Polarity particles in English and beyond

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1 Introduction

Examples of utterances involving 'polarity particles':

(1) Amy left.
   a. Yes, she did. / *No, she did.
   b. No, she didn't. / *Yes, she didn't

(2) Did Amy leave?
   a. Yes, she did. / *No, she did.
   b. No, she didn't. / *Yes, she didn't.

Some issues that arise:

- What are the particles languages use?

  – 2 particle languages (English)

  – 3 particle languages (Romanian, French, German)

(3) A: Paul a telefonat. / A telefonat Paul?
    B: Da, (a telefonat) / Nu, nu a telefonat.   'P called. / Did P call?'
    'Yes, (he did) / No, (he didn't).'

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

- Questions of distribution and interpretation:

  – What does each particle do?

  – What are the distributional restrictions in each language?

  – How do languages with 2 particles differ from those with 3?

  – What cross-linguistic patterns should we expect?

- Anaphoric nature of polarity particles:

  – not good in 'out of the blue' contexts

- Relation between polarity particle and antecedent will be used as a window onto the discourse function of the antecedent

  – polarity particles are fine in reactions to assertions and polar questions

  – not fine in reactions to *wh*-questions; certain types of disjunctive questions

(5) A: Who left?
    B: *Yes, Paul did.

(6) Is the door open↑ or closed↓?
   a. # Yes.
   b. # No.

- Issue that arises: capturing both the essential similarities and the essential distinctions between assertions and polar questions.

Basic ideas to be worked out:

- Effect of utterance types, and in particular, assertions and polar questions, on context: **proposal** to update the common ground of a conversation in one or more ways. (See Stalnaker (1978); Groenendijk and Roelofsen (2009); Farkas and Bruce (2010), among others.)

- Polarity particles mark **responses** to a given proposal as being **confirming/reversing**, or as being **positive/negative**.

Main ideas we bring together:

- Pope (1976): distinction between responses that are *confirming/rejecting* vs *positive/negative* (see also Sadock and Zwicky (1985), Ginzburg and Sag (2000), among others)

- Gunlogson (2008): notion of *source/dependent* associated to particular discourse commitments

- our own earlier work concerned with

  – capturing similarities/differences across responses to polar questions and responses to assertions

  – encoding properties of responses as semantic features that are expressed by various particles and particle combinations

First part of the talk (Section 2):

- develops a sufficiently fine-grained formal notion of proposals involved in making the simplest type of assertions (uttering declarative sentences with falling intonation) and in asking polar questions

- accounts for the distribution of polarity particles in English in reactions to these antecedents

- sets up some expectations with respect to what we are likely to find cross-linguistically

Second part of the talk (Section 3):

- 3-polarity particle languages with special attention to Romanian

2 Proposals, responses, and polarity particles in English

This section: interleaves theoretical assumptions and proposals with an account of the distribution and interpretation of *yes/no* in responses to assertions and polar questions.

2.1 Proposals as sets of possibilities

Inquisitive semantics framework (see Groenendijk and Roelofsen (2009); Ciardelli and Roelofsen (2011); AnderBois (2011))

- Semantics of a sentence captures both its informative content and the nature of proposal made in uttering it.

- Propositions are defined as sets of **possibilities**.

- Each possibility is a set of **possible worlds**.

- Each possibility represents a potential update of the common ground.

Example:

The propositions expressed by (1) and (2) given in (a) and (b)

(a) [Amy left]
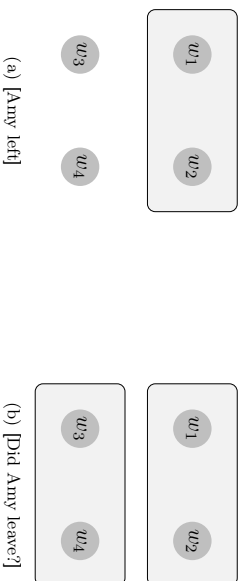
(b) [Did Amy leave?]

w_1 and w_2: worlds where Amy left
w_3 and w_4: worlds where Amy did not leave

Notation:

- the proposition expressed by a sentence φ: $[\varphi]$

In uttering *Amy left/Did Amy leave?*, a speaker:

1. **commits** to the actual world being contained in at least one of the possibilities in $[\varphi]$, and at the same time

2. **requests** a response from other participants that provides enough information to establish at least one of the proposed updates

2.2 Highlighting

We need a finer-grained formal representation of proposals if we want to account for polarity particle distribution:

(7) Is the door open?
   a. Yes ⇒ open
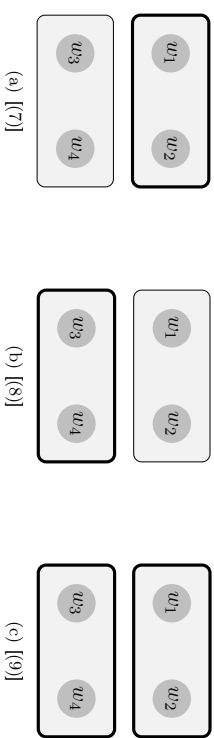   b. No ⇒ closed

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(a) [(7)]

(b) [(8)]

(c) [(9)]

Figure 1: The possibilities proposed and highlighted by (7), (8), and (9).

(8) Is the door closed?
   a. Yes ⇒ closed
   b. No ⇒ open

(9) Is the door open↑ or closed↓?
   a. # Yes
   b. # No

So far:

- these questions express *identical* propositions (each consisting of **two possibilities**, the possibility that the door is open, and the possibility that the door is closed)

- and yet the distribution and interpretation of polarity particles in responses to them varies:

Proposal:

- distinction between **highlighted** and non-highlighted possibilities[1]

- intuitively, highlighted possibilities are the ones that are **explicitly mentioned**

Back to our examples:

- (7) highlights the possibility that the door is **open**

- (8) highlights the possibility that the door is **closed**

- (9) highlights **both** of these possibilities

In Figure 1:

- w_1 and w_2 are worlds where the door is **open**

- w_3 and w_4 are worlds where the door is **closed**

- **highlighted** possibilities are displayed with a **thick border**

Back to accounting for *yes* and *no*:

- Highlighted possibilities serve as **antecedents** for subsequent **anaphoric** expressions

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[1] See Roelofsen and van Gool (2010); Pruitt and Roelofsen (2011); Farkas (2011).

• Polarity particles are such anaphoric expressions

Preliminary proposal for *yes/no*:

• A *yes* answer to an initiative ψ **presupposes** that there is **exactly one highlighted alternative** for ψ.

• If this presupposition is met, *yes* confirms this highlighted alternative.

• A *no* answer simply rejects all the highlighted possibilities for ψ.

Account of the contrast between (7), (8), and (9):

• In (7), there is **exactly one highlighted alternative**. So:

– *yes* is licensed: it confirms the highlighted alt, conveying that the door is open;
– *no* denies the highlighted alternative, conveying that the door is closed.

• In (8), there is again **exactly one highlighted alternative**. So:

– *yes* is licensed: it confirms the highlighted alt, conveying that the door is closed;
– *no* denies the highlighted alternative, conveying that the door is open.

• In (9), there are **two highlighted alternatives**. So:

– *yes* is not licensed—its presupposition is not met;
– *no* signals that the door is neither open nor closed, which is contradictory.

Some additional welcome predictions:

• Polarity particles can only be used in responses, **not 'out of the blue'**.

• Polarity particles can **not** be used **in response to *wh*-questions**, assuming that such questions do not highlight any possibilities

2.3   Positive and negative possibilities

The distinction between highlighted and non-highlighted possibilities is not enough:

(10)   Susan failed the exam.
   a.   Yes, she failed.
   b.   *No, she failed.

(11)   Susan didn't pass the exam.
   a.   Yes, she didn't pass.
   b.   No, she didn't pass.

So far:

• (10) and (11) are **equivalent**:
– they express the same proposition
– they highlight the same possibility

• and yet they do not license the same polarity particles

Conclusion:

• a semantic account of this contrast requires our notion of propositions/proposals to be even more fine-grained so as to distinguish between (10) and (11).

Proposal:

• distinction between **positive** and **negative** possibilities (see Barwise and Perry (1983), Ginzburg and Sag (2000))

• negative possibilities are introduced by sentences involving sentential negation

• [not φ] consists of a single [H,−] possibility: the complement of ∪[φ]

Examples:

• [Susan failed the exam]   consists of a single [H,+] possibility
• [Susan did not pass the exam]   consists of a single [H,−] possibility

Common to both:

• the possibility involved consists of all worlds where Susan failed

Difference:

• in the first case this possibility is positive, in the second, it is negative

Back to polarity particles:

• Polarity particles presuppose positive/negative antecedents, just like pronouns presuppose masculine/feminine antecedents

• Polarity particles may have two functions:

– they may signal whether the antecedent possibilities are **confirmed** or **rejected**
– they may signal **positive** or **negative** nature of the antecedent and of the response

In (10-a-b):

• **confirming** response with **positive** antecedent
– licenses *yes*
– doesn't license *no*

In (11-a-b):

• **confirming** response with **negative** antecedent
– licenses **yes** (because confirming)
– licenses **no** (because it confirms a negative antecedent)

Next issue:

• capturing the connections between nature of antecedent, nature of response and the distribution of polarity particles

2.4 Absolute and relative polarity features

Two parameters that characterize responses involving polarity particles (Pope (1976); Ginzburg and Sag (2000); Farkas and Bruce (2010); Farkas (2010)):

- relation between response and antecedent (**confirming** vs. **rejecting**)
- nature of the response itself (**positive** vs. **negative**)

Polarity particles realize two sets of features:

- **absolute** polarity feature marks a response as being

  - **positive:** [+]
  - **negative:** [−]

- **relative** polarity feature marks a response as

  - **confirming** and having the **same** absolute polarity as the antecedent: [SAME]
  - **rejecting** and having the **reverse** absolute polarity relative to the antecedent: [REVERSE]

Possible feature value combinations:

	response	relation with antecedent
[SAME,+]	+	same
[SAME,−]	−	same
[REVERSE,+]	+	reverse
[REVERSE,−]	−	reverse

Some syntactic assumptions:

- Polarity features are hosted by a syntactic node called **PolP**
- PolP attaches to a clausal node, which we call its **prejacent**
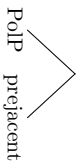
PolP   prejacent

- The prejacent may be partially or fully elided

  - presence of prejacent is obligatory in some special cases in English; essential for particle distribution in Romanian
  - unitary account of *yes* and *no* in English: elided prejacent in cases of solo particle responses

To do next:

- The semantic contribution of the four possible feature combinations in PolP
- Feature realization rules:

  - which particles can be used to realize which features, and
  - given a certain feature combination, which features are to be realized

2.5 Interpretation of feature combinations in PolP

Semantic contribution of material in PolP:

- set of **presuppositions**
- if the presuppositions are met, PolP expresses the **identity function**, $\lambda p.p$

Presuppositions of feature combinations in PolP:

- [SAME,+]

  - presupposes a unique [H,+] alternative α on the Table[2]
  - presupposes that its prejacent **confirms** this alternative: $[\text{prejacent}] = \{\alpha_{[+]}\}$

- [SAME,−]

  - presupposes a unique [H,−] alternative α on the Table
  - presupposes that its prejacent **confirms** this alternative: $[\text{prejacent}] = \{\alpha_{[-]}\}$

- [REVERSE,+]

  - presupposes a non-empty set of [H,−] alternatives A on the Table
  - presupposes that its prejacent **rejects** all these alternatives: $[\text{prejacent}] = \{\bigcup \overline{A}_{[+]}\}$

- [REVERSE,−]

  - presupposes a non-empty set of [H,+] alternatives A on the Table
  - presupposes that its prejacent **rejects** all these alternatives: $[\text{prejacent}] = \{\bigcup \overline{A}_{[-]}\}$

What is the connection between features in PolP and the polarity particles of a language?

2.6 Account of polarity particles in English

Two issues that have to be settled:

- Which features / feature combinations have to be realized?
- Which particles can be used to realize which features?

Some markedness considerations:

(12)
- a. [−] is marked relative to [+]
- b. [REVERSE] is marked relative to [SAME]
- c. The absolute polarity of [REVERSE] responses is marked because it **contrasts** with the polarity of the antecedent
- d. [REVERSE] in response to an assertion is more marked than [REVERSE] in response to a polar question

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[2] We assume a discourse model in which 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 the 'alternatives on the Table.' The discourse model will be spelled out in the full paper (in progress). It will integrate inquisitive semantics with the model of Farkas and Bruce (2010), which in turn builds on much earlier work, e.g., Hamblin (1971); Stalnaker (1978); Carlson (1983); Ginzburg (1996); Clark (1992); Roberts (1996); Gunlogson (2001); Asher and Lascarides (2003); Büring (2003).

Expectation:

• Features that are more **marked** have higher 'realization needs' and thus will tend to be expressed more than features that are **unmarked**.

Connection between absolute and relative features:

(13) a. [SAME] and [+] are the unmarked values in the two sets
b. [REVERSE] and [−] are the marked values in the two sets

• Possible syncretisms (see Pope (1976)):

(14) a. one particle for [SAME] and [+]
b. one particle for [REVERSE] and [−]

Realization rules in English:

(15) a. [SAME] and [+] realized by *yes*
b. [REVERSE] and [−] realized by *no*

Polarity particles in English do **double duty**

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

Main predictions:

(16) 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*

(17) a. In the case of [SAME,−] we expect a **preference** for *no* over *yes* because [−] is more marked than [SAME]
b. In the case of [REVERSE,+] **both features have high realization needs**; special conditions may obtain

• In English, [REVERSE,+] polarity phrases must have an explicit prejacent with **verum focus**, reflecting the **contrastive** positive polarity of the response:

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

The full paradigm[3]:

(19) A: Peter called. / Did Peter call?
B: Yes, he did. / *No, he did.

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

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[3] For a different account of [SAME,−] cases, where both *yes* and *no* can occur as 'solo' particles, see Kramer and Rawlins (2009) as well as Ginzburg and Sag (2000).

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

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

Main proposals of Gunlogson (2008):

(23) A: Stuart is in town.
B: Yes, I saw him yesterday. / *Yes, I had no idea.

2.7 The role of *sourcehood*

Observation in Gunlogson (2008):

• discourse commitments have Sources – participant whose evidence / epistemic authority provides the basis of commitment

• discourse commitments may have Dependents – participant that accepts a commitment sourced by another participant.

Adding Source and Dependents to context structures:

• discourse structures contain a list DC_X of discourse commitments for each discourse participant X: list of possibilities p such that X is publicly committed to w_c being in p

• a particular possibility may be marked by Source superscripts and Dependent subscripts: p^A. p is a commitment with A as Source; p_A: p is a commitment with A as dependent

• default situation: possibilities in DC_X have X as Source

Back to *yes, no*: both commit Speaker to a unique possibility and register Speaker as Source – see (23)

Forms of assertion acceptance that do not register speaker as Source:

(24) A: Johnny's just arrived.
B: Aha. / Ok. (I had no idea.) Then we can start dinner.

Degrees of acceptance:

• acceptance as dependent (*aha*)

• endorsement: acceptance as source or co-source (*yes*)

Information seeking questions:

• Questioner : no epistemic authority over answer

• Addressee: epistemic authority and therefore source for her answer

Quiz questions:

• Both Questioner and Addressee may be sources for answer

Some welcome consequences: (i) acceptance of answer to an information seeking polar question cannot be signaled with *yes* but it can be signaled with *ok, aha*;

(ii) acceptance of answer to quiz question can be signaled with *yes*

(iii) *ok* cannot be used to answer a question affirmatively because author of the answer of a question must be Source

(25)   A: Is Johnny coming with us to the movies?
       B:(Yes), he is. / No, he isn't.

       A: Aha. / Ok. /#Yes.

(26)   A: So, Johnny, what's the capital of California?
       J: Sacramento.

       A: Yes, you're right. Let's go on to a more difficult one.

So far we have:

- proposed an account of what polarity particles can do in general

- accounted for the distribution and interpretation of *yes* and *no* in responses in English

- set up certain cross-linguistic expectations

Next questions:

- What happens in other languages?

- In particular, what happens in 3 polarity particle languages?

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

Some cross-linguistic expectations concerning polarity particles:

- the distinction between absolute and relative polarity features leads to expectation of

– systems that rely primarily on one or the other parameter (English, Japanese)

– systems with richer inventories: particles specialized for relative features *and* particles specialized for absolute features

– special realization strategies for [reverse,+]

– if special [reverse,+] the particle may be based on [reverse] or it may be based on [+]

In this section: 3 particle system of Romanian where third particle is dedicated to expressing [reverse]

3.1   The polarity particles of Romanian

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

(27)   Realization rules for Romanian (realization **potential** of polarity particles)

a.   [+] is realized by *da*

b.   [−] is realized by *nu*

c.   [reverse] is realized by *ba*

(28)   Expression rules for Romanian (realization **needs** of polarity features)

a.   Absolute features must be realized (by a particle or by the prejacent)

b.   [same] is not realized

c.   [reverse] is always realized in [reverse,+] responses

d.   [reverse] is optionally realized in [reverse,−] responses

e.   [reverse] is not realized in [reverse,−] responses to *questions*

Data accounted for:

- *da* realizes [+] and therefore possible only in [same,+] and [reverse,+] responses

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

(30)   [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 [−] and therefore possible only in [same,−] and [reverse,−] responses

(31)   [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).'

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

- *ba* realizes [reverse] and therefore possible only in [reverse,+] and [reverse,−] responses

(33)   [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.'

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

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

(35) 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 (33)

  – In [REVERSE,−] responses to **assertions**, [REVERSE] is **optionally** realized:

(36) [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:

(37) [REVERSE,−] in reactions to questions
     A: 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 a language with a dedicated [REVERSE] particle and no dedicated [SAME] particle is in line with our markedness considerations

- 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 in R but not in E

- No overlap in the use of *da* and *nu*, because these polarity particles don't do double duty, the way their E counterparts do

- High realization needs of [REVERSE,+] are satisfied by obligatory use of [REVERSE] particle

Necessity of having responses (and not just their antecedents) marked for absolute polarity:

- in *ba da/ba nu* responses *da* and *nu* realize the absolute polarity of the response

Connection between polarity particles and prejacent:

- the absolute polarity of a response in Romanian must be overtly realized

- it may be realized by particle or by prejacent (or both)

Predictions concerning other particle systems:

- Languages may lack [+] particles but have [−] particles (Latin, Irish)

- Languages could have a dedicated [REVERSE,+] particle based on a [+] version (French, Danish) or on a [REVERSE] version (German)

4 Conclusion

- In order to account for the distribution and interpretation of polarity particles we relied on three distinctions:

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

- Polarity particles: realize 2 sets features, *absolute* and *relative* polarity

- 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 and at the same time 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,+]

- Open issues:

  – biased polar questions of various types
  – assertion - tag questions of various types (see Malamud and Stephenson (2011))
  – other acceptance/confirmation or rejection markers

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