

Syntactic, Semantic and Information Structures of Floating Quantifiers

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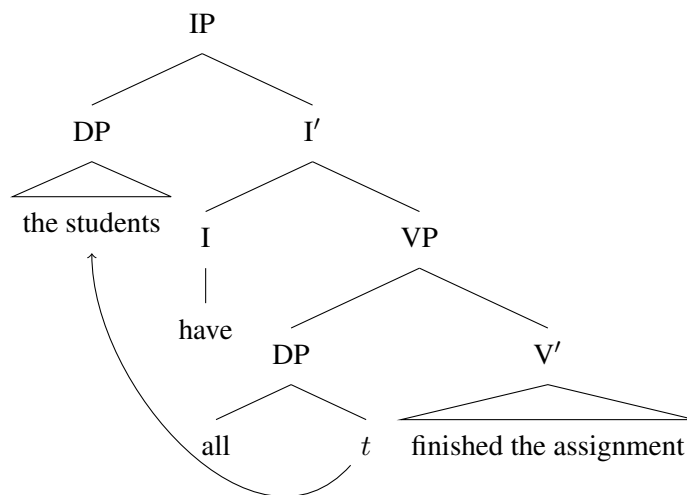
1 Introduction

- (1) a. The students have *all* finished the assignment.
b. Elles sont *toutes* allées à la plage.
 they.F are all.F.PL gone.F.PL to the beach
 ‘They all went to the beach.’ (French)
c. Diesen Studenten habe ich gestern *allen* geschmeichelt.
 these.DAT.PL students have I yesterday all.DAT.PL flattered
 ‘I flattered all of these students yesterday.’ (German) (Bobaljik, 2003, 107–9)
d. kodomo-tati wa *minna* eiga o tanosinda.
 children-PL TOPIC all movie ACC enjoy.PAST
 ‘The children all enjoyed the movie.’ (Japanese)

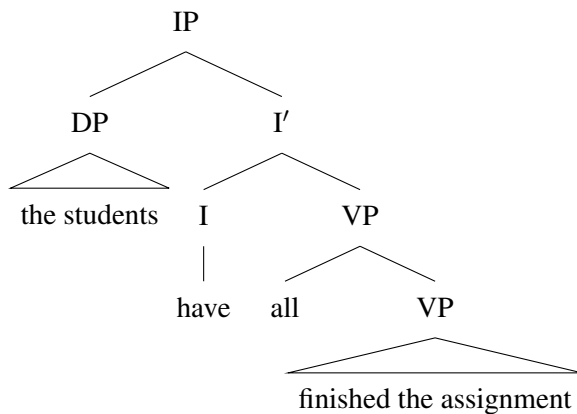
2 Previous analyses

- Stranding analysis (Sportiche, 1988; Shlonsky, 1991)
- VP modifier analysis (Dowty and Brodie, 1984; Baltin, 1982; Bobaljik, 2003; Kim and Kim, 2009)
- Complement/adjunct analysis (Abeillé and Godard, 1998)

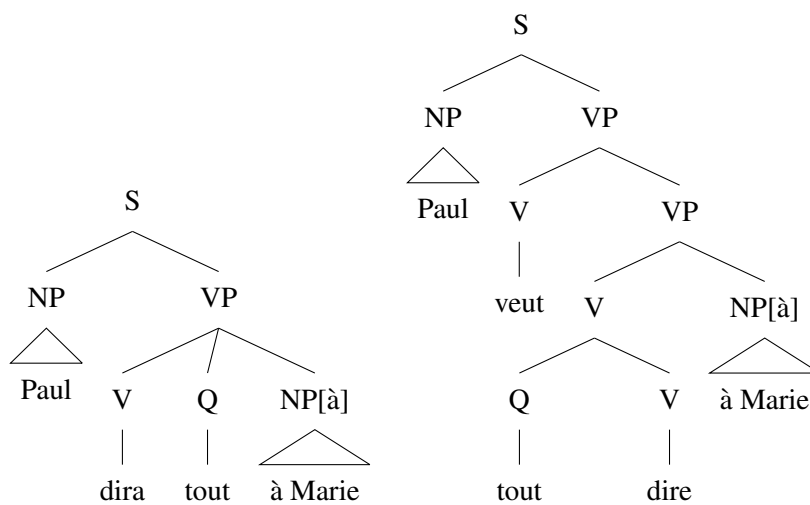
- (2) Stranding analysis



(3) VP modifier analysis



(4) Complement/adjunct analysis (Abeillé and Godard, 1998, 82)



Against stranding analysis

- A sentence with an FQ does not always have a corresponding sentence with a non-floating quantifier ((5), (6)).

(5) a. Ces enfants ont *chacun* lu un livre différent.
 these children have each read a book different
 'These children have each read a different book.'

b. **Chacun* ces enfants a lu un livre différent.
 each these children has read a book different
 'Each of these children has read a different book.' (French)(Bobaljik, 2003, 123–4)

(6) a. John, Bill and Tom *all* came to the class.

b. **All* of John, Bill and Tom came to the class.

- Languages like Dutch and Mandarin Chinese have different lexical items for non-floating quantifiers ((7), (8)).

(7) a. *Alle* toeristen zullen Boston bezoeken.
 all tourists will Boston visit
 'All tourists will visit Boston.'

- b. De toeristen zullen *allemaal* Boston bezoeken.
 the tourists will all Boston visit
 ‘The tourists will all visit Boston.’ (Dutch)
- (8) a. *suo you* de ren zou le
 all PRT people left ASP
 ‘All the people have left.’
- b. ren *dou* zou le
 people all left ASP
 ‘The people have all left.’ (Mandarin Chinese) (Dowty and Brodie, 1984, 82)

Issues

- An FQ semantically quantifies the modified NP.
 - FQs can appear in the VP-internal positions ((9), (10)).
- (9) a. I gave the kids *each* a quarter.
 b. Mary put the books *all/both/each* (back) on the proper shelf. (Maling, 1976, 712)
- (10) a. Marie sloeg de mannen *allebei* op het gezicht.
 M. hit the men both in the face
 ‘Marie hit the men both in the face.’
- b. Ik vind de talen *allemaal* mooi.
 I find the languages all beautiful
 ‘I find the languages all beautiful.’ (Dutch)
- An FQ agrees with the modified noun in some languages ((1b, c)).
- (1) b. Elles sont *toutes* allées à la plage.
 they.F are all.F.PL gone.F.PL to the beach
 ‘They all went to the beach.’ (French)
- c. Diesen Studenten habe ich gestern *allen* geschmeichelt.
 these.DAT.PL students have I yesterday all.DAT.PL flattered
 ‘I flattered all of these students yesterday.’ (German)

3 Proposal

- Information-structurally, the NP quantified by an FQ is a ‘reference-oriented topic expression’ (Lambrecht, 1994; Neeleman and van de Koot, 2008; Neeleman and Vermeulen, 2012) and the FQ functions as a focus in the comment (cf. Kuno and Takami, 2003).
 - The default position for a reference-oriented topic expression is sentence-initial, and the following part functions as a comment that consists of a focus and a background ((11a)).
 - The isomorphic syntactic configuration corresponding to the topic–comment structure consists of a clause initial subject (topic) and the VP (comment) ((11b)).
- (11) a. topic* [comment focus [background ...]] (Neeleman and van de Koot, 2008, 146)
 b. NP_{SUBJ} [VP QP [VP ...]]

- (12) a. [_{topic} The students] have [_{comment} [_{focus} *all*] [_{background} finished the assignment]]
 b. [_{NP} The students] have [_{VP} [_{QP} *all*] [_{VP} finished the assignment]]
- (13) a. [_{topic} De toeristen] zullen [_{comment} [_{focus} *allemaal*] [_{background} Boston bezoeken]]
 b. [_{NP} De toeristen] will [_{VP} [_{QP} *allemaal*] [_{VP} Boston bezoeken]]
 the tourists will all Boston visit
 ‘The tourists will all visit Boston.’ (Dutch)

- An FQ can appear VP-internally as long as the preceding NP is a topic and the following elements function as a background.

- (14) a. I gave [_{topic} the kids] [_{comment} [_{focus} *each*] [_{background} a quarter]].
 b. I [_{VP} gave [_{NP} the kids] [_{QP} each] [_{NP} a quarter]]
- (15) a. Ik vind [_{topic} de talen] [_{comment} [_{focus} *allemaal*] [_{background} mooi]]
 b. Ik vind [_{VP} [_{NP} de talen] [_{QP} *allemaal*] [_{AP} mooi]]
 I find the languages all beautiful
 ‘I find the languages all beautiful.’ (Dutch)

3.1 Topic–comment structure

- An indefinite NP makes the sentence illicit with an FQ since it is normally not taken as a referent-oriented topic expression ((16a, b)).
- An indefinite NP with an FQ indicates a generic characteristic of the NP ((17)).

- (16) a. The children *all* visited London.
 b. #Children *all* visited London.
- (17) Kinderen genieten *allemaal* van de film.
 children enjoy all of the film
 ‘Children all enjoy the film.’ (Dutch)

- In Japanese an FQ cannot quantify an NP with the dative particle *ni* or ablative particle *kara* in the preverbal focus position ((18a, c)), while it can when those casemarked NPs are marked by the contrastive topic marker *wa* ((18b, c)).

- (18) a.??Taroo ga Hanako o sinseki ni *minna* syookai sita.
 T. NOM H. ACC relatives DAT all introduce do.PAST
 ‘Taro introduced Hanako to all of his relatives.’
- b. Taroo ga Hanako o sinseki ni wa *minna* syookai sita.
 T. NOM H. ACC relatives DAT TOPIC all introduce do.PAST
 ‘As for his relatives, Taro introduced Hanako to all of them.’
- c.??sono seizika ga kihukin o siensya kara *50-me*i atumeta.
 that politician NOM donation ACC supporter from 50-CL collect.PAST
 ‘That politician collected donations from 50 supporters.’
- d. sono seizika ga kihukin o siensya kara wa *50-me*i atumeta.
 that politician NOM donation ACC supporter from TOPIC 50-CL collect.PAST
 ‘As for supporters, that politician collected donations from 50 of them.’ (Japanese)

- Manner adverbs, which are by default given a focus interpretation, cannot appear before the FQ since they prevent the FQ from forming a topic–comment structure ((19a), (20a), (21a))
- The same effect does not arise with non-focus bearing locative adverbs ((19b)) or sentential adverbs ((20c)).

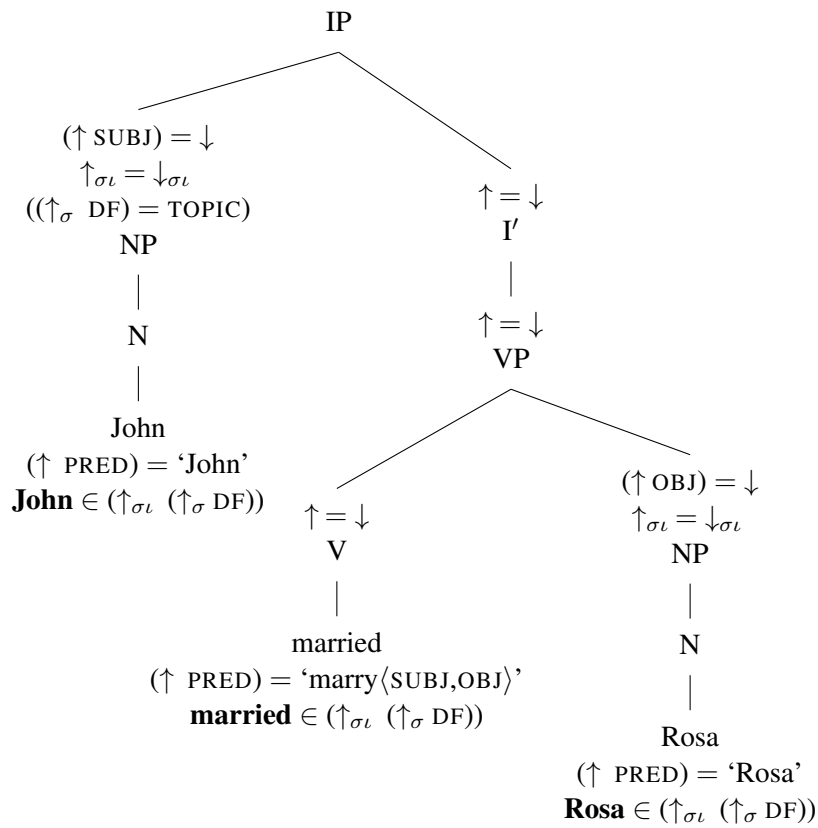
- (19) a. **kodomo ga geragera-to hutari waratta.*
 child NOM loudly two.CL laughed
 ‘Two children laughed loudly.’
- b. *gakusei ga office ni hutari kita.*
 student NOM office to two.CL came
 ‘Two students came to the office.’ (Japanese; Kuno and Takami 2003, 283–4)
- (20) a. *These thieves could completely *all* crack this safe in 5 minutes flat.
 b. These thieves could *all* completely crack this safe in 5 minutes flat.
 c. The thieves have certainly *all* been apprehended.
 d. The thieves have *all* certainly been apprehended. (Bobaljik, 1995, 231–2)
- (21) a. *Los estudiantes entenderán completamente *todos* (ese problema).
 the students will.understand completely all that problem
 b. ?Los estudiantes entenderán *todos* completamente (ese problema).
 (Spanish; Bošković 2004, 686)

3.2 Analysis

- A sentence is partitioned into TOPIC, FOCUS, BACKGROUND and COMPLETIVE in information structure (Butt and King, 1996, 2000; Choi, 1999).
- The semantic structure feature DF is specified in various ways, such as phrase-structure position, prosody and morphological marking ((25)).
- Specification of a value for the semantic structure feature DF determines the membership of the information structure roles ((26)) (Dalrymple and Nikolaeva, 2011).

- (22) Q: What did John do?
 A: John married Rosa.
 TOPIC FOCUS

(23)



(24)
$$m : \begin{bmatrix} \text{PRED} & \text{'marry}\langle\text{SUBJ,OBJ}\rangle\text{' } \\ \text{SUBJ} & s : [\text{PRED} \text{'John'}] \\ \text{OBJ} & o : [\text{PRED} \text{'Rosa'}] \end{bmatrix}$$

(25)
$$\begin{aligned} s_\sigma &: [\text{DF} \text{ TOPIC}] \\ m_\sigma &: [\text{DF} \text{ FOCUS}] \\ o_\sigma &: [\text{DF} \text{ FOCUS}] \end{aligned}$$

(26)
$$m_{\sigma\iota} : \begin{bmatrix} \text{TOPIC} & \{ \mathbf{John} \} \\ \text{FOCUS} & \left\{ \begin{array}{l} \mathbf{married} \\ \mathbf{Rosa} \end{array} \right\} \end{bmatrix}$$

(Dalrymple and Nikolaeva, 2011, 84–5)

VP-adjunction FQ

- The VP adjunction rule can be formulated as in (27).

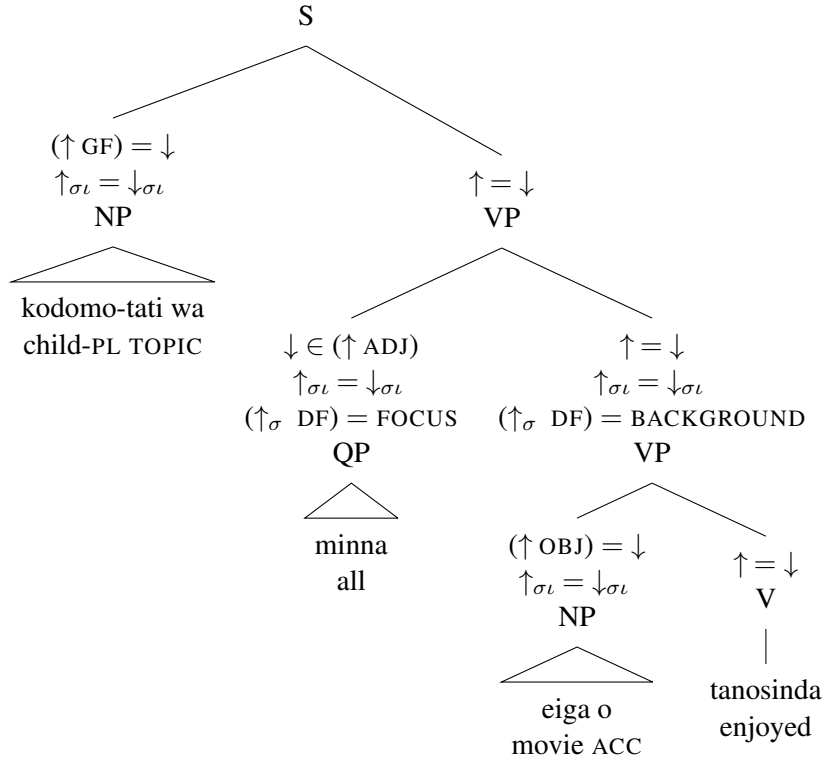
$$(27) \quad \text{VP} \longrightarrow \begin{array}{cc} \text{QP} & \text{VP} \\ \downarrow \in (\uparrow \text{ADJ}) & \uparrow = \downarrow \\ \uparrow_{\sigma\iota} = \downarrow_{\sigma\iota} & \uparrow_{\sigma\iota} = \downarrow_{\sigma\iota} \\ (\uparrow_{\sigma} \text{DF}) = \text{FOCUS} & (\uparrow_{\sigma} \text{DF}) = \text{BACKGROUND} \end{array}$$

- Semantically, an FQ relates an individual x to two propositions $R(x)$ (restrictive meaning) and $S(x)$ (scope meaning) (Dalrymple et al., 1997; Dalrymple, 2001).
- The NP modified by an FQ is identified by its topic status, i.e. the value of DF must be TOPIC in s-structure.

$$(28) \quad \begin{array}{l} \text{a. } \textit{minna} \quad \text{Q} \quad (\uparrow \text{PRED}) = \text{'all'} \\ \lambda R. \lambda S. \textit{all}(x, R(x), S(x)) : \\ [((\%t)_{\sigma} \text{VAR}) \multimap ((\%t)_{\sigma} \text{RESTR})] \multimap [\forall H. [(\%t)_{\sigma} \multimap H] \multimap H] \\ ((\text{ADJ} \in \uparrow) \quad \text{GF} \quad) = \%t \\ \quad \quad \quad (\rightarrow_{\sigma} \text{DF}) = \text{TOPIC} \\ \mathbf{all} \in (\uparrow_{\sigma\iota} (\uparrow_{\sigma} \text{DF})) \\ \text{b. } \textit{kodomo} \quad \text{N} \quad (\uparrow \text{PRED}) = \text{'child'} \\ \lambda x. \textit{child}(x) : (\uparrow_{\sigma} \text{VAR}) \multimap (\uparrow_{\sigma} \text{RESTR}) \\ \mathbf{child} \in (\uparrow_{\sigma\iota} (\uparrow_{\sigma} \text{DF})) \\ \text{c. } \textit{tanosinda} \quad \text{V} \quad (\uparrow \text{PRED}) = \text{'enjoy(SUBJ,OBJ)'} \\ \lambda x. \lambda y. \textit{enjoy}(x, y) : (\uparrow \text{SUBJ})_{\sigma} \multimap [(\uparrow \text{OBJ})_{\sigma} \multimap \uparrow_{\sigma}] \\ \mathbf{enjoy} \in (\uparrow_{\sigma\iota} (\uparrow_{\sigma} \text{DF})) \end{array}$$

- In c-structure, an FQ heads a quantifier phrase (QP), which is adjoined to VP ((29)).
- In f-structure, the QP is mapped onto a member of ADJ ((30)).
- In s-structure, the values of DF for the QP and the following VP are specified as FOCUS and BACKGROUND respectively ((31)).
- In i-structure, the meaning constructors corresponding to an FQ and the following constituent become a member of FOCUS and BACKGROUND respectively, while the one corresponding to a quantified NP becomes a member of TOPIC ((32)).

(29)



(30)

$$e : \left[\begin{array}{l} \text{PRED } \text{'enjoy'} \langle \text{SUBJ, OBJ} \rangle \\ \text{SUBJ } s : \left[\text{PRED } \text{'child'} \right] \\ \text{OBJ } o : \left[\text{PRED } \text{'movie'} \right] \\ \text{ADJ } \left\{ a : \left[\text{PRED } \text{'all'} \right] \right\} \end{array} \right]$$

(31)

$$s_\sigma : \left[\begin{array}{l} \text{STATUS IDENTIFIABLE} \\ \text{ACTV ACTIVE} \\ \text{VAR } [] \\ \text{RESTR } [] \\ \text{DF TOPIC} \end{array} \right]$$

$$o_\sigma : [\text{DF BACKGROUND}]$$

$$a_\sigma : [\text{DF FOCUS}]$$

$$e_\sigma : [\text{DF BACKGROUND}]$$

(32)

$$e_{\sigma_l} : \left[\begin{array}{l} \text{TOPIC } \{ \text{children} \} \\ \text{FOCUS } \{ \text{all} \} \\ \text{BACKGROUND } \left\{ \begin{array}{l} \text{enjoyed} \\ \text{movie} \end{array} \right\} \end{array} \right]$$

(33)

$$\begin{array}{ll} \mathbf{all} & \lambda R. \lambda S. all(x, R(x), S(x)) : \quad [(s_\sigma \text{ VAR}) \multimap (s_\sigma \text{ RESTR})] \multimap [\forall H. [s_\sigma \multimap H] \multimap H] \\ \mathbf{child} & \lambda x. child(x) : \quad (s_\sigma \text{ VAR}) \multimap (s_\sigma \text{ RESTR}) \\ \mathbf{enjoy-movie} & \lambda x. enjoy(x, movie) : \quad s_\sigma \multimap e_\sigma \end{array}$$

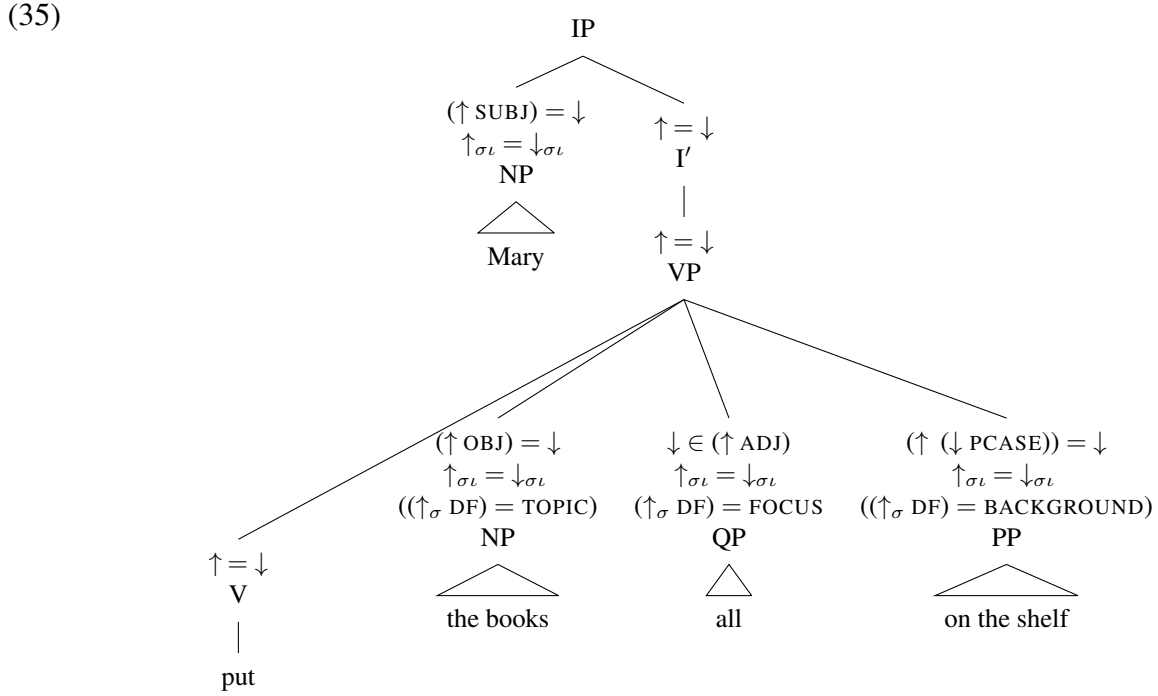
$\mathbf{all, child, enjoy-movie} \vdash all(x, child(x), enjoyed-movie(x)) : e_\sigma$

VP-internal FQ

- When QP appears under VP, it requires the preceding NP to be a topic and the following constituent to be a background.

•

- (34) VP \rightarrow V NP QP PP
- $\uparrow = \downarrow$ $(\uparrow \text{ OBJ}) = \downarrow$ $\downarrow \in (\uparrow \text{ ADJ})$ $(\uparrow (\downarrow \text{ PCASE})) = \downarrow$
 $\uparrow_{\sigma\iota} = \downarrow_{\sigma\iota}$ $\uparrow_{\sigma\iota} = \downarrow_{\sigma\iota}$ $\uparrow_{\sigma\iota} = \downarrow_{\sigma\iota}$ $\uparrow_{\sigma\iota} = \downarrow_{\sigma\iota}$
 $((\uparrow_{\sigma} \text{ DF}) = \text{TOPIC})$ $(\uparrow_{\sigma} \text{ DF}) = \text{FOCUS}$ $((\uparrow_{\sigma} \text{ DF}) = \text{BACKGROUND})$



- (36)
- | | | | |
|---|---|--|---|
| $p :$ | [| PRED 'put(SUBJ,OBJ,OBL _{on})' |] |
| | | SUBJ $s : [\text{PRED 'Mary'}]$ | |
| | | OBJ $o : [\text{SPEC } [\text{PRED 'the'}]]$ | |
| | | [PRED 'book' | |
| | | NUM PL] | |
| OBL _{on} $l : [\text{PRED 'shelf'}]$ |] | | |
| [PCASE OBL _{on}] | | | |
| ADJ { $a : [\text{PRED 'all'}]$ } | | | |

- (37)
- | | |
|---|---|
| $s_{\sigma} : [\text{DF COMPLETIVE}]$ |] |
| $o_{\sigma} : [\text{STATUS IDENTIFIABLE}]$ | |
| [ACTV ACTIVE] | |
| [DF TOPIC] | |
| $l_{\sigma} : [\text{DF BACKGROUND}]$ | |
| $a_{\sigma} : [\text{DF FOCUS}]$ | |
| $p_{\sigma} : [\text{DF COMPLETIVE}]$ | |

- (38)
- | | | | |
|---------------------|---|------------------------------------|---|
| $p_{\sigma\iota} :$ | [| TOPIC { the-books } |] |
| | | FOCUS { all } | |
| | | BACKGROUND { on-the-shelf } | |
| | | COMPLETIVE { Mary } | |
| | | { put } | |

Agreement

- Adjective–noun agreement is not necessarily restricted to a relation between NP-internal constituents, e.g. secondary predication ((39), (40)).

- (39) a. Ella llegó borracha.
she arrived drunk-F.SG
'She arrived drunk.'
- b. Ellas llegaron borrachas/*os.
they.F arrived drunk-F.PL
'They arrived drunk.'
- (Spanish; Fitzpatrick 2006, 75)

- (40) a. Vadim vernulsja iz bol'nicy zdoroviy.
V.NOM returned from hospital healthy.NOM
'Vadim returned from the hospital healthy.'
- b. Ja zakazala rybu syruju.
I ordered fish.ACC raw.ACC
'I ordered the fish raw.'
- (Russian; Fitzpatrick 2006, 76)

- Agreement between a topic constituent and a predicate is widely found (Polinsky and Comrie, 1999; Nikolaeva, 1999; Givón, 2001; Bobaljik and Wurmbrand, 2002; Dalrymple and Nikolaeva, 2011)

- (41) a. (ma) tam kalaŋ we:l-s-əm / we:l-s-∅-e:m
I this reindeer kill-PAST-1.SG.SUBJ kill-PAST-SG.OBJ-1.SG.SUBJ
'I killed this reindeer.'
- b. (What did you do to this reindeer?)
tam kalaŋ we:l-s-e:m / *we:l-s-əm
this reindeer kill-PAST-OBJ/1.SG.SUBJ kill-PAST-1.SG.SUBJ
'I killed this reindeer.'
- c. kalaŋ xalśa we:l-s-əlli / *we:l-əs
reindeer where kill-PAST-OBJ/1.SG.SUBJ kill-PAST-1.SG.SUBJ
'Where did he kill the/a reindeer?'
- (Ostyak; Dalrymple and Nikolaeva 2011, 142, 146)

- The topic status of the agreement controller can be specified in the lexical entry of an FQ.

- (42) Diesen Studenten habe ich (gestern) allen geschmeichelt.
these.DAT.PL students have I (yesterday) all.DAT.PL flattered
'I flattered all of these students yesterday.' (German)

- (43) *allen* Q (↑ PRED) = 'all'
(%t CASE) = DAT
(%t NUM) = PL
- $$[[((\%t)_\sigma \text{ VAR}) \multimap ((\%t)_\sigma \text{ RESTR})] \multimap [\forall H.[(\%t)_\sigma \multimap H] \multimap H]]$$
- $$((\text{ADJ} \in \uparrow) \quad \text{GF} \quad) = \%t$$
- $$(\rightarrow_\sigma \text{ DF}) = \text{TOPIC}$$
- all** ∈ (↑_{σ_v} (↑_σ DF))

4 Conclusion

- An FQ functions as a focus and marks the left-edge of the comment in the topic–comment structure.
- The most salient phrase structure configuration consists of a fronted topic constituent followed by an FQ that is adjoined to VP.
- An FQ can appear VP-internally only when the topic–comment structure is satisfied.
- Agreement can be formulated between a topic constituent and an FQ.

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