

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.

* A substantial part of the paper in progress that this handout is based on—the part that spells out the ‘inquisitive discourse model’ in detail—is left out here for reasons of time. Feedback of any kind will be very much appreciated. We are very grateful to Adrian Brasoveanu for fruitful collaboration on a closely related project.

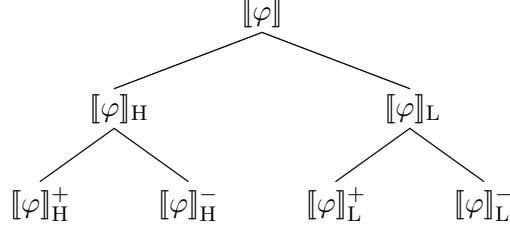
- Our aims for today:
 - Extend the analysis of polarity particles developed so far to account for responses to negative questions¹ and assertions, incorporating and further developing ideas from Farkas and Bruce (2010) and Farkas (2010, 2011)
 - Explore consequences for disjunctive questions and assertions (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**



3 Introducing negative possibilities

- Notation

- $[[\varphi]]$ = the proposition expressed by φ
 - $[[\varphi]]_H$ = the possibilities in $[[\varphi]]$ that are highlighted
 - $[[\varphi]]_L$ = the possibilities in $[[\varphi]]$ that are not highlighted ('lowlighted')
 - $[[\varphi]]_H^+$ = the possibilities in $[[\varphi]]_H$ that are positive
 - $[[\varphi]]_H^-$ = the possibilities in $[[\varphi]]_H$ that are negative
 - $[[\varphi]]_L^+$ = the possibilities in $[[\varphi]]_L$ that are positive
 - $[[\varphi]]_L^-$ = the possibilities in $[[\varphi]]_L$ that are negative
- Negative possibilities are introduced by sentential negation
 - The semantic contribution of sentential negation

- $[[\text{not } \varphi]]_H^- = \{\overline{\bigcup [[\varphi]]}\}$
- $[[\text{not } \varphi]]_H^+ = [[\text{not } \varphi]]_L^+ = [[\text{not } \varphi]]_L^- = \emptyset$

In words:

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

- $[[\text{Susan failed the exam}]]$ 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

¹We 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,-]
- To be specified:
 - 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 Table²
 - 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

²We 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

- Which particles can be used to realize which features?
 - [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)
- Given a certain feature combination, which features are to be realized?

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

- Overview of main predictions

- (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)
- Realization rules for Romanian: realization **potential** of polarity particles
 - *da* realizes [+]
 - *nu* realizes [-]
 - *ba* realizes [REVERSE]
- Realization rules for Romanian: 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 [+]

| | |
|---|---|
| <p>(15) [SAME,+] A: Paul a telefonat./A telefonat Paul? B: Da/*Nu, (a telefonat).</p> | ‘Paul called./Did Paul call?’ ‘Yes / *No (he called)’. |
|---|---|
- *nu* realizes [−]

| | |
|---|---|
| <p>(16) [REVERSE,+] A: Paul nu a telefonat./Nu a telefonat Paul? B: Ba da/*Nu, (a telefonat).</p> | ‘P did not call./Did P not call?’ ‘Yes, he DID.’ |
|---|---|
- *ba* realizes [REVERSE]

| | |
|--|--|
| <p>(17) [SAME,−] A: Paul nu a telefonat./Nu a telefonat Paul? B: Nu, (nu a telefonat).</p> | ‘P did not call./Did P not call?’ ‘No, (he didn’t call).’ |
| <p>(18) [REVERSE,−] A: Paul a telefonat./A telefonat Paul? B: Nu, (nu a telefonat).</p> | ‘Paul called./Did Paul call?’ ‘No, (he didn’t call).’ |
- *da* realizes [+]

| | |
|---|---|
| <p>(19) [REVERSE,+] A: Paul nu a telefonat./Nu a telefonat Paul? B: Ba (da)/*nu, (a telefonat).</p> | ‘P did not call./Did P not call?’ ‘Yes, he DID.’ |
|---|---|
- *ba* realizes [REVERSE]

| | |
|--|---|
| <p>(20) [REVERSE,−] A: Paul a telefonat. B: (Ba) nu, (nu a telefonat).</p> | ‘Paul called.’ ‘No, (he didn’t call).’ |
|--|---|

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

| | | | |
|------|----|--|---------------------------------------|
| (21) | a. | A: Paul nu a telefonat. B: *Ba. / Ba da. / Ba, a telefonat. | 'Paul did not call.' 'Yes, he DID' |
| | b. | A: Paul a telefonat. B: *Ba. / Ba nu, (nu a telefonat). / Ba, nu a telefonat. | 'Paul called.' '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. B: (Ba) nu, (nu a telefonat). | 'Paul called.' 'No, he DIDN'T' |
|------|-------------|---|-----------------------------------|

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

| | | | |
|------|-------------|---|--------------------------------------|
| (23) | [REVERSE,−] | in reactions to questions A: Nu a telefonat Paul? B: *Ba nu/Nu, (nu a telefonat). | 'Did Paul call?' '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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