Sentence-final sentence adverbs in the phase model

Claim: Sentence adverbs (SA) can be merged in the vP phase, can occur in the sentence-final position, be accented there and focalized. 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 in the appropriate sentence.

1. Introduction

• SAs cannot occur in the sentence-final position (unless separated by a comma intonation).

(1)  a. *Gianni partirà probabilmente.  
Gianni will leave probably.  
Italian, Belletti 1990, 53 (53)

b. *Jean partira probablement.  
Jean will leave probably.  
French, Belletti 1990, 53 (53)

c. *O Janis tha figi pithanos.  
The-John-NOM FUT go-3SG probably  
Greek, Alexiadou 1997, 157 (80)

d. *Horatio has lost his mind evidently/probably.  
(English, Jackendoff 1972, 50 (3.9))

• The same holds for Czech:

(2)  a. *Tu knihu pošle Jirkovi Pavel pravděpodobně.  
the book ACC sends Jirka DAT Pavel NOM probably  
‘The book, Pavel will probably send to Jirka.’

b. *Tu knihu pošle Jirkovi Pavel možná.  
the book ACC sends Jirka DAT Pavel NOM possibly  
‘The book, Pavel will possibly send to Jirka.’

• Cinque (1999) or Laenzlinger (2002): (1) and (2) can be accounted for in terms of the high structural status of the sentence adverbs.

• Lang (1979): SAs are focus sensitive operators. And they themselves cannot be focalized. Hajičová, Partee & Sgall (1998a,b) and Koktová (1987, 1999): the prototypical position of focus sensitive adverbials is at the boundary between the background and the focus.

Krifka (1992) and Jacobs (1986, 1988) focusing adverbials must c-command their focus.

• But there are sentence adverbs that can occur in the sentence-final position (3) and (4).
This poses a 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<sub>ACC</sub> sends <sub>DAT</sub> Jirka<sub>NOM</sub> Pavel<sub>NOM</sub> certainly
‘The book, Pavel will certainly send to Jirka.’

(4) Gianni lo merita sicuramente / di sicuro
‘Gianni deserves it surely.’ (Cinque 1999, 180 note 80)

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

- Lang (1979): distinguishes three classes of German SAs:
  class A: e.g. wahrscheinlich (probably), möglicherweise (possibly)
  class B: bedauerlicherweise (unfortunately), überraschenderweise (surprisingly)
  class C: tatsächlich (really), in der Tat (certainly)
The adverbs in (2) (class A) differ from the adverb in (3) (class C) in the fact that they cannot be accented and focalized.

- But both proposals have a problem with (5). The sentence-final adverb is epistemic (Lang’s class A), is accented and represents the focus itself. It is associated with the focus-sensitive adverbia[l *jenom* (only).

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

(5) *Tu knihu pošle Jirkovi Pavel jenom možná.*
the book<sub>ACC</sub> sends <sub>DAT</sub> Jirka<sub>NOM</sub> Pavel<sub>NOM</sub> only possibly
‘It is only possible that Pavel will send the book to Jirka.’

2. Other proposals: veridicality and downward-monotonicity

- There is a difference between the behavior of the epistemic *možná* and the realis mood *určitě*.
  *Možná*, in contrast to *určitě*, is excluded from environments licensing negative polarity items. It is degraded under the question operator (7) or the imperative operator (9).

(6) *Pošle Pavel (určitě) Jirkovi tu knihu (určitě)*?
sends Pavel<sub>NOM</sub> certainly Jirka<sub>DAT</sub> the book<sub>ACC</sub> certainly
‘Will Pavel certainly send the book to Jirka?’

(7) *Pošle Pavel (*možná) Jirkovi tu knihu (*možná)*?
sends Pavel<sub>NOM</sub> possibly Jirka<sub>DAT</sub> the book<sub>ACC</sub> possibly
‘Will Pavel possibly send the book to Jirka?’
(8) Pošli Jirkovi (určitě) tu knihu (určitě)! send Jirka\textsubscript{DAT} certainly the book\textsubscript{ACC} certainly ‘Send certainly the book to Jirka.’

(9) Pošli Jirkovi (*možná) tu knihu (*možná)! send Jirka\textsubscript{DAT} possibly the book\textsubscript{ACC} possibly ‘Send possibly the book to Jirka.’

2.1. Veridicality

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

(10) (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 \( \neg p \): \( Fp \rightarrow \neg p \).

- Given (6)-(9), is the ungrammaticality of (2) with the SA due to the presence of a nonveridical operator? This would have to be covert (e.g. Jacobs’s ASSERT (1988)).

- Problem: If ASSERT is nonveridical (ASSERT\(p\) does not entail \(p\)), then one cannot assume that the truth of a sentence is always evaluated with respect to certain (speaker’s) epistemic model because in speaker’s belief model, the asserted proposition can be true.

- (11) with \textit{možná} in the background (as evidenced by the congruent context (11a)) is grammatical.
   Since ASSERT has in its scope the whole sentence, it should be nonveridical only in its nuclear scope (in the focus).
   No problem because all illocutionary operators can be focus sensitive and can participate in the tripartite structure (Jacobs 1988).

(11) a. Komu pošle Pavel tu knihu? (To whom will Pavel send the book?)
   b. Tu knihu pošle možná Pavel Jirkovi.
   the book\textsubscript{ACC} sends possibly Pavel\textsubscript{NOM} Jirka\textsubscript{DAT}
   ‘The book, Pavel will possibly send to Jirka.’

- But there is an unexpected contrast between the backgrounded and focalized position of \textit{možná}:

(12) a. ??Buď sousedka možná vaří, nebo soused lakuje auto.
    Either neighbor\textsubscript{FEM} possibly cooks or neighbor\textsubscript{MASC} paints car
    ‘Either the neighbor possibly is cooking or her husband is painting his car.’

   b. *Buď sousedka vaří možná, nebo soused lakuje auto.
    Either neighbor\textsubscript{FEM} cooks possibly or neighbor\textsubscript{MASC} paints car
    ‘Either the neighbor possibly is cooking or her husband is painting his car.’

- But \textit{možná} should be equally bad in all positions in the sentence because exclusive \textit{or} is a nonveridical operator (in both conjuncts, Zwart 1995).
(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 pCq \Rightarrow p [pCq \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 focalized position does not work.

2.2. Downward-monotonicity

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

(14) 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. (15a) entails (15b); the replacement of knihu with the stronger predicate zajímavou knihu under negation preserves the truth.

Pavel\textsubscript{NOM} \textsubscript{NEG} sends Jirk\textsubscript{DAT} book\textsubscript{ACC}
‘Pavel will not send a book to Jirka.’

b. Pavel nepošle Jirkovi zajímavou knihu.
Pavel\textsubscript{NOM} \textsubscript{NEG} sends Jirk\textsubscript{DAT} interesting book\textsubscript{ACC}
‘Pavel will not send an interesting book to Jirka.’

• Given the contrast between možná in the focus (2) and in the background (11), the covert (ASSERT) operator should be DE in its nuclear scope (the focus) but not in its restrictor (the background).

• This does not go through because (16) - with the appropriate context (16a) - shows that the focus (of the ASSERT) is upward-entailing; (16b) entails (16c).

(16) a. Co pošle Pavel Jirkovi? (What will Pavel send to Jirka?)

b. Pavel pošle Jirkovi zajímavou knihu.
Pavel\textsubscript{NOM} sends Jirk\textsubscript{DAT} interesting book\textsubscript{ACC}
‘Pavel will send an interesting book to Jirka.’

c. Pavel pošle Jirkovi knihu.
Pavel\textsubscript{NOM} sends Jirk\textsubscript{DAT} book\textsubscript{ACC}
‘Pavel will send a book to Jirka.’

• The explanation in terms of DE does not work either.
3. The analysis

• Every phase has its own subarray (e.g. Chomsky 2001).

• Then the null assumption is that adverbs can be merged in both the vP and the CP phase.

• Biskup (2006, to appear): Phrases moved to the CP phase (scrambled or topicalized) are backgrounded and get a specific (epistemic, partitive or generic) interpretation (17).

This is driven by the grammar requirement that backgrounded specific elements are to be linearized and interpreted in the CP phase (the left part of sentences) in scrambling languages like Czech.

(17)


At the semantic interface, the vP phase (or 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:

(18)

• Then, (2b), (3) and (5) look like:

(19) *[CP [AP Tu knihu pošle [TP Jirkovi Pavel [vP možná ]]]],

‘The book, Pavel will possibly send to Jirka.’

(20) [CP [AP Tu knihu pošle [TP Jirkovi Pavel [vP určitě ]]]],

‘The book, Pavel will certainly send to Jirka.’

(21) [CP [AP Tu knihu pošle [TP Jirkovi Pavel [vP jenom možná ]]]],

‘It is only possible that the book Pavel will send to Jirka.’

• Every sentence has a focus.
• The SA in the sentence-final position in vP is necessarily focalized and introduces a set of alternatives.

• To account for the difference between SAs like určitě and možná I will make use of Krifka’s (1995) ‘extreme value’.¹

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

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

• Určitě (given its lexicoconceptual properties) represents the highest value on the epistemic scale of focus alternatives, it can occur in the focalized sentence-final position (3) (verum-focus interpretation).

• Možná does not represent an extreme value on the epistemic scale; hence it cannot serve as the asserted focus alternative (2).

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

  Only is focus sensitive (Rooth 1985, Beaver & Clark 2003, Krifka 2006) and associates with the focalized možná and excludes all other alternatives.

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

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

• As in (5), (22) 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:

(22) a. *[CP [AP Pavel přijde [vP pravděpodobně ]]].
  PavelNOM comes probably
  ‘Pavel will probably come.’

  b. [CP [AP Pavel přijde [vP nanejvýš pravděpodobně ]]].
  PavelNOM comes most highly probably
  ‘It is at most probable that Pavel will come.’
  ‘It is highly probable that Pavel will come.’

• Pravděpodobně can 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.
    Then (22b) may be continued by: Určitě ne najisto. (Certainly not beyond doubt).

¹ It was suggested by Piñón (2006) that Krifka’s approach (1995) might be used for the analysis of sentence adverbials.
2. The probability of Pavel’s coming is highest, it is in fact certain that Pavel will come. The asserted alternative represents the extremely high value on the epistemic scale.

- In a certain context, the assertion in (23) with the focus particle dokonce associated with pravděpodobně has the extreme value because it is particularly unlikely (the height of the probability value is unexpected) wrt. alternative assertions, which have a lower probability.

(23) \[ CP [ \Delta Pavel p řijde [vP dokonce pravděpodobně ]]].

Pavel comes even probably

‘It is even probable that Pavel will come.’

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

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.

This means that the (un)grammaticality of the appropriate sentence depends on the (non-)interpretability of the SA in the vP position and not on the syntactic position of the SA itself.

I have argued that 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 in the appropriate sentence.

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