Syntactic, Semantic and Information Structures of Floating Quantifiers

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1 Introduction

2 Previous analyses

3 Proposal

4 Conclusion
(1)  

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)
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(2) Stranding analysis

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(2) Stranding analysis

IP

   DP  I'

          the students

          have

      VP

      DP  V'

         t

         finished the assignment

(cf. Sportiche, 1988; Shlonsky, 1991)
```
(3) VP modifier analysis

\[
\begin{array}{c}
\text{IP} \\
\text{DP} \quad \text{I'} \\
\text{the students} \quad \text{I} \quad \text{VP} \\
\text{have} \quad \text{all} \quad \text{VP} \\
\text{finished the assignment}
\end{array}
\]

(cf. Dowty and Brodie, 1984; Baltin, 1982; Bobaljik, 2003; Kim and Kim, 2009)
(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*
   these.DAT.PL students have I yesterday all.DAT.PL
   geschmeichelt.
   flattered
   ‘I flattered all of these students yesterday.’ (German)
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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. \(\text{topic* [comment focus [background ...]]}\)

\[(\text{Neeleman and van de Koot, 2008, 146})\]

b. \(\text{NP}_{\text{subj}} [\text{VP QP [VP ...]]}\)
(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 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)
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

T. NOM H. ACC relatives DAT TOPIC all introduce sita.
do.PAST

‘As for his relatives, Taro introduced Hanako to all of them.’
(18) c. sono seizika ga kihukin o siensya kara 50-mei that politician NOM donation ACC supporter from 50-CL atumeta.
collect.PAST
‘That politician collected donations from 50 supporters.’
d. sono seizika ga kihukin o siensya kara wa 50-mei that politician NOM donation ACC supporter from TOPIC 50-CL atumeta.
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 the students will understand completely all that problema).

b. ?Los estudiantes entenderán todos completamente (ese problema).

(Spanish; Bošković 2004, 686)
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)

```
(↑SUBJ) = ↓
↑σl = ↓σl
((↑σ DF) = TOPIC)
  NP
    |  ↑ = ↓
    |  I'
    |  ↑ = ↓
    |  VP
      ↑ = ↓
      V
        |  ↑ = ↓
        married
          ↑ = ↓
          (↑PRED) = ‘marry⟨SUBJ,OBJ⟩’
          married ∈ (↑σl (↑σ DF))
        ↑σl = ↓σl
        NP
          ↑ = ↓
          N
            ↑ = ↓
            Rosa
              ↑ = ↓
              (↑PRED) = ‘Rosa’
              Rosa ∈ (↑σl (↑σ DF))
```
(24) \[
\begin{align*}
\text{PRED} & \quad \text{‘marry\langle\text{SUBJ,OBJ}\rangle’} \\
\text{m} : & \quad \begin{cases} 
\text{SUBJ} & \text{s} : [\text{PRED} \quad \text{‘John’}] \\
\text{OBJ} & \text{o} : [\text{PRED} \quad \text{‘Rosa’}] 
\end{cases}
\end{align*}
\]

(25) \[
\begin{align*}
\text{s}_\sigma : & \quad [\text{DF \ TOPIC}] \\
\text{m}_\sigma : & \quad [\text{DF \ FOCUS}] \\
\text{o}_\sigma : & \quad [\text{DF \ FOCUS}]
\end{align*}
\]

(26) \[
\begin{align*}
\text{TOPIC} & \quad \{ \text{John} \} \\
\text{m}_{\sigma t} : & \quad \begin{cases} 
\text{FOCUS} & \{ \text{married} \} \\
\text{Rosa} & \}
\end{cases}
\end{align*}
\]

(Dalrymple and Nikolaeva, 2011, 84–5)
The VP adjunction rule can be formulated as in (27).

\[(27)\quad \text{VP} \quad \rightarrow \quad \text{QP} \quad \text{VP} \quad \downarrow \in (\uparrow \text{ADJ}) \quad \uparrow = \downarrow \quad \uparrow \sigma_l = \downarrow \sigma_l \quad (\uparrow \sigma \text{ DF}) = \text{FOCUS} \quad (\uparrow \sigma \text{ DF}) = \text{BACKGROUND} \]
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) a. *minna* Q  ($\uparrow$ PRED) = ‘all’

\[
\lambda R. \lambda S. \text{all}(x, R(x), S(x)) : \\
[(((%t_\sigma VAR) \rightarrow ((%t_\sigma RESTR)]] \\
\rightarrow [\forall H. [((%t_\sigma \rightarrow H] \rightarrow H] \\
((\text{ADJ} \in \uparrow) \text{GF} \rightarrow_\sigma \text{DF}) = %t \\
\text{all} \in (\uparrow_\sigma \text{DF}) = \text{TOPIC}
\]
(29)

```
S

(↑ GF) = ↓
↑σl = ↓σl

NP

kodomo-tati wa
child-PL TOPIC

↓ ∈ (↑ ADJ)
↑σl = ↓σl

QP

(↑σ DF) = FOCUS

VP

(↑ OBJ) = ↓
↑σl = ↓σl

NP

eiga o
movie ACC

tanosinda
enjoyed

minna
all

(↑ σ DF) = BACKGROUND

↑ = ↓

V
```

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(30) \[
\begin{align*}
\text{PRED} & \quad \text{‘enjoy} \langle \text{SUBJ}, \text{OBJ} \rangle \text{’} \\
\text{SUBJ} & \quad s : [ \text{PRED} \quad \text{‘child’} ] \\
\text{OBJ} & \quad o : [ \text{PRED} \quad \text{‘movie’} ] \\
\text{ADJ} & \quad \{ a : [ \text{PRED} \quad \text{‘all’} ] \}
\end{align*}
\]

(31) \[
\begin{align*}
\text{STATUS IDENTIFIABLE} & \\
\text{ACTV ACTIVE} & \quad o_{\sigma} : [ \text{DF BACKGROUND} ] \\
\text{VAR [ ]} & \quad a_{\sigma} : [ \text{DF FOCUS} ] \\
\text{RESTR [ ]} & \quad e_{\sigma} : [ \text{DF BACKGROUND} ] \\
\text{DF TOPIC} & 
\end{align*}
\]

(32) \[
\begin{align*}
\text{TOPIC} & \quad \{ \text{children} \} \\
\text{FOCUS} & \quad \{ \text{all} \} \\
\text{BACKGROUND} & \quad \{ \text{enjoyed} \} \\
\text{movie} & 
\end{align*}
\]
\begin{align*}
(33) \quad \text{all} & \quad \lambda R. \lambda S. \text{all}(x, R(x), S(x)) : \\
& \quad [(s_\sigma \text{ VAR}) \rightarrow (s_\sigma \text{ RESTR})] \rightarrow [\forall H.[s_\sigma \rightarrow H] \rightarrow H] \\
\text{child} & \quad \lambda x. \text{child}(x) : (s_\sigma \text{ VAR}) \rightarrow (s_\sigma \text{ RESTR}) \\
\text{enjoy-movie} & \quad \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*}
When QP appears under VP, it requires the preceding NP to be a topic and the following constituent to be a background.

(34)

\[
\begin{align*}
VP & \quad \longrightarrow \quad V \\
\uparrow = \downarrow & \quad \text{(\uparrow OBJ) = \downarrow} \\
\uparrow_{\sigma_l} = \downarrow_{\sigma_l} & \quad \text{((\uparrow_\sigma \ DF) = TOPIC)} \\
\end{align*}
\]

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

\[
\begin{align*}
\text{PP} & \quad \text{((\uparrow (\downarrow \text{PCASE})) = \downarrow)} \\
\uparrow_{\sigma_l} = \downarrow_{\sigma_l} & \quad \text{((\uparrow_\sigma \ DF) = BACKGROUND)}
\end{align*}
\]
(35)
(36) $p: [ \text{PRED} \ 'put' \langle \text{SUBJ}, \text{OBJ}, \text{OBL}_{on} \rangle ' \rangle ]$

$\text{SUBJ} \ s: [ \text{PRED} \ 'Mary' ]$

$\text{OBJ} \ o: [ \text{PRED} \ 'book' \ ]$

$\text{NUM} \ \text{PL}$

$\text{OBL}_{on} \ l: [ \text{PRED} \ 'shelf' ]$

$\text{PCASE} \ \text{OBL}_{on}$

$\text{ADJ} \ \{ \ a: [ \text{PRED} \ 'all' ] \ \}$
(37) \( s_\sigma : [\text{DF Completive}] \)

\[
\begin{array}{l}
\text{STATUS Identifiable} \\
\text{ACTV Active} \\
\text{DF Topic}
\end{array}
\]

\( o_\sigma : [\text{DF Background}] \)

\( l_\sigma : [\text{DF Focus}] \)

\( a_\sigma : [\text{DF Completive}] \)

\( p_\sigma : [\text{DF Completive}] \)

(38)

\[
\begin{array}{l}
\text{Topic} \{ \text{the-books} \} \\
\text{Focus} \{ \text{all} \} \\
\text{Background} \{ \text{on-the-shelf} \} \\
\text{Completive} \{ \text{Mary} \}
\end{array}
\]
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 / I this reindeer kill-PAST-1.SG.SUBJ we:l-s-∅-e:m 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-əś 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 these.DAT.PL students have I (yesterday) all.DAT.PL geschmeichelt.
flattered
‘I flattered all of these students yesterday.’ (German)

(43) allen Q (↑ PRED) = ‘all’
(%t CASE) = DAT
(%t NUM) = PL

[((%t)σ VAR) → ○ ((%t)σ RESTR))]
→ ○ [∀H.[(%t)σ → ○ H] → ○ H]

((ADJ ∈ ↑ ) GF ) = %t
(→σ DF) = TOPIC
all ∈ (↑σι (↑σ DF))
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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.


