Alternatives in different dimensions: a case study of focus intervention

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Two lines of research in Alternative Semantics

Alternative Semantics (Hamblin 1973)

- Focus semantics
  - Focused expressions denote sets of alternatives in the **focus** dimension (Rooth 1985, 1992; a.o.)

- Neo-Hamblin Semantics
  - Some expressions denote sets of alternatives in the **ordinary** dimension

    Wh-phrases (Kratzer and Shimoyama 2002; Dong 2009; a.o.)
    Disjunctive phrases (Alonso-Ovalle 2008; a.o.)
    Indefinites (Kratzer and Shimoyama 2002; Charlow 2014; a.o.)

What will happen if we put alternatives in different dimensions together?

Focus intervention

Focus intervention

(1) ?* Ta **zhi** yaoqing-le Libai$_F$ chuxi *shenme huodong*?
he only invite-Asp Libai$_F$ attend what activity

'What was the activity x such that he only invited Libai$_F$ to attend x?'

(2) ?* **Zhiyou** Libai$_F$ chuxi-le *shenme huodong*?
only Libai$_F$ attend-Asp what activity

'What was the activity x such that only Libai$_F$ attended x?'

WH-fronting

(3) *Shenme huodong*, ta **zhi** yaoqing-le Libai$_F$ chuxi?
what activity he only invite-Asp Libai$_F$ attend
'What was the activity x such that he only invited Libai$_F$ to attend x?'

(4) *Shenme huodong*, **zhiyou** Libai$_F$ chuxi-le?
what activity only Libai$_F$ attend-Asp
'What was the activity x such that only Libai$_F$ attended x?'

F-WH association: Focus-sensitive operators are associated with WH-phrases.

(5) Libai **zhi** chuxi-le *shenme huodong*?
Libai only attend-Asp what activity
'What was the activity x such that Libai only attended x?'

(6) **Zhiyou** *shei* chuxi-le wanyan?
only who attend-Asp dinner
'Who was the person x such that only x attended the dinner?'

(7) a. ?*[Q ... **focus-sensitive operator** [$\underline{\text{XP}}_F$ ... *WH* ...]]

b. [Q *WH* ... **focus-sensitive operator** [$\underline{\text{XP}}_F$ ...]]

c. [Q ... **focus-sensitive operator** [... *WH* ...]]

⇒ WH-phrases and focused phrases cannot co-occur within the scope of a focus-sensitive operator.

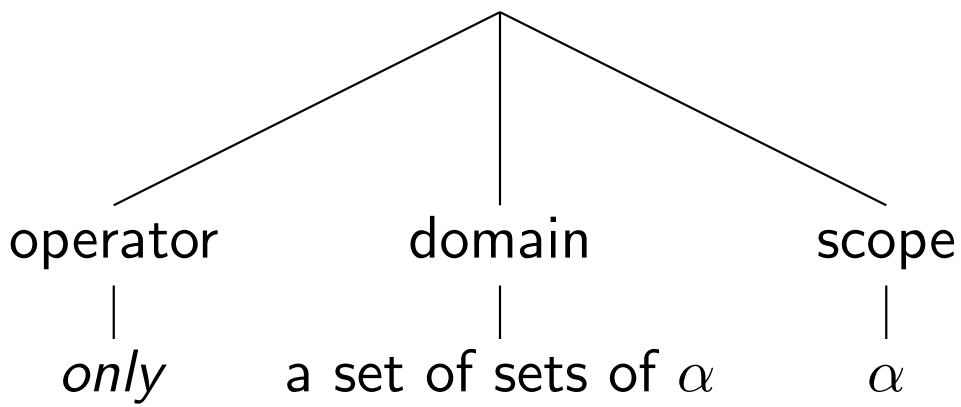
(For alternative formulations of focus intervention, see Beck 2006, Tomioka 2007, Mayr 2014, a.o.)

Sketching our attempt

- Ordinary alternatives and focus alternatives occur along different dimensions
- The interaction of ordinary and focus alternatives gives rise to inappropriate quantificational domains for the focus-sensitive operator

(8) ?*[Q ... **focus-sensitive operator** [$\underline{\text{XP}}_F$ ... *WH* ...]]

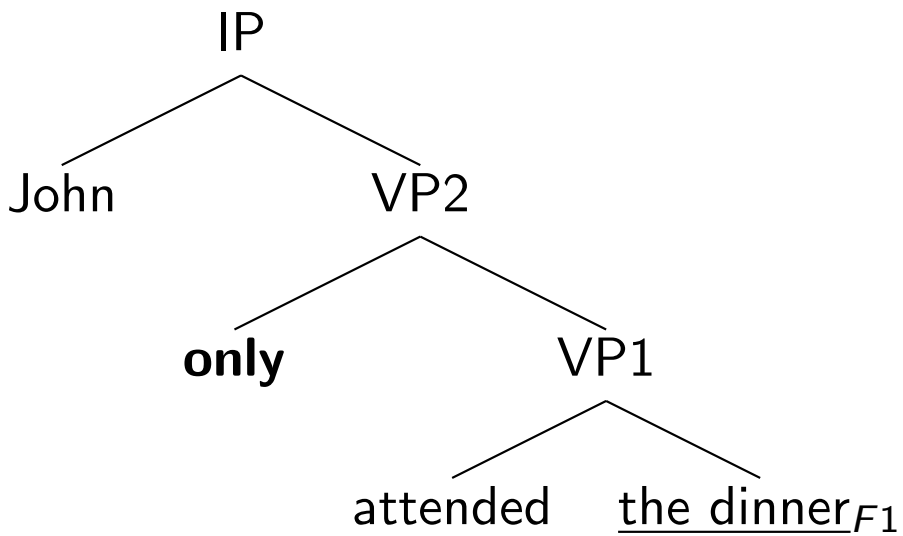
(9)



α does not belong to the quantificational domain

Association with focus (Kratzer 1991)

(10)



a. $[\![\textit{the dinner}_{F1}]\!]^{g} =$ the dinner; $[\![\textit{the dinner}_{F1}]\!]^{g,h} = h(1)$

b. $[\![\text{VP1}]\!]^{g} = \lambda$y. y attended the dinner

c. $[\![\text{VP1}]\!]^{g,h} = \lambda$y. y attended $h(1)$

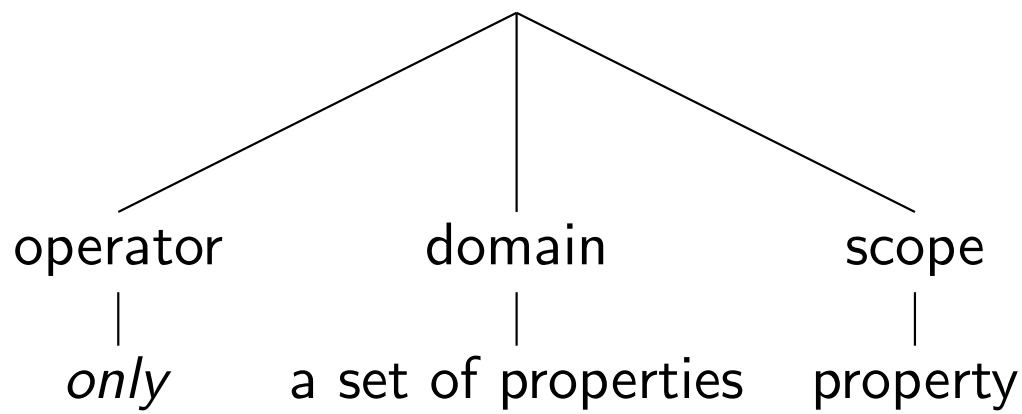
d. $[\![\text{VP1}]\!]^{f} = \{\lambda$y. y attended $h(1) \mid h \in \text{H}\}$
$= \{\lambda$y. y attended the dinner, λy. y attended the concert, ...$\}$

Only takes as its quantificational domain the focus semantic value of VP1 $\Rightarrow$ Association with focus

(11) $[\![\textit{only}\ \text{VP1}]\!]^g$
$= [\![\textit{only}]\!]^g\ ([\![\text{VP1}]\!]^f)\ ([\![\text{VP1}]\!]^g)$
$= \lambda y.\underline{\forall P \in [\![\text{VP1}]\!]^f}[P(y) \rightarrow [\![\text{VP1}]\!]^g(y) \subseteq P(y)]$

Notice $P_{<e,t>} \in [\![\text{VP1}]\!]^f$ $_{<<e,t>,t>}$

(12)

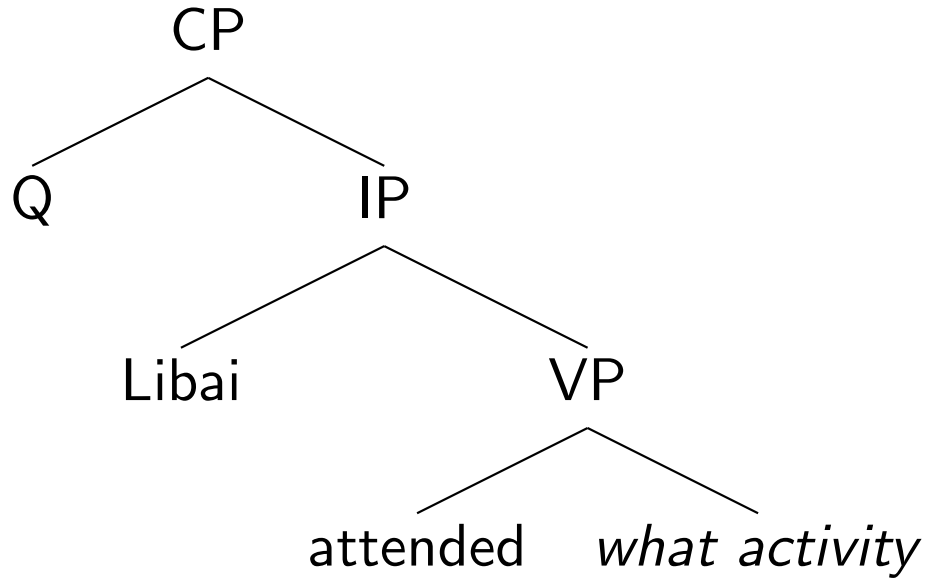


Pillar II: neo-Hamblin semantics

Semantics of wh-phrase

- Ordinary semantic value: a set of alternatives (Hamblin 1973)
  $[\![WH]\!]^g = \{\text{a, b, c}\}$ (ordinary semantic value)
- Secondary value: same as the ordinary semantic value
  $[\![WH]\!]^{g,h} = \{\text{a, b, c}\}$
- Focus semantic value: none
  (see also Eckardt 2007; contra Beck 2006)

(13)



a. $[\![\textit{what activity}]\!]^g = \{$the dinner, the concert, ...$\}$

b. $[\![\textit{attended}]\!]^g = \lambda$x.$\lambda$y. y attended x

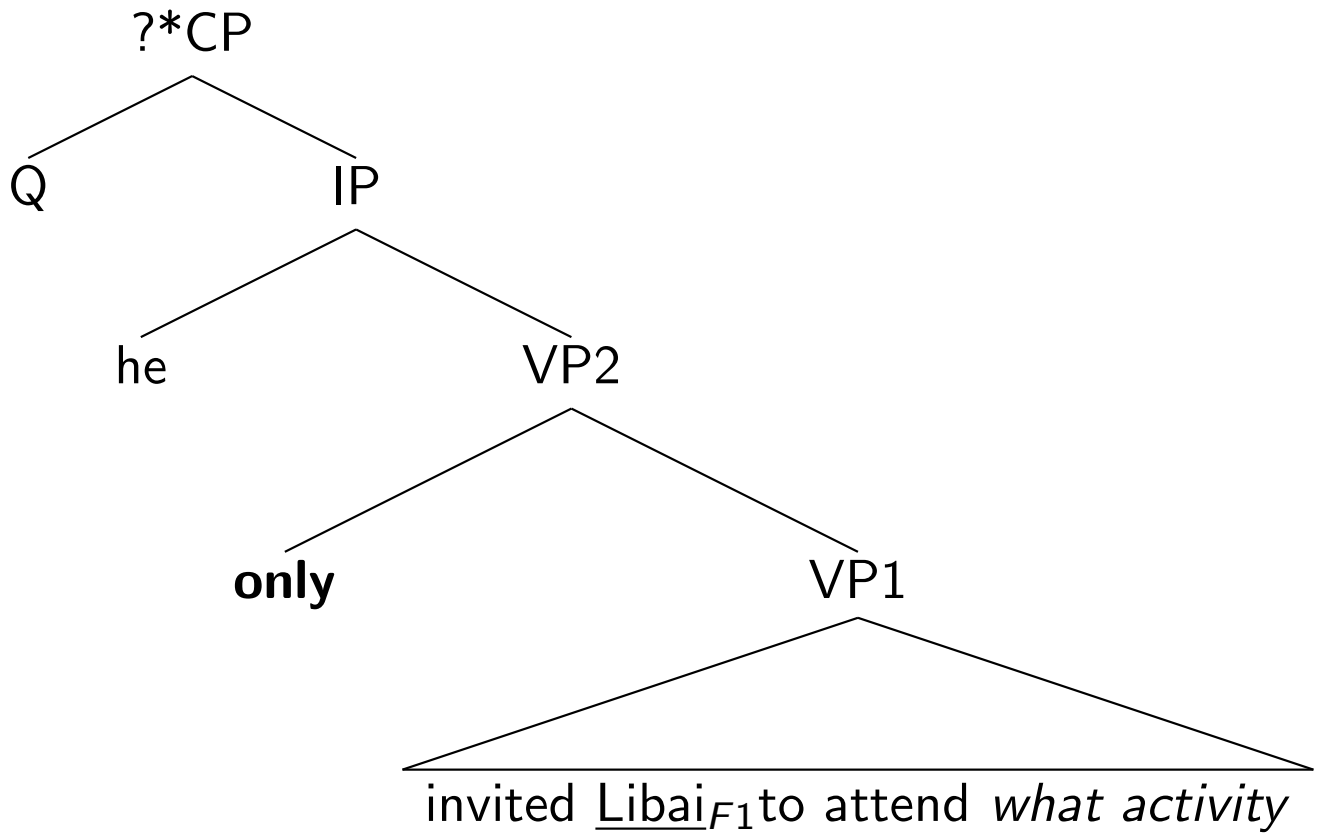
c. $[\![\text{VP}]\!]^g = \{[\![\textit{attended}]\!]^g$ (x) | x $\in [\![\textit{what activity}]\!]^g\}$
$= \{\lambda$y. y attended the dinner, λy. y attended the concert, ...$\}$
(pointwise functional application, Yatsushiro 2009, see also Hagstrom 1998)

(14) a. $[\![\text{IP}]\!]^g = \left\{ \begin{array}{l} \text{Libai attended the dinner,} \\ \text{Libai attended the concert,} \\ \ldots \end{array} \right\}$

b. $[\![\text{CP}]\!]^g = [\![\text{Q IP}]\!]^g = [\![\text{IP}]\!]^g$
(Kratzer and Shimoyama 2002)

Deriving focus intervention

(15)



a. $[\![Libai_{F1}]\!]^g$ = Libai; $[\![Libai_{F1}]\!]^{g,h} = h(1)$

b. $[\![what\ activity]\!]^g = [\![what\ activity]\!]^{g,h} = \{$dinner, concert, ...$\}$

(16) $[\![\text{VP1}]\!]^g = \{\lambda\text{y. y invited Libai to attend x} \mid \text{x} \in [\![\textit{what activity}]\!]^g\}$

$$= \left\{ \begin{array}{l} \lambda\text{y. y invited Libai to attend the dinner} \\ \lambda\text{y. y invited Libai to attend the concert} \\ \ldots \end{array} \right\}$$

(17) $[\![\text{VP1}]\!]^{g,h} = \{\lambda\text{y. y invited } h(1) \text{ to attend x} \mid \text{x} \in [\![\textit{what activity}]\!]^{g,h}\}$

$$= \left\{ \begin{array}{l} \lambda\text{y. y invited } h(1) \text{ to attend the dinner} \\ \lambda\text{y. y invited } h(1) \text{ to attend the concert} \\ \ldots \end{array} \right\}$$

(18) $[\![\text{VP1}]\!]^f = \{[\![\text{VP1}]\!]^{g,h} \mid h \in \text{H}\}$

$$= \left\{ \left\{ \begin{array}{l} \lambda\text{y. y invited } h(1) \text{ to attend the dinner} \\ \lambda\text{y. y invited } h(1) \text{ to attend the concert} \\ \ldots \end{array} \right\} \mid h \in \text{H} \right\}$$

$\Rightarrow$ a set of sets of properties

$$(19) \quad [\![\text{VP1}]\!]^f = \left\{ \begin{array}{c} \left\{ \begin{array}{c} \lambda y.\ y \text{ invited Libai to attend the dinner} \\ \lambda y.\ y \text{ invited Libai to attend the concert} \\ \ldots \\ \lambda y.\ y \text{ invited Dufu to attend the dinner} \\ \lambda y.\ y \text{ invited Dufu to attend the concert} \\ \ldots \end{array} \right\} \\ \ldots \end{array} \right\}$$

The predicate-level *only*: $[\![only]\!]^g([\![\phi]\!]^f)_{\langle\langle e,t\rangle,t\rangle}([\![\phi]\!]^g)_{\langle e,t\rangle}$

$[\![only]\!]^g\ ([\![\text{VP1}]\!]^f)\ ([\![\text{VP1}]\!]^g)$

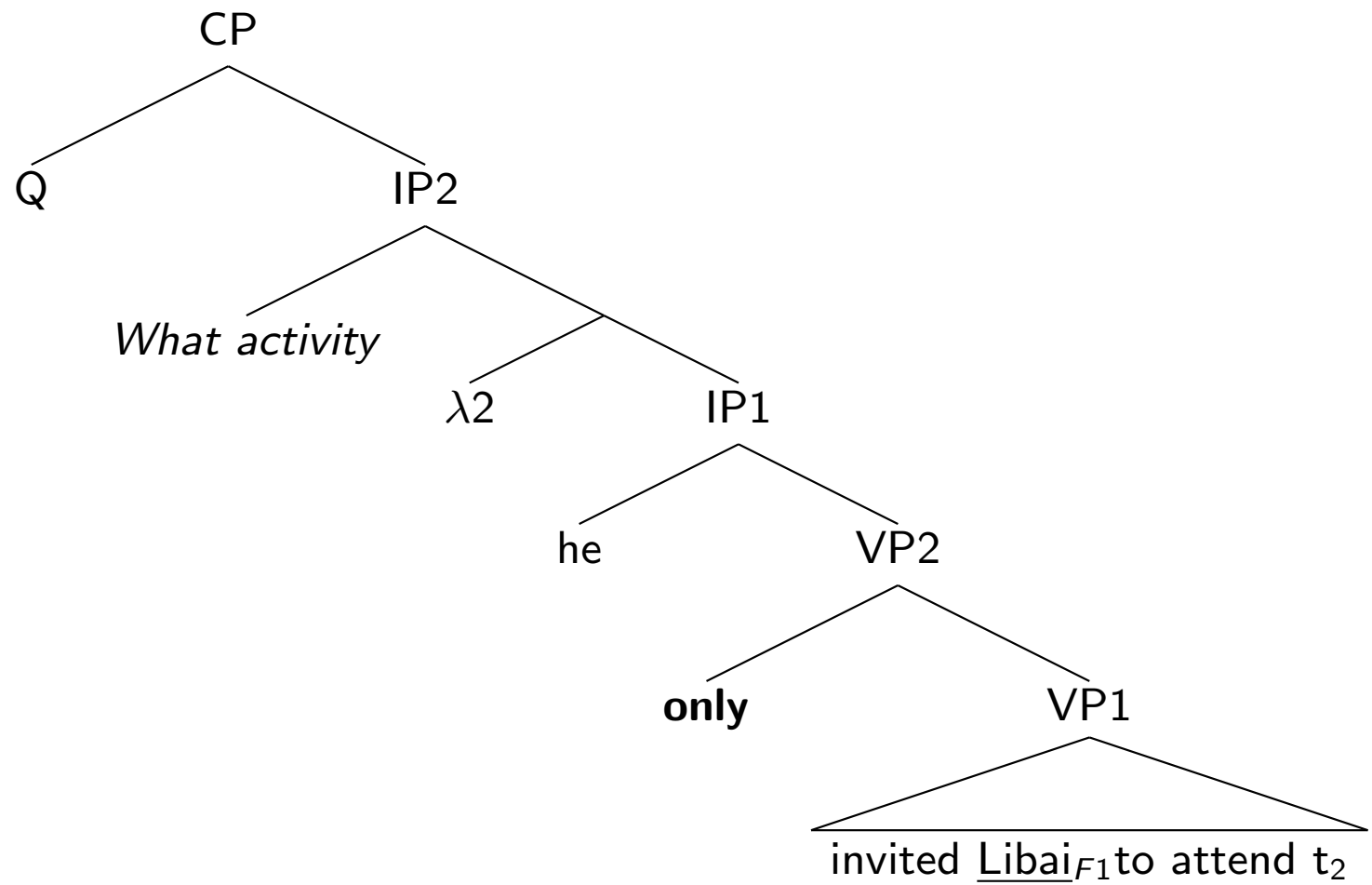
$$= [\![only]\!]^g\ ([\![\text{VP1}]\!]^f) \left(\left\{ \begin{array}{l} \lambda\text{y. y invited Libai to attend the dinner} \\ \lambda\text{y. y invited Libai to attend the concert} \\ \ldots \end{array} \right\} \right)$$

$$= \left\{ \begin{array}{l} [\![only]\!]^g\ ([\![\text{VP1}]\!]^f)_{\langle\langle\langle e,t\rangle,t\rangle,t\rangle}(\lambda\text{y. y invited Libai to attend the dinner}) \\ [\![only]\!]^g\ ([\![\text{VP1}]\!]^f)_{\langle\langle\langle e,t\rangle,t\rangle,t\rangle}(\lambda\text{y. y invited Libai to attend the concert}) \\ \ldots \end{array} \right\}$$

$= \mathbf{??}$

No focus intervention with WH-fronting

(20)



a. $[\![Libai_{F1}]\!]^g$ = Libai; $[\![Libai_{F1}]\!]^{g,h} = h(1)$

b. $[\![t_2]\!]^g = [\![t_2]\!]^{g,h} = g(2)$

c. $[\![what\ activity]\!]^g = [\![what\ activity]\!]^{g,h}$ = {dinner, concert, ...}

(21) a. $[\![\text{VP1}]\!]^g = \lambda$y. y invited Libai to attend $g(2)$

b. $[\![\text{VP1}]\!]^{g,h} = \lambda$y. y invited $h(1)$ to attend $g(2)$

c. $[\![\text{VP1}]\!]^f = \{[\![\text{VP1}]\!]^{g,h} \mid h \in \text{H}\}$

$$= \left\{ \begin{array}{c} \lambda\text{y. y invited Libai to attend } g(2) \\ \lambda\text{y. y invited Dufu to attend } g(2) \\ \ldots \end{array} \right\}$$

$\Rightarrow$ a set of alternatives

d. $[\![\textit{only}\ \text{VP1}]\!]^g = [\![\textit{only}]\!]^g\ ([\![\text{VP1}]\!]^f)_{\langle\langle e,t\rangle,t\rangle}\ ([\![\text{VP1}]\!]^g)_{\langle e,t\rangle}$

$\Rightarrow$ Licit quantification

(22) a. $[\![\text{IP1}]\!]^g = \text{ONLY}(\text{he invited Libai to attend } g(2))$

b. $\lambda 2.[\![\text{IP1}]\!]^{g[x/2]}$
$= \lambda \text{x. ONLY}(\text{he invited Libai to attend x})$

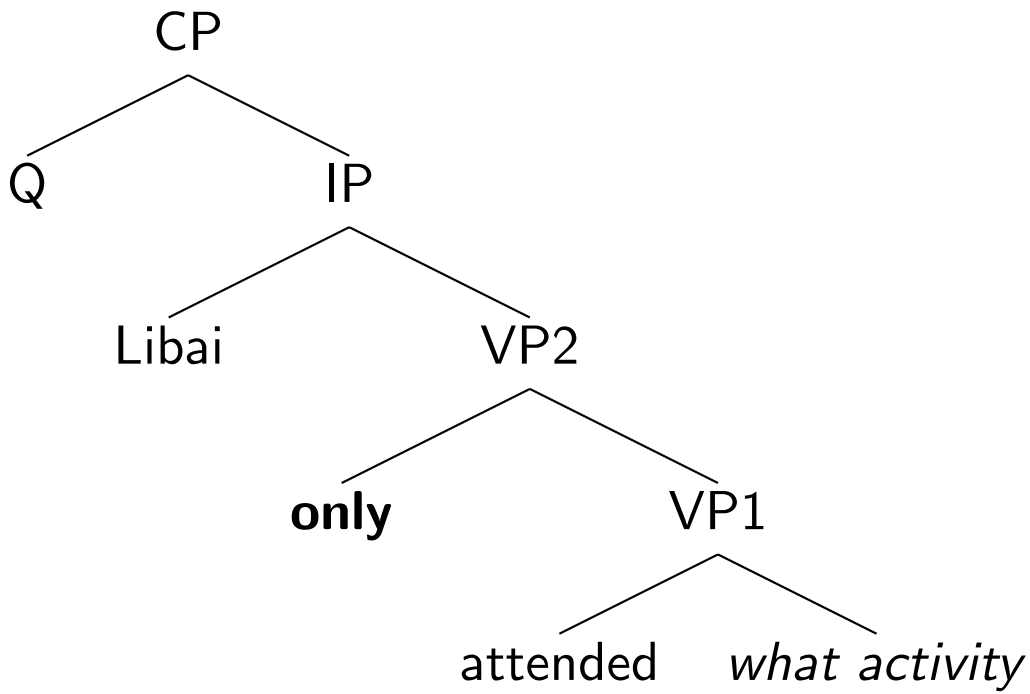
c. $[\![\text{IP2}]\!]^g$
$= \{\text{he only invited Libai to attend x} \mid \text{x} \in [\![\textit{what activity}]\!]^g\}$

$$= \left\{ \begin{array}{l} \text{he only invited Libai to attend the dinner} \\ \text{he only allow Libai to attend the concert} \\ \ldots \end{array} \right\}$$

d. $[\![\text{CP}]\!]^g = [\![\text{IP2}]\!]^g$

No focus intervention with F-WH association

(23)



a. $[\![\textit{what activity}]\!]^{g} = [\![\textit{what activity}]\!]^{g,h}$
$=$ {the dinner, the concert, ...}

b. $[\![\text{VP1}]\!]^{g} = [\![\text{VP1}]\!]^{g,h}$
$=$ {λy. y attend the dinner, λy. y attended the concert, ...}
$\Rightarrow$ a set of properties

$$[\![\text{VP2}]\!]^g = [\![\textit{only}]\!]^g\ ([\![\text{VP1}]\!]^{g,h})\ ([\![\text{VP1}]\!]^g)$$

$$= \left\{ \begin{array}{l} [\![\textit{only}]\!]^g\ ([\![\text{VP1}]\!]^{g,h})_{\langle\langle e,t\rangle,t\rangle}\ (\lambda\text{y. y attended the dinner}) \\ [\![\textit{only}]\!]^g\ ([\![\text{VP1}]\!]^{g,h})_{\langle\langle e,t\rangle,t\rangle}\ (\lambda\text{y. y attended the concert}) \\ \ldots \end{array} \right\}$$

Only takes as its quantificational domain the set of alternatives derived via the wh-phrase $\Rightarrow$ F-WH association

More quick predictions

Focus intervention is independent of the linear order of the WH and the focused phrase

(24) a. *? **Zhiyou** yanjiu *shenme* de jiaoshou$_F$ dong xiexing
only study what DE professor know cuneiform
wenzi?
script
'What is the thing x such that only [professors]$_F$ who study x know cuneiform script.'

b. ?* Ta **shi** zai *nali* xue yingwen$_F$, er bu shi fawen?
he SHI at where study English and not SHI French
'What was the place x such that it is [English]$_F$, not French, that he studied at x?'

Association with multiple WH

A focus-sensitive operator can be associated with multiple wh-phrases.

(25) Ta **zhi** [$_{VP}$ song-le *shei shenme shu*]?
he only send-Asp who what book
'Who was the person x and what was the book y such that he only sent x y?'

(26) Ta **hai** [$_{VP}$ song-le *shei shenme shu*]?
he also send-Asp who what book
'Who was the person x and what was the book y such that he also sent x y?'

(27) Ta **zhi** [$_{VP}$ song-le *shei shenme shu*]?
he only send-Asp who what book

a. $[\![\text{VP}]\!]^{g} = [\![\text{VP}]\!]^{g,h} =$ (see also Hagstrom 1998)
$\{\lambda$y. y sent x z $\mid [\![\textit{who}]\!]^{g} \times [\![\textit{what book}]\!]^{g}\ \} =$
$\{\lambda$y. y sent Peter a novel,λy. y sent John a journal, ...$\}$
$\Rightarrow$ a set of properties

b. $[\![\textit{only}\ \text{VP}]\!]^{g} =$

$$\left\{ \begin{array}{l} \lambda\text{y.}\underline{\forall\text{P}\in\ [\![\text{VP}]\!]^{g,h}}\ [\text{P(y)}\rightarrow\text{y sent Peter a novel}\subseteq\text{P(y)}] \\ \lambda\text{y.}\underline{\forall\text{P}\in\ [\![\text{VP}]\!]^{g,h}}\ [\text{P(y)}\rightarrow\text{y sent John a journal}\subseteq\text{P(y)}] \\ \ldots \end{array} \right\}$$

Generalized focus intervention

Other expressions denoting sets of alternatives in the ordinary dimension:

- Non-interrogative wh-phrases (Kratzer and Shimoyama 2002)
- Disjunctive phrases (Simons 2005)

Do they exhibit focus intervention?

Non-interrogative *wh*-phrases

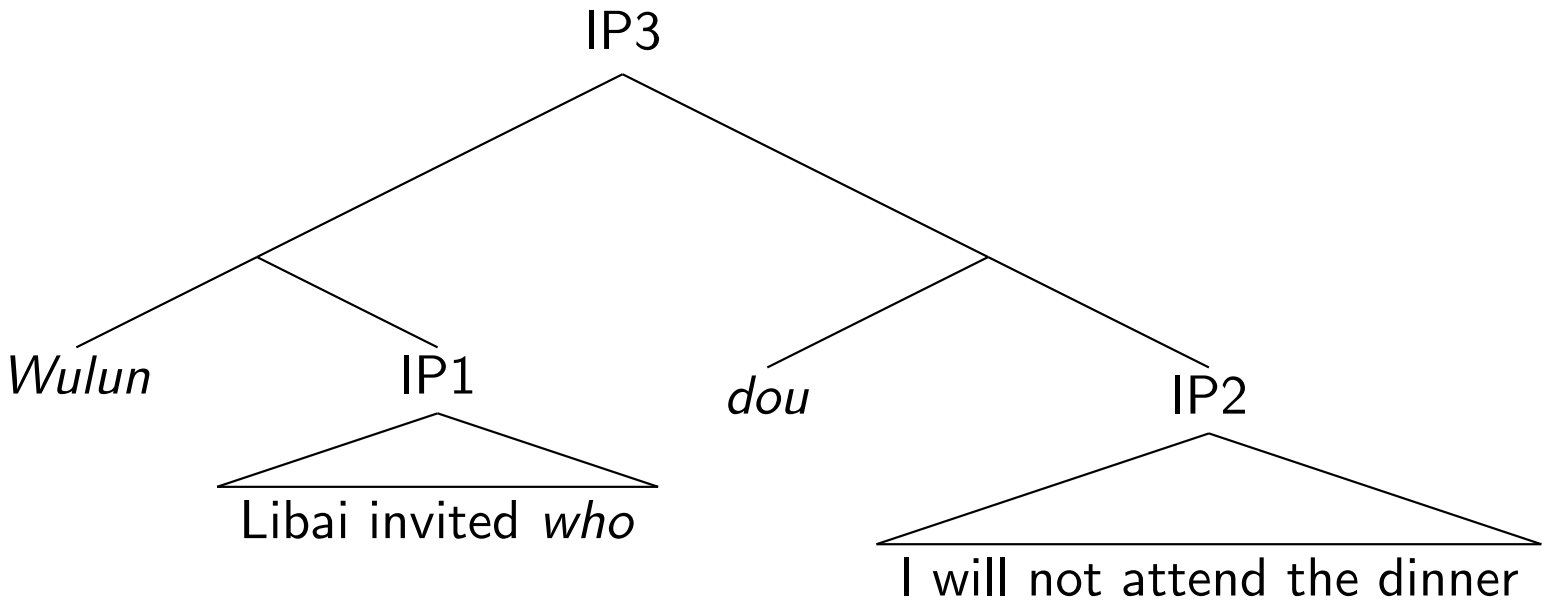
Non-interrogative *wh*-phrases

- Introduce sets of ordinary alternatives, just like their interrogative counterparts (Kratzer and Shimoyama 2002)
- The alternatives are subject to closure by alternative-sensitive operators
  - Universal closure
  - Existential closure

Non-interrogative *wh*-phrases with a universal closure

(28) [IP3 Wulun [IP1 Libai yaoqing *shei*], [IP2 wo dou
no.matter Libai invite who, I DOU
bu hui chuxi wanyan]].
not will attend dinner
'No matter who Libai invites, I will not attend the dinner.'

(29)



(30) a. $[\![\textit{shei}]\!]^g = \{\text{John, Mary}\}$

b. $[\![\text{IP1}]\!]^g = \{\lambda w.\text{invites}_w(\text{Libai}, x) \mid x \in [\![\textit{shei}]\!]^g\}$

c. $[\![\textit{wulun } \alpha \textit{ dou } \beta]\!]^g = \lambda w.\forall p \in [\![\alpha]\!]^g\ [p(w) \rightarrow [\![\beta]\!]^g(w)]$

d. $[\![\text{IP2}]\!]^g = \lambda w.\forall p \in [\![\text{IP1}]\!]^g\ [p(w) \rightarrow \neg\ \text{will-attend}_w(\text{I, the dinner})]$

Focus intervention

(31) ?* Wulun ta **zhi** yaoqing-le [Libai]$_F$ chuxi *shenme*
no.matter he only invite-Asp Libai attend what
huodong, wo dou hui daochang.
activity I DOU will go
'No matter which activity x such that he only invited [Libai]$_F$ to attend x, I will go.'

F-WH association

(32) Wulun Libai **zhi** yaoqing-le *shei* chuxi wanyan,
no.matter Libai only invite-Asp who attend dinner
wo dou hui daochang.
I DOU will go
'No matter who is the person *x* such that Libai only invited *x*, I will go.'

Non-interrogative *wh*-phrases with an existential closure

(33) $[_{\text{IP3}}$ keneng $[_{\text{IP2}} \exists [_{\text{IP1}}$ Libai chi-le *shenme dongxi*]]]
possibly Libai eat-Asp what thing
'Perhaps Libai ate something.'

(34) a. $[\![\text{IP1}]\!]^g = \{\lambda w.\text{ate}_w(\text{Libai}, x) \mid x \in [\![\textit{shenme dongxi}]\!]^g\}$

b. $[\![\text{IP2}]\!]^g = \lambda w.\exists p\ [p \in [\![\text{IP1}]\!]^g \wedge p(w)]$

c. $[\![\text{IP3}]\!]^g = \lambda w.\exists w'\ [w' \in \xi_w \wedge \exists p\ [p \in [\![\text{IP1}]\!]^g \wedge p(w')]]$,
where ξ is the set of worlds epistemically accessible from w

The location of applying ∃ is flexible

(35) a. Keneng Libai mei zuodui *shenme ti* ba.
possibly Libai not answer.correctly *what* *problem* SFP

b. [$_{IP}$ possibly Libai not [∃ [$_{VP}$ correctly answer what problem]]]
≈ It is possible that Libai didn't solve any (significant) problem.

c. [$_{IP2}$ possibly [∃ [$_{IP1}$ Libai not correctly answer what problem]]]
≈ It is possible that there is some problem that Libai didn't solve.

Availability of ∃ > *not*

(36) Keneng Libai mei zuodui *shenme ti* ba. Wo
possibly Libai not answer.correctly what problem SFP I
kan bu shi daishu ti jiu shi jihe ti.
think not SHI algebra problem just SHI geometry problem
'It is possible that there is some problem that Libai didn't solve. I think it's either algebra or geometry.'

When a focus-sensitive operator and its associate precedes *not*, $\exists > \textit{not}$ is unavailable

(37) a. Keneng **zhiyou** Libai$_F$ mei zuo-dui *shenme* *ti* ba.
possibly only Libai not answer.correctly what problem SFP

b. [possibly **only** Libai$_F$ [$\exists$ [not answer.correctly *what problem*]]]
$\approx$ It is possible that only Libai$_F$ didn't solve any problem.

c. ?* [possibly [$\exists$ [**only** Libai$_F$ not answer.correctly *what problem*]]]
$\approx$ It is possible that there is some problem that only Libai$_F$ didn't solve.

(38) Keneng **zhiyou** Libai$_F$ mei zuo-dui *shenme*
possibly only Libai not answer.correctly what
ti ba. # Wo kan bu shi daishu ti jiu
problem SFP I think not SHI algebra problem just
shi jihe ti.
SHI geometry problem
Intended: 'It is possible that there is some problem that only Libai$_F$ didn't solve. I think it's either algebra or geometry.'

Disjunctive phrases in declarative sentences

Disjunctive phrases can be modeled after Hamblin semantics, introducing sets of alternatives (Simons 2005)

(39) Peter introduced John to $[_{\text{DisjP}}$ *Mary or Sue*].

(40) a. $[_{\text{IP2}} \exists [_{\text{IP1}}$ Peter introduced John to $[_{\text{DisjP}}$ *Mary or Sue*]]]

b. $[\![\text{DisjP}]\!]^g = \{\text{Mary, Sue}\}$

c. $[\![\text{IP1}]\!]^g = \{\lambda w.\text{introduce}_w(\text{Peter, John, } x) \mid x \in [\![\text{DisjP}]\!]^g\}$

d. $[\![\text{IP2}]\!]^g = \lambda w.\exists p\ [p \in [\![\text{IP1}]\!]^g \wedge p(w)]$

Disjunctive phrases enter into scopal interaction

(41) a. Mary is looking for $[_{\text{DisjP}}$ *a maid or a cook*].

b. Mary is looking for x, x is a maid or x is a cook

c. Mary is looking for a maid or Mary is looking for a cook, (but I don't know which).

(42) Peter introduced John to [$_{\text{DisjP}}$ *Mary or Sue*]. But I'm not sure which.

Focus intervention

(43) a. Perter **only** introduced $\underline{\text{John}}_F$ to [$_{\text{DisjP}}$ *Mary or Sue*].
?*But I'm not sure which.
$\approx$ [$\exists$ [Peter [$_{\text{VP2}}$ **only** [$_{\text{VP1}}$ introduced $\underline{\text{John}}_{F1}$ to [$_{\text{DisjP}}$ *Mary or Sue*]]]]]

b. **Only** $\underline{\text{Peter}}_F$ introduced John to [$_{\text{DisjP}}$ *Mary or Sue*].
?*But I'm not sure which.
$\approx$ [$\exists$ [$_{\text{IP2}}$ **Only** [$_{\text{IP1}}$ $\underline{\text{Peter}}_{F1}$ introduced John to [$_{\text{DisjP}}$ *Mary or Sue*]]]]

F-Alt association

(44) a. Peter **only** introduced John to $[_{\text{DisjP}}$ *Mary or Sue*$]_F$.
But I'm not sure which one.

b. Peter **only** introduced $[_{\text{DisjP}}$ *John or Paul*$]_F$ to Mary.
But I'm not sure which one.

Disjunctive phrases in alternative questions

Assume that the compositional analysis of alternative questions follows Hamblin semantics (von Stechow 1991; Biezma and Rawlins 2012; see also Beck and Kim 2006).

(45) a. $[_{CP}$ Did John $[_{DisjP}$ dance or sing]]?

b. $[\![DisjP]\!]^g = \{\lambda$y. y danced, λy. y sang$\}$

c. $[\![CP]\!]^g = \{$John danced, John sang$\}$

In this framework, disjunctive phrases in alternative questions have the same ordinary semantic value as *wh*-phrases in Mandarin *wh*-in-situ questions. Consequently, our analysis predicts the following contrast:

(46) a. ?* [Q ... **focus-sensitive op.** [$\underline{\text{XP}}_F$ ... *DisjP* ...]]

b. [Q ... **focus-sensitive op.** [... *DisjP* ...]]
$\Rightarrow$ **Association with alternatives**
F-Alt association

(47) Focus intervention effects (Beck and Kim 2006: 172)

a. ?* Did **only** Mary$_F$ introduce Sue [$_{DisjP}$ *to Bill or (to) Tom*]?

b. ?* Did **only** Mary$_F$ introduce [$_{DisjP}$ *Sue or Molly*] to Bill?

c. ?* Did **only** John$_F$ drink [$_{DisjP}$ *coffee or tea*]?

(48) F-Alt association

a. Did Mary introduce Sue **only** [$_{DisjP}$ *to Bill or (to) Tom*]?

b. Did Mary **only** introduce [$_{DisjP}$ *Sue or Molly*] to Bill?

c. Did John **only** drink [$_{DisjP}$ *coffee or tea*]?

Conclusion

Empirical advancement

- There is no 'intervention' in focus intervention constructions.
- Focus intervention is not confined to (wh-)questions.

Theoretical advancement

- Focus intervention can be made to follow from Alternative Semantics (Beck 2006)
- Alternatives along different dimensions interact to give rise to interesting grammatical phenomena, such as intervention effects.

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