

Sentence adverbs in the phase model

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Main points:

- Sentence adverbs (SAs) can be merged in the vP phase, can occur in the sentence-final position, can be accented there and focused.
- The ungrammaticality of certain SAs in the sentence-final position has semantic reasons, not syntactic.
- They cannot serve as the asserted alternative in the focus of the appropriate sentence.

1. Introduction

- SAs cannot occur in the sentence-final position (unless they are separated by a comma intonation):

(1) a. * Horatio has lost his mind *evidently/probably*. (English, Jackendoff 1972, 50 (3-9))

b. * Gianni partirà *probabilmente*. (Italian, Belletti 1990, 53 (53))

Gianni will leave probably.

c. * Jean partira *probablement*. (French, Belletti 1990, 53 (53))

Jean will leave probably.

d. * O Janis tha figi *pithanos*. (Greek, Alexiadou 1997, 157 (80))

The-John-NOM FUT go-3SG probably

e. * Gianni lo merita *francamente/fortunatamente/evidentemente/probabilmente/forse/...*

Gianni deserves it frankly/luckily/evidently/probably/perhaps/...

(Italian, Cinque 1999, 31 (126))

- The same holds for Czech:

(2) a. * Tu knihu pošle Jirkovi Pavel *pravděpodobně*.

the book_{ACC} sends Jirk_{DAT} Pavel_{NOM} probably

intended: 'Pavel will probably send Jirka the book.'

b. * Tu knihu pošle Jirkovi Pavel *možná*.

the book_{ACC} sends Jirk_{DAT} Pavel_{NOM} possibly

intended: 'Pavel will possibly send Jirka the book.'

- Syntactic approach:

Jackendoff (1972), Cinque (1999) or Laenzlinger (2002): Data like (1) and (2) could be accounted for in terms of the high structural status of the sentence adverbs.

- Semantic-pragmatic approach:

Lang (1979): SAs are focus sensitive operators. And they themselves cannot be focused. Koptová (1987, 1999) or Hajičová, Partee & Sgall (1998): the prototypical position of focus sensitive adverbials is at the boundary between the background and the focus. Jacobs (1986, 1988) or Krifka (1992): focusing adverbials must c-command their focus.

- But there are sentence adverbs that can occur in the sentence-final position, see (3) and (4).

Problem for the argument that the source of the ungrammaticality of SAs in the sentence-final position is the height of their structural position.

And shows that the ungrammaticality of (2) does not lie in the general impossibility of SAs to appear in the sentence-final position and be accented there.

(3) Tu knihu pošle Jirkovi Pavel *určitě*.

the book_{ACC} sends Jirk_{DAT} Pavel_{NOM} certainly

'Pavel will certainly send Jirka the book.'

(4) Gianni lo merita *sicuramente / di sicuro*

'Gianni deserves it surely.'

(Cinque 1999, 180 note 80))

- Possible solutions

o Cinque (1999): The SA in (3) or (4) is used as a focusing adverb (a head taking its modifiee as a complement) and belongs to the class of realis mood adverbs that allow their complements to move across them (for some reason).

o Lang (1979): distinguishes between three classes of SAs in German:
 class A: e.g. *wahrscheinlich* 'probably', *möglichweise* 'possibly'
 class B: *bedauerlicherweise* 'unfortunately', *überraschenderweise* 'surprisingly'
 class C: *tatsächlich* 'really', in der Tat 'certainly'

Adverbs of class C (3) differ from the adverbs of class A (2) and B in that they can be accented and focused.

- But both proposals have a problem with (5):

(5) Tu knihu pošle Jirkovi Pavel jenom možná.
 the book_{ACC} sends Jirk_{DAT} Pavel_{nom} only possibly
 'It is only possible that Pavel will send Jirka the book.'

Možná is epistemic, that is, Lang's class A.

It is accented and represents the focus itself. It is associated with the focus-sensitive adverb *jenom*.

Non-clausal adverbials (*možná* in (5)) are merged to the left in Czech (Biskup in prep.).

2. Other proposals

- The epistemic *možná* and the realis mood *určitě* have different lexicosemantic properties:

Možná, in contrast to *určitě*, is excluded from environments licensing negative polarity items.

It is unacceptable under the question operator (6b) and the imperative operator (7b).

Question:

(6) a. Pošle Pavel (určitě) Jirkovi tu knihu (určitě)?
 sends Pavel_{nom} certainly Jirk_{DAT} the book_{acc} certainly
 'Will Pavel certainly send Jirka the book?'
 b. Pošle Pavel (*možná) Jirkovi tu knihu (*možná)?
 sends Pavel_{nom} possibly Jirk_{DAT} the book_{acc} possibly

Imperative:

(7) a. Pošli Jirkovi (určitě) tu knihu (určitě)!
 send Jirk_{DAT} certainly the book_{acc} certainly
 'Send certainly the book to Jirka.'

b. Pošli Jirkovi (*možná) tu knihu (*možná)!
 send Jirk_{DAT} possibly the book_{acc} possibly

2.1. Veridicality

- Questions and imperatives are nonveridical environments (Giannakidou 1999, 2002).

(8) *(Non)veridicality for propositional operators* (Giannakidou 2002, 5):

(i) A propositional operator *F* is veridical iff *Fp* entails *p*: $Fp \rightarrow p$; otherwise *F* is nonveridical.
 (ii) A nonveridical operator *F* is antiveridical iff *Fp* entails *not p*: $Fp \rightarrow \neg p$.

- Given the contrast in (6) and (7) and the contrast between (2) and (3), is the ungrammaticality of (2) due to the presence of a nonveridical operator?

This could be a covert illocutionary operator (e.g. Jacobs's 1988 ASSERT).

ASSERT(p) does not entail p

- (9) with *možná* in the background position (as shown by the congruent context (9a)) is grammatical.

Since ASSERT has the whole sentence in its scope, it should be nonveridical only in its nuclear scope (in the focus).

Not problem because all illocutionary operators can be focus sensitive and can form the tripartite structure (Jacobs 1988).

(9) a. Komu pošle Pavel tu knihu?
 'To whom will Pavel send the book?'
 b. Tu knihu pošle možná Pavel Jirkovi.
 the book_{acc} sends possibly Pavel_{nom} Jirk_{DAT}
 'Pavel will possibly send the book to Jirka.'

- Problem: there is an unexpected contrast between the backgrounded (10a) and the focused position (10b) of *možná*:

(10) a. ?? Bud' sousečka možná vaň, nebo souseď lakuje auto.
 Either neighbour_{TEM} possibly cooks or neighbour_{MASC} paints car.
 'Either the neighbour possibly is cooking or her husband is painting his car.'

b. * Bud' sousečka vaří možná, nebo souseď lakuje auto.
 Either neighbour_{FEM} cooks possibly or neighbour_{MASC} paints car

- But *možná* should be equally bad in all positions in the sentence because exclusive *or* is a nonveridical operator (in both conjuncts), see Zwart (1995).

(11) (Non)veridicality for dyadic operators (Zwart 1995, 288):

Let C be a dyadic truth-functional connective. C is said to be *veridical* with respect to p

[q] just in case $p \vee q \Rightarrow p$ [$p \wedge q \Rightarrow q$] is logically valid.

If C is not veridical with respect to p [q], then C is *nonveridical* with respect to p [q].

- The explanation in terms of nonveridicality of the focused position does not work.

2.2. Downward monotonicity

- Nilsen (2003): SAs like *možná* are positive polarity items and are excluded from downward-entailing contexts.

(12) *DE function* (Nilsen 2003, 41)

A function *f* is downward-entailing iff whenever *a* is semantically stronger than *b*, it holds that *f(b)* is semantically stronger than *f(a)*.

DE operators reverse the direction of entailment.

E.g. (13a) entails (13b); the replacement of *knihu* with the stronger predicate *zajímavou knihu* under negation preserves the truth.

(13) a. Pavel nepošle Jirkovi knihu.

Pavel_{NOM} NEGsendš Jirk_{DAT} book_{ACC}

'Pavel will not send Jirka a book.'

b. Pavel nepošle Jirkovi zajímavou knihu.

Pavel_{NOM} NEGsendš Jirk_{DAT} interesting book_{ACC}

'Pavel will not send Jirka an interesting book.'

- Given the contrast between *možná* in the focus (2b) and in the background (9b), the covert (ASSERT) operator should be DE in its nuclear scope (the focus) but not in its restrictor (the background).

- This does not work.
- (14), with context (14a), shows that the operator behaves upward-entailing in the focus; (14b) entails (14c).

(14) a. Co pošle Pavel Jirkovi?

'What will Pavel send Jirka?'

b. Pavel pošle Jirkovi zajímavou knihu.

Pavel_{NOM} sendš Jirk_{DAT} interesting book_{ACC}

'Pavel will send Jirka an interesting book.'

c. Pavel pošle Jirkovi knihu.

Pavel_{NOM} sendš Jirk_{DAT} book_{ACC}

'Pavel will send Jirka a book.'

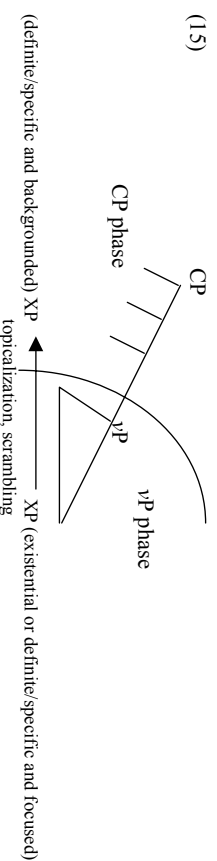
- The explanation in terms of DE does not work either.

3. Proposal

- Chomsky (2001): Lexicon → lexical array (numeration) → lexical subarray.
 Every phrase has its own lexical subarray.

- Thus, theoretically, adverbs can be merged in both the vP and the CP phase.

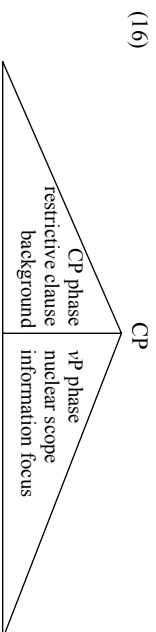
- Biskup (2006, in prep.): XPs moved to the CP phase (scrambled or topicalized) are interpreted as backgrounded and get a definite/specific (epistemic, partitive or generic) interpretation (15).



There is a correlation between the phase structure, tripartite quantificational and information structure of the sentence (building on Partee 1992, Diesing 1992, Chomsky 2000, et seq.).

At the semantic interface, the vP phase (elements in the phase) is interpreted as the nuclear scope of the quantificational structure and the information focus.

The CP phase is interpreted as the restrictive clause and the background:



• Every sentence has a focus (Rooth 1992, Lambrecht 1994, Kiss 1998).

• Then, (2b), (3) and (5) look like:

(17) * [CP [MoodP Tu knihu pošle [TP Jirkovi Pavel [vP možná]]]].
 the book_{ACC} sends Jirkad_{AR} Pavel_{NOM} possibly
 intended: 'Pavel will possibly send Jirka the book.'

(18) [CP [MoodP Tu knihu pošle [TP Jirkovi Pavel [vP určité]]]].
 the book_{ACC} sends Jirkad_{AR} Pavel_{NOM} certainly
 'Pavel will certainly send Jirka the book.'

(19) [CP [MoodP Tu knihu pošle [TP Jirkovi Pavel [vP jenom možná]]]].
 the book_{ACC} sends Jirkad_{AR} Pavel_{NOM} only possibly
 'It is only possible that Pavel will send Jirka the book.'

• The SA in the sentence-final position in vP is necessarily focused and introduces a set of alternatives.

• Piñón (2006): Kriřka's approach (1995) can be used for analysing sentence adverbs.

• To account for the difference between SAs like *určité* and *mořná*, I make use of Kriřka's (1995) notion of 'extreme value'.

Kriřka (1995): Polarity items as well as focused elements introduce alternatives and the alternatives can be ordered according to semantic strength (set relations).

• Proposal: a SA can appear in the sentence-final position in the vP phase and be focused (and accented) there only if it represents the extreme value wrt. the set of focus alternatives.

• Epistemic SAs correspond to certain values on the epistemic (probability) scale.

• Given its lexicosemantic properties, *určité* represents the highest value on the epistemic scale (of focus alternatives).
 Therefore, it can occur in the focused sentence-final position in (18)=(3).

• *Mořná* does not represent an extreme value on the epistemic scale.

Hence, it cannot serve as the asserted focus alternative, see (17)=(2b).

• But it changes when *jenom* is added (19)=(5).

Only is focus sensitive and associates with the focused *mořná* and excludes all other alternatives (Rooth 1985, Beaver & Clark 2003, Kriřka 2006).

Then (19)=(5) is interpreted: It is only possible (and not e.g. probable or certain) that Pavel will send Jirka the book.

Jenom makes from *mořná* the lowest alternative on the epistemic scale (extreme probability value).

• (20) also demonstrates that SAs can be merged in the vP phase.

Although *pravděpodobně* 'probably' cannot occur in the sentence-final position by itself, it can be interpreted there if it gets help through another element:

(20) a. * [CP [MoodP Pavel přijde [vP pravděpodobně]]]].
 Pavel_{NOM} comes probably

intended: 'Pavel will probably come.'

b. [CP [MoodP Pavel přijde [vP nanejvýř pravděpodobně]]]].
 Pavel_{NOM} comes most highly probably

'It is at most probable that Pavel will come.'

'It is highly probable that Pavel will come.'

• *Pravděpodobně* can also occur in the sentence-final position if it represents the extreme value in the set of focus alternatives.

• The extreme value can appear on either end of the epistemic scale:

1. The extremely-low-value interpretation: no focus alternative is lower than the *pravděpodobně* value.
2. Probability of Pavel's coming is of the highest value; it is, in fact, certain that Pavel will come.

The asserted alternative represents the extremely high value on the epistemic scale.

- In an appropriate context, *pravděpodobně* associated with the focus particle *dokonce* also represents the extreme (high) value because it is particularly unlikely (the height of the probability value is unexpected) wrt. alternative assertions.

(21) [CP [I_{NP} Pavel příjde [I_{NP} dokonce pravděpodobně]].

Pavel_{NPOM} comes even probably

'It is even probable that Pavel will come.'

4. Conclusion

I have argued that SAs can be merged in the vP phase, can occur in the sentence-final position, and can be focused there.

Depending on the lexicosemantic properties of the SA and on the properties of the appropriate sentence, either the SA can be interpreted in the vP position or it cannot.

The (un)grammaticality depends on the interpretability of the SA in the vP position and not on the syntactic position of the SA itself.

The ungrammaticality of certain SAs in the sentence-final position in the vP phase is due to the fact that they cannot serve as the asserted alternative in the focus of the appropriate sentence.

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