternative questions are generally assumed not to license *yes/no* responses

- Thus, the fact that (14) licenses *yes/no* responses is surprising

- We have a straightforward account of this observation:

  - The question in (14) highlights one positive possibility and one negative possibility
  - This means that both [SAME,+] and [SAME,−] particle responses are licensed
  - This is exactly what we see in (14a) and (14b), respectively.

- We also have an account for the fact that (13) does *not* license polarity particle responses:

  - The question in (14) highlights two positive possibilities
  - This means that [SAME,+] and [SAME,−] and [REVERSE,+] responses are not licensed
  - [REVERSE,−] is licensed, because there are positive antecedent possibilities
  - However, a [REVERSE,−] response rejects all the positive antecedent possibilities, which means in this case that it is **contradictory** (presupposing that Susan did *do* the exam)

- Thus, disjunctive questions provide additional support for the distinction between positive and negative possibilities and the distinction between absolute and relative polarity features

- This domain is explored in more detail in the paper

6 Typological considerations

- Given the assumed distinction between absolute and relative polarity features, we expect to find languages with different polarity particle systems

- In particular, we expect languages where particles don't do double duty, unlike in English

- We also expect to find different realization strategies in the case of [REVERSE,+]

- In this section we will consider several **languages with three polarity particles**:

  - A language with two absolute particles and a specialized [REVERSE] particle (Romanian)
  - Several languages with a specialized particle for [REVERSE,+]
    * based on an adversative [REVERSE] morpheme (German)
    * or based on a special [+] morpheme (French, Swedish, Danish)

6.1 A dedicated [reverse] particle: the case of Romanian

- Particle inventory: *da*, *nu*, *ba* (Farkas, 2011)

- <u>Realization rules for Romanian:</u> realization **potential** of polarity particles

    - *da* realizes [+]
    - *nu* realizes [−]
    - *ba* realizes [REVERSE]

- <u>Realization rules for Romanian:</u> realization **needs** of polarity features

    - Absolute features must be realized, either by a particle or by an accompanying clause
    - [SAME] is never realized
    - [REVERSE] is always realized in [REVERSE,+] responses
    - [REVERSE] is optionally realized in [REVERSE,−] responses to assertions
    - [REVERSE] is never realized in [REVERSE,−] responses to questions

- *da* realizes [+]

    (15) [SAME,+]
    A: Paul a telefonat./A telefonat Paul?   'Paul called./Did Paul call?'
    B: Da/*Nu, (a telefonat).   'Yes / *No (he called)'.

    (16) [REVERSE,+]
    A: Paul nu a telefonat./Nu a telefonat Paul?   'P did not call./Did P not call?'
    B: Ba da/*Nu, (a telefonat).   'Yes, he DID.'

- *nu* realizes [−]

    (17) [SAME,−]
    A: Paul nu a telefonat./Nu a telefonat Paul?   'P did not call./Did P not call?'
    B: Nu, (nu a telefonat).   'No, (he didn't call).'

    (18) [REVERSE,−]
    A: Paul a telefonat./A telefonat Paul?   'Paul called./Did Paul call?'
    B: Nu, (nu a telefonat).   'No, (he didn't call).'

- *ba* realizes [REVERSE]

    (19) [REVERSE,+]
    A: Paul nu a telefonat./Nu a telefonat Paul?   'P did not call./Did P not call?'
    B: Ba (da)/*nu, (a telefonat).   'Yes, he DID.'

    (20) [REVERSE,−]
    A: Paul a telefonat.   'Paul called.'
    B: (Ba) nu, (nu a telefonat).   'No, (he didn't call).

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- Absolute features must be realized (by particle or accompanying clause):

  (21)   a.   A: Paul nu a telefonat.   'Paul did not call.'
                  B: *Ba. / Ba da. / Ba, a telefonat.   'Yes, he DID.'

          b.   A: Paul a telefonat.   'Paul called.'
                  B: *Ba. / Ba nu, (nu a telefonat). / Ba, nu a telefonat.   'No, he DIDN't.'

- Realization of [REVERSE] in different types of responses:

  - In [REVERSE,+] responses, [REVERSE] is **always** realized: see (19)
  - In [REVERSE,−] responses to **assertions**, [REVERSE] is **optionally** realized:

    (22)   [REVERSE,−] in reactions to assertions
              A: Paul a telefonat.   'Paul called.'
              B: (Ba) nu, (nu a telefonat).   'No, he DIDN'T.'

  - In [REVERSE,−] responses to **questions**, [REVERSE] is **never** realized:

    (23)   [REVERSE,−] in reactions to questions
              A: Nu a telefonat Paul?   'Did Paul call?'
              B: *Ba nu/Nu, (nu a telefonat).   'No, he didn't.'

- The Romanian polarity particle system and our markedness considerations

  - The existence of languages with a dedicated [REVERSE] particle and no dedicated [SAME] particle is in line with our markedness considerations
  - We predict that there are no languages exhibiting the opposite pattern—a dedicated [SAME] particle but no dedicated [REVERSE] particle
  - The behavior of the [REVERSE] particle is also in line with our markedness considerations:
    * [REVERSE,+] is more marked than [REVERSE,−] and thus has higher realization needs
    * **Assertion reversal** is more marked than **question reversal**: the former leads to a 'conversational crisis', while the latter doesn't.

- Main contrasts with English

  - Presence of a dedicated [REVERSE] particle
  - No overlap in the use of *da* and *nu*, because these polarity particles don't do double duty
  - High realization needs of [REVERSE,+] are satisfied by obligatory [REVERSE] particle

- Predictions concerning other three polarity particle systems with a dedicated [REVERSE] particle:

  - Realization of [+] could be optional, because [+] is relatively unmarked
  - In this case, solo [REVERSE] would be possible in [REVERSE,+] responses (Hungarian)
  - Realization of [REVERSE] could be obligatory throughout

6.2 A dedicated [reverse,+] particle: the case of French and German

- Languages with basic absolute polarity particles may have a special [REVERSE,+] because no absolute polarity particle can realize both features and yet both have high realization needs.

- Special [REVERSE,+] particles may consist of a special [+] particle or a special [REVERSE] particle.

6.2.1 Languages with a special [+] particle for [reverse,+]: French

- Polarity particles in French: *oui*, *non*, *si*

- Features realized by each particle:

  - *oui* realizes [+]

    (24)   [SAME,+]
            A: Claude est à la maison.   'Claude is at home.'
            B: Oui, (elle y est).   'Yes, (she is.)'

  - *non* realizes [−]

    (25)   [SAME,−]
            A: Claude n'est pas à la maison.   'Claude is not at home.'
            B: Non, (elle n'y est pas).   'No, (she isn't).

  - *si* realizes [REVERSE,+]

    (26)   [REVERSE,+]
            A: Claude n'est pas à la maison.   'Claude is not at home.'
            B: Si, (elle y est).   'Yes, she IS.'

    (27)   [REVERSE,−]
            A: Claude est à la maison.   'Claude is at home.'
            B: *Si/Non, (elle n'y est pas).   'No, (she isn't).'

6.2.2 Languages with a special [reverse] particle for [reverse,+]: German

- Polarity particles in German: *ja*, *nein*, *(ja) doch*

- Features realized by each particle:

  - *ja* realizes [+]

    (28)   [SAME,+]
            A: Katharina ist zu Hause?   'Katharina is at home.'
            B: Ja, (sie ist zu Hause).   'Yes, she is.'

  - *nein* realizes [−]

    (29)   [SAME,−]
            A: Katharina ist nicht zu Hause.   'Katharina is not at home."
            B: Nein, (sie ist nicht zu Hause).   'No, she isn't.'

– *(ja) doch* realizes [REVERSE,+]

(30) [REVERSE,+]
  A: Katharina ist nicht zu Hause.   'Katharina is not at home.'
  B: (Ja) doch, (sie ist zu Hause).   'Yes, she IS.'

(31) [REVERSE,−]
  A: Katharina ist zu Hause.   'Katharina is at home.'
  B: *Doch/Nein, (sie ist nicht zu Hause).   'No, she isn't.'

7 Conclusion

- In order to account for the distribution and interpretation of polarity particles in responses to negative questions and assertions, we made two crucial distinctions:

  - A distinction between positive and negative possibilities (semantic refinement)
  - A distinction between absolute and relative polarity features (syntactic refinement)

- Polarity particles realize polarity features

- The particle inventory and realization rules may differ from language to language

- However, we expect that the realization rules of any particular language are in line with the general principle that more marked features have higher realization needs

- [REVERSE,+] is special in this respect, because both features have high realization needs, while it is unlikely that a language has a single particle that realizes both [REVERSE] and [+]

- Across languages, we see different strategies to satisfy the high realization needs of [REVERSE,+]

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