1 Introduction

a. The students have all finished the assignment.

b. Elles sont toutes allées à la plage.
   ‘They all went to the beach.’ (French)

c. Diesen Studenten habe ich gestern allen geschmeichelt.
   ‘I flattered all of these students yesterday.’ (German) (Bobaljik, 2003, 107–9)

d. kodomo-tati wa minna eiga o tanosinda.
   ‘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)
(3) VP modifier analysis

```
   IP
     /\       I'  
    /   \     /    \  
   DP    I     VP
       \  /        \  /
    the students  I  have all  VP
                       \    
                        \   \  
                         \ has finished the assignment
```

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

```
   S
   /\       
  /   \     
 NP   VP
  \    \    \  
    S     
     /\    /
    NP VP
       \  /
    Paul  V
    \  |
     V Q NP[à]
    \  |
     V Q à Marie
```

**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 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 . . .]]
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 visit Boston.’ (Dutch)

• An FQ can appear VP-internally as long as the preceding NP is a topic and the following elements functions 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.’ (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.??Taro 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. Taro 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-mei 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-mei 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. 

\[
\begin{align*}
\text{TOPIC} & \quad \text{FOCUS} \\
\text{John} & \quad \text{married} \\
\end{align*}
\]

(23) 

\[
\begin{array}{c}
\text{IP} \\
\uparrow_{\text{SUBJ}} = \downarrow \\
\uparrow_{\sigma} = \downarrow_{\sigma_l} \\
\text{TOPIC} = \text{TOPIC} \\
\text{NP} \\
\text{John} \\
\text{married} \\
\text{married} \in (\uparrow_{\sigma} (\uparrow_{\sigma} \text{DF})) \\
\text{VP} \\
\text{JOHN} \in (\uparrow_{\sigma} (\uparrow_{\sigma} \text{DF})) \\
\text{NP} \\
\text{Rosa} \\
\text{Rosa} \in (\uparrow_{\sigma} (\uparrow_{\sigma} \text{DF})) \\
\end{array}
\]

(24)  \[
\begin{align*}
m & : \left[ \begin{array}{c} \\
\text{PRED} \quad \text{`marry(SUBJ,OBJ)' } \\
\text{SUBJ} \quad s : \left[ \text{PRED} \quad \text{`John' } \\
\text{OBJ} \quad o : \left[ \text{PRED} \quad \text{`Rosa' } \\
\end{array} \right] \\
\end{align*}
\]

(25) 

\[
\begin{align*}
m_{\sigma} & : [\text{DF} \quad \text{TOPIC}] \\
o_{\sigma} & : [\text{DF} \quad \text{FOCUS}] \\
\end{align*}
\]

(26) 

\[
\begin{align*}
m_{\sigma l} & : [\text{TOPIC} \quad \{ \text{John } \} ] \\
m_{\sigma f} & : [\text{FOCUS} \quad \{ \text{married } \} \{ \text{Rosa } \} ] \\
\end{align*}
\]

(Dalrymple and Nikolaeva, 2011, 84–5)
VP-adjunction FQ

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

\[
\begin{align*}
\text{VP} & \rightarrow \quad \text{QP} \quad \text{VP} \\
\downarrow \in (\uparrow \text{ADJ}) & \quad \uparrow = \downarrow \\
\uparrow_{\sigma t} = \downarrow_{\sigma t} & \quad \uparrow_{\sigma t} = \downarrow_{\sigma t} \\
(\uparrow_{\sigma} \text{DF}) = \text{FOCUS} \quad (\uparrow_{\sigma} \text{DF}) = \text{BACKGROUND}
\end{align*}
\]

- 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.

\[
\begin{align*}
(28) \quad \text{a. minna} \quad \text{Q} & \quad (\uparrow \text{PRED}) = \text{‘all’} \\
\quad & \lambda R. \lambda S. \text{all}(x, R(x), S(x)) : \\
\quad & [((%t)_{\sigma} \text{VAR}) \rightarrow ((%t)_{\sigma} \text{RESTRICTION})] \rightarrow [\forall H. [((%t)_{\sigma} \rightarrow H) \rightarrow H]] \\
\quad & ((\text{ADJ} \in \uparrow) \quad \text{GF}) = %t \\
\quad & \text{all} \in (\uparrow_{\sigma t} (\uparrow_{\sigma} \text{DF})) \\
\quad & \text{b. kodomo} \quad \text{N} & \quad (\uparrow \text{PRED}) = \text{‘child’} \\
\quad & \lambda x. \text{child}(x) : (\uparrow_{\sigma} \text{VAR}) \rightarrow ((\uparrow_{\sigma} \text{RESTRICTION}) \\
\quad & \text{child} \in (\uparrow_{\sigma t} (\uparrow_{\sigma} \text{DF})) \\
\quad & \text{c. tanosinda} \quad \text{V} & \quad (\uparrow \text{PRED}) = \text{‘enjoy(SUBJ,OBJ)’} \\
\quad & \lambda x. \lambda y. \text{enjoy}(x, y) : (\uparrow \text{SUBJ})_{\sigma} \rightarrow ((\uparrow \text{OBJ})_{\sigma} \rightarrow \uparrow_{\sigma} ) \\
\quad & \text{enjoy} \in (\uparrow_{\sigma t} (\uparrow_{\sigma} \text{DF}))
\end{align*}
\]

- 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)  
\[
S \\
\quad \downarrow\sigma_i = \downarrow\sigma_i \\
\quad \uparrow\sigma_i = \downarrow\sigma_i \\
\quad \uparrow\sigma = \downarrow\sigma \\
\quad \uparrow = \downarrow \\
\quad \text{kodomo-tati wa child-PL TOPIC} \\
\quad \downarrow \in (\uparrow \text{ADJ}) \\
\quad \uparrow = \downarrow \\
\quad \uparrow\sigma_i = \downarrow\sigma_i \\
\quad (\uparrow_{\sigma_i} \text{DF}) = \text{FOCUS} \\
\quad (\uparrow_{\sigma_i} \text{DF}) = \text{BACKGROUND} \\
\quad \text{NP} \\
\quad \text{VP} \\
\quad \text{QP} \\
\quad \text{minna all} \\
\quad (\uparrow \text{OBJ}) = \downarrow \\
\quad \uparrow\sigma_i = \downarrow\sigma_i \\
\quad \uparrow\sigma = \downarrow\sigma \\
\quad \text{eiga o movie ACC} \\
\quad \text{tanosinda enjoyed} \\
\]

(30)  
\[
\begin{align*}
\text{SUBJ} & : [\text{PRED} \ "\text{child}" ] \\
\text{OBJ} & : [\text{PRED} \ "\text{movie}" ] \\
\text{ADJ} & : \{ a : [\text{PRED} \ "\text{all}" ] \} \\
\end{align*}
\]

(31)  
\[
\begin{align*}
\text{S}_{\sigma} : [\text{VAR} \ [ ] ] \\
\text{R}_{\sigma} : [\text{DF} \ \text{TOPIC} ] \\
\text{O}_{\sigma} : [\text{DF} \ \text{BACKGROUND} ] \\
\text{e}_{\sigma} : [\text{DF} \ \text{BACKGROUND} ] \\
\end{align*}
\]

(32)  
\[
\begin{align*}
\text{TOPIC} & : \{ \text{children} \} \\
\text{FOCUS} & : \{ \text{all} \} \\
\text{BACKGROUND} & : \{ \text{enjoyed} \} \\
\text{movie} & : \{ \} \\
\end{align*}
\]

(33)  
\[
\begin{align*}
\text{all} & : \lambda R. \lambda S. \text{all}(x, \text{R}(x), \text{S}(x)) : [(s_{\sigma} \text{VAR}) \rightarrow (s_{\sigma} \text{RESTR})] \rightarrow [\forall H. (s_{\sigma} \rightarrow H) \rightarrow H] \\
\text{child} & : \lambda x. \text{child}(x) : (s_{\sigma} \text{VAR}) \rightarrow (s_{\sigma} \text{RESTR}) \\
\text{enjoy-movie} & : \lambda x. \text{enjoy}(x, \text{movie}) : s_{\sigma} \rightarrow e_{\sigma} \\
\text{all, child, enjoy-movie} \vdash \text{all}(x, \text{child}(x), \text{enjoyed-movie}(x)) : e_{\sigma}
\end{align*}
\]
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) \[ VP \rightarrow V \quad NP \quad QP \quad PP \]

\[ \uparrow = \downarrow \quad (\uparrow \text{OBJ}) = \downarrow \quad \downarrow \in (\uparrow \text{ADJ}) \quad (\uparrow (\downarrow \text{PCASE})) = \downarrow \]

\[ \uparrow_{\sigma_i} = \downarrow_{\sigma_i} \quad \uparrow_{\sigma_i} = \downarrow_{\sigma_i} \quad \uparrow_{\sigma_i} = \downarrow_{\sigma_i} \]

\[ ((\uparrow_{\sigma_i} \text{DF}) = \text{TOPIC}) \quad ((\uparrow_{\sigma_i} \text{DF}) = \text{FOCUS}) \quad ((\uparrow_{\sigma_i} \text{DF}) = \text{BACKGROUND}) \]

(35)

(36)

\[
\begin{align*}
PRED & : \text{put}(\text{SUBJ},\text{OBJ},\text{OBL}_{on})' \\
\text{SUBJ} & : \{ \text{PRED 'Mary'} \} \\
\text{OBJ} & : \{ \text{SPEC [PRED 'the']}, \text{PRED 'book'}, \text{NUM PL} \} \\
\text{OBL}_{on} & : \{ \text{PRED 'shelf \ PCASE OBL}_{on} \} \\
\text{ADJ} & : \{ \text{a [PRED 'all']} \} \\
p & : \\
\end{align*}
\]

(37)

\[
\begin{align*}
s_{\sigma} : [\text{DF COMPLETIVE}] \\
o_{\sigma} : [\text{ACTV ACTIVE}] \\
l_{\sigma} : [\text{DF BACKGROUND}] \\
a_{\sigma} : [\text{DF FOCUS}] \\
p_{\sigma} : [\text{DF COMPLETIVE}] \\
\end{align*}
\]

(38)

\[
\begin{align*}
\text{TOPIC} & : \{ \text{the-books} \} \\
\text{FOCUS} & : \{ \text{all} \} \\
p_{\sigma_i} : \{ \text{BACKGROUND} \}, \{ \text{on-the-shelf} \} \\
\text{COMPLETIVE} & : \{ \text{Mary put} \} \\
\end{align*}
\]
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-∅-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-∅m
       this reindeer kill-PAST-OBJ/1.SG.SUBJ kill-PAST-1.SG.SUBJ
       ‘I killed this reindeer.’
   c. kalaŋ xal’sa we:l-s-∅lli / *we:l-∅s
       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) VAR) → ((%(t) RESTR)) → [∀H.((%(t) → H) → H)]
       ((ADJ ∈ ↑) GF ) = %t
       all ∈ (↑%(t) (↑%(t) 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.

References

Abeillé, Anne and Godard, Danièle. 1998. A Lexical Approach to Quantifier Floating in French. In Gert Webelhuth, Jean-Pierre Koenig and Andreas Kathol (eds.), Lexical and Construc-


Kim, Jong-Bok and Kim, Jung-Soo. 2009. English Floating Quantifier Constructions: A Non-
movement Approach. Language and Information 13, 57–75.


