

# Intervention Effects directly follow from Scope Rigidity in Turkish

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## 1 Introduction

- **Intervention** in *wh*-questions is a kind of *ordering restriction* that requires **wh-phrases** to follow elements called interveners (Hoji, 1985; Beck, 1996; Beck and Kim, 1997; Pesetsky, 2000; Tanaka, 2003; Beck, 2006; Cable, 2010; Branan, 2018; Kotek, 2019a, a.o.).

– Our focus: Intervention in Turkish (Beck and Kim, 1997; Keleşir, 2001; Kesen, 2010)

- (1) \*Parti-de hiçkimse **kim-le** konuş-ma-dı?  
party-LOC anybody<sub>NCI</sub> who-with talk-NEG-PST  
Int: Who is such that no one talked to them at the party?      ✗ intervener >> **wh**
- (2) Parti-de **kim** hiçkimse-yle konuş-ma-dı?  
party-LOC who anybody<sub>NCI</sub>-with talk-NEG-PST  
Who is such that they talked to no one at the party?      ✓ **wh** >> intervener

- Descriptively, intervention appears to be a phenomenon concerning *wh*-in-situ.
  - since *wh*-in-situ is typically island-insensitive, prominent semantic theories link intervention to the way grammar is assumed to generate ‘island-insensitive *wh*-in-situ’
  - Two kinds of semantic analyses where *wh*-phrases are interpreted in-situ:
    - \* *wh*-phrases lack normal semantic values (Beck, 2006; Cable, 2010; Kotek, 2014, a.o.)  
**intervention** ↔ if a *wh*-phrase is in the immediate scope of an operator that requires the normal semantic value of its prejacent
    - \* incompatibility of  $\lambda$ -abstraction with pointwise composition [Shan (2004)]  
**intervention** ↔ [  $\lambda \alpha$  ] where  $\llbracket \alpha \rrbracket^f$  is a non-singleton set  
(Erlewine and Kotek, 2017b; Kotek, 2019a)

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\*This paper is largely based on a brief discussion that appears in my dissertation, (Demirok, 2019). I gratefully acknowledge all the people that I acknowledge there. In addition, I gratefully acknowledge the audience at Tu+6 where an earlier version of this paper was presented. All errors are solely my own.

- Recent work: cyclic scope-taking can derive exceptional wide scope and exceptional *de re*. (Charlow, 2004, 2020; Elliott, 2015; Elliot and Sauerland, 2019; Demirok, 2019; Elliot, 2021)

**So: possibly, grammar doesn't have a special way to interpret in-situ wh-phrases.**

- In that case, a **scopal** account of *wh*-phrases will need to do (Heim, 2000; Elliott, 2015)
- Importantly, this opens up the possibility of another hypothesis on intervention:

(3) **Hypothesis on Intervention**  
the 'ordering restriction' that we call intervention is Scope Rigidity.

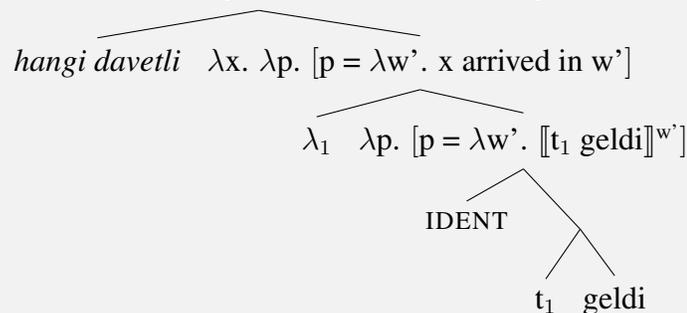
⇒ if *wh*-phrases are scope-takers, they may also be subject to Scope Rigidity!

• Background assumption on the way wh-phrases take scope

Heim (2000): *wh*-phrases move above IDENT, which derives a Hamblin set

(4) a. Hangi davetli geldi?  
Which guest arrived?

b.  $\lambda p. \exists x: \text{guest}(x) \ \& \ [p = \lambda w'. \ x \text{ arrived in } w']$



(5) a.  $[[\text{IDENT}]]^w = \lambda p_{\langle s, t \rangle}. [\lambda q. q = p]$

b.  $[[\text{hangi}]]^w = [[\text{which}]]^w = \lambda f. \lambda R_{\langle e, \langle st, t \rangle \rangle}. \lambda p. \exists x: f(x)=1 \ \& \ R(x)(p)=1$

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note<sub>1</sub>: there are alternative scopal implementations: e.g. Fox (2012); Dayal (2016)

note<sub>2</sub>: we need to upgrade our baseline scopal account by defining type-flexible functions that make cyclic-scope taking possible (Charlow, 2020). [See: Appendix-1]

## 2 How do we get intervention from Scope Rigidity?

- Scope Rigidity := inverse scope is not available.

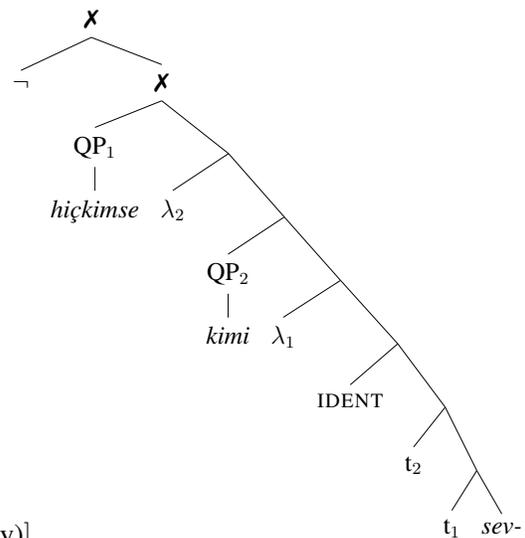
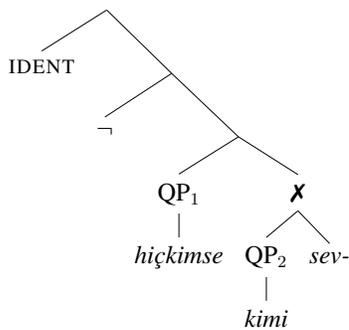
– QP<sub>2</sub> cannot scope above QP<sub>1</sub> ⇒ lack of ambiguity (Keleşir, 2001; Özyıldız, 2017)

(6) [QP<sub>1</sub> *bi çocuk*] [QP<sub>2</sub> *her elmayı*] *yedi*  
 a child every apple ate  
 =  $\exists x \text{ child}(x) \ \& \ \forall y \text{ apple}(y) \rightarrow \text{ate}(y)(x)$  ⇐ SURFACE SCOPE  
 ≠  $\forall y \text{ apple}(y) \rightarrow \exists x \text{ child}(x) \ \& \ \text{ate}(y)(x)$  ⇐ INVERSE SCOPE

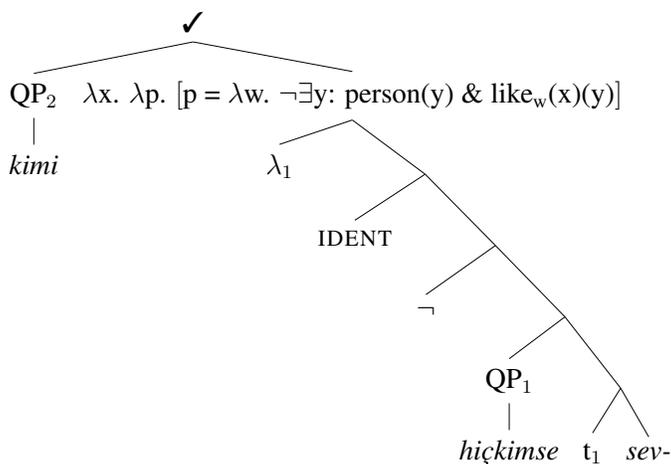
– QP<sub>2</sub> cannot scope above QP<sub>1</sub> ⇒ so-called **intervention**

(7) \*<sub>[QP<sub>1</sub> *hiçkimse*] [QP<sub>2</sub> *kimi*] *sev-m-iyor?*  
 anybody<sub>NCI</sub> who.ACC like-NEG-IMP  
 = (no interpretation is derived) ⇐ SURFACE  
 ≠  $\lambda p. \exists x: \text{person}(x) \ \& \ [p = \lambda w. \neg \exists y: \text{person}(y) \ \& \ \text{like}_w(x)(y)]$  ⇐ INVERSE</sub>

- surface scope logical forms: QP<sub>1</sub> >> QP<sub>2</sub>



- inverse scope: QP<sub>2</sub> >> QP<sub>1</sub>



### 3 Intervention is parasitic on rigid interpretation of order

Kotek (2019): intervention is obviated by

(i) covert *wh*-movement past the intervener (in English)

(ii) reconstruction of the intervener below the *wh*-phrase [see: Appendix-2] (in Japanese)

⇒ neither of these options are available when intervention is present.

- overtly moving a **wh-phrase** past an intervener **obviates** intervention

- (8) a. \*Parti-de hiçkimse **kim-le** konuş-ma-dı?  
 party-LOC anybody<sub>NCI</sub> who-with talk-NEG-PST
- b. Parti-de **kim-le** hiçkimse **t** konuş-ma-dı?  
 party-LOC who-with anybody<sub>NCI</sub> talk-NEG-PST  
 Who is such that nobody talked to them at the party?

- Given that (8a) is lacking an interpretation, we can infer that in Turkish,

*covert wh*-scrambling past an intervener is not possible -  
 this follows if **wh-phrases** in Turkish are scope-takers & scope-rigid.

- overtly moving an intervener past a **wh-phrase** **creates** intervention

- (9) a. Parti-de **kim** hiçkimse-yle konuş-ma-dı?  
 party-LOC who anybody<sub>NCI</sub>-with talk-NEG-PST  
 Who is such that they talked to nobody at the party?
- b. \*Parti-de hiçkimse-yle **kim** **t** konuş-ma-dı?  
 party-LOC anybody<sub>NCI</sub>-with who talk-NEG-PST

- Given that (9b) is lacking an interpretation, we can infer:

the intervener in (8a) cannot reconstruct to its base position below the *wh*-phrase.

- And we do have independent evidence that **wh-phrases** in Turkish are scope-rigid:
  - an embedded scope **wh-phrase** cannot precede a matrix clause QP  
 (See Tanaka (2003) for parallel data in Japanese)
  - the linear order between **wh-phrases** determines their relative scope  
 (See Richards (2000) for parallel data in Japanese)

(i) **embedded scope wh cannot precede matrix-scope QP**

- (10) [QP2 Kim-in] [QP1 hiçkimse] [t<sub>QP2</sub> gittiğini] bilmiyor  
who-GEN anybody<sub>NCI</sub> left know.NEG  
✓ ‘Who is such that nobody knows they left?’  
✗ ‘Nobody knows who left.’

- (11) [QP1 Hiçkimse] [QP2 kim-in] gittiğini bilmiyor = ✓ ‘Nobody knows who left.’

(ii) **wh-phrases are scope-rigid wrt each other**

- (12) Ben sana [QP1 kimin] [QP2 hangi filmi] izlediğini söyledim  
I you who.GEN which movie.ACC watched tell.PST.1  
✓ ‘I told you who watched which movie.’ both embedded scope  
✓ ‘Who did I tell you *t* watched which movie?’ both matrix scope  
✓ ‘Who is such that I told you which movie they watched?’ QP1 matrix scope  
✗ ‘Which movie is such that I told you who watched it?’ \*QP2 matrix scope

the unavailable reading becomes possible (albeit somewhat marginally) if QP2 precedes QP1

- (13) ?Ben sana [QP2 hangi filmi] [QP1 kimin] t<sub>QP2</sub> izlediğini söyledim  
✓ ‘Which movie is such that I told you who watched it?’ ✓ QP2 matrix scope

## 4 What will be an intervener?

- Recall: uninterpretability arises because a **wh-phrase** fails to take inverse scope
- **Basic Prediction:** if a QP cannot take scope above a wh-phrase, then it cannot precede it. (if it does precede it, the string will be uninterpretable)

Group 1: Quantifiers that scope below negation

- The NCI *hiçkimse*, NPI *herhangi biri* and the universal quantifier *herkes* all need to scope below negation in Turkish (Keleşir, 2001).
- Since  $\neg$  cannot scope above the wh-phrase, no logical form for surface scope is interpretable in (7), (14), and (15). All become good if QP<sub>2</sub> precedes QP<sub>1</sub>.

- (14) \*<sub>[QP1 herhangi biri]</sub> [<sub>QP2 kimi</sub>] sev-m-iyor?  
anybody<sub>NPI</sub> who.ACC like-NEG-IMPF  
= (no interpretation is derived) ⇐ SURFACE  
≠  $\lambda p. \exists x: \text{person}(x) \ \& \ [p = \lambda w. \neg \exists y: \text{person}(y) \ \& \ \text{like}_w(x)(y)]$  ⇐ INVERSE

- (15) \*<sub>[QP1 herkes]</sub> [<sub>QP2 kimi</sub>] sev-m-iyor?  
everybody who.ACC like-NEG-IMPF  
= (no interpretation is derived) ⇐ SURFACE  
≠  $\lambda p. \exists x: \text{person}(x) \ \& \ [p = \lambda w. \neg \forall y: \text{person}(y) \rightarrow \text{like}_w(x)(y)]$  ⇐ INVERSE

Group 2: Focus particles: *da* ‘too’ , *sadece* ‘only’ , *bile* ‘even’

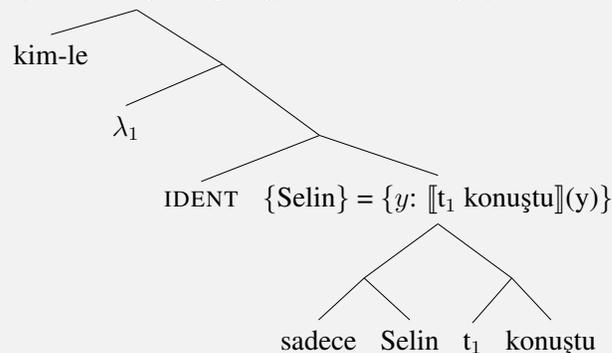
- These focus particles can be taken to create scope-takers when they combine with a DP.
- As they need to scope inside the question nucleus, they cannot precede the wh-phrase.

- (16) \* $[_{QP_1}$  sadece Selin]  $[_{QP_2}$  kim-le] konuştu?  
 only Selin who-with talk.PST  
 = (no interpretation is derived)  $\Leftarrow$  SURFACE  
 $\neq$  Who is such that only Selin talked to them?  $\Leftarrow$  INVERSE
- (17) \* $[_{QP_1}$  Selin de]  $[_{QP_2}$  kim-le] konuştu?  
 Selin too who-with talk.PST  
 = (no interpretation is derived)  $\Leftarrow$  SURFACE  
 $\neq$  Who is such that Selin, too, talked to them?  $\Leftarrow$  INVERSE
- (18) \* $[_{QP_1}$  Selin bile]  $[_{QP_2}$  kim-le] konuştu?  
 Selin even who-with talk.PST  
 = (no interpretation is derived)  $\Leftarrow$  SURFACE  
 $\neq$  Who is such that even Selin talked to them?  $\Leftarrow$  INVERSE

**scopal** treatment of *sadece*-phrases

see: Krifka (1991); Geurts and van der Sandt (2004); Sauerland (2018)

- (19)  $\lambda p. \exists x: \text{person}(x) \ \& \ [p = \lambda w. [\{\text{Selin}\} = \{y: \text{talked}_w(x)(y)\}]]$



- (20) a.  $[_{QP_1}$  hiçkimse]  $[_{QP_2}$  sadece Selin-le] konuş-ma-dı  
 anybody<sub>NCI</sub> only Selin-with talk-NEG-PST  
 ✓ Nobody is such that Selin is the only one they talked to.  $\Leftarrow$  SURFACE  
 ✗ Selin is the only one that nobody talked to.  $\Leftarrow$  INVERSE
- b.  $[_{QP_2}$  sadece Selin-le]  $[_{QP_1}$  hiçkimse] konuş-ma-dı  
 only Selin-with anybody<sub>NCI</sub> talk-NEG-PST  
 ✓ Selin is the only one that nobody talked to.  $\Leftarrow$  SURFACE  
 ✗ Nobody is such that Selin is the only one they talked to.  $\Leftarrow$  INVERSE

Other Cases: quantifiers that *can* precede wh-phrases

– Hypothesis: This may be possible when

- \* the preceding QP scopes higher than the question (in embedded contexts)  
(See Erlewine and Kotek (2017b); Kotek (2019a) for parallel observations in Japanese.)

- (21) Her öğrenci-nin hangi notu aldığı**n**ı biliyorum.  
every student-GEN which grade.ACC got I.know  
✓ For each student x, I know which grade x got.
- (22) Sadece Pelin-in hangi notu aldığı**n**ı biliyorum.  
only Pelin-GEN which grade.ACC got I.know  
✓ Pelin is the only x such that I know which grade x got.
- (23) Hiçbir öğrenci-nin hangi notu aldığı**n**ı bilmiyorum.  
any<sub>NCI</sub> student-GEN which grade.ACC got know.NEG.1SG  
✓ No student x is such that I know which grade x got.

- \* the preceding QP receives a non-scopal construal (e.g. plural individual).  
Hypothesis: not scopal → not subject to Scope Rigidity.

- (24) ✓two NP > **wh** ; ✓**wh** > two NP
- a. İki öğrenci hangi soruyu cevapladı?  
two student which question.ACC answered  
≈ ‘Which question is such that those/the two students answered it?’
- b. Hangi soruyu iki öğrenci cevapladı?  
which question.ACC two student answered  
≈ ‘Which question is such that exactly two students answered it?’
- (25) ✓all NPs > **wh** ; ✓**wh** > all NPs
- a. Bütün öğrenciler hangi soruyu cevapla-ma-dı?  
all students which question.ACC answer-NEG-PST-  
✓‘Which question is such that (all) students didn’t answer it?’  
✗‘Which question is such that not all students answered it?’
- b. Hangi soruyu bütün öğrenciler cevapla-ma-dı?  
✓‘Which question is such that (all) students didn’t answer it?’  
✓‘Which question is such that not all students answered it?’

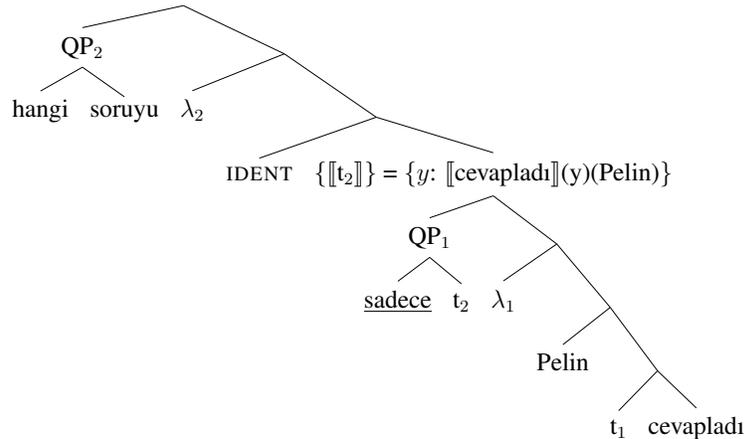
## 5 Nested QPs and Scope Rigidity

- In Turkish, a **wh-phrase** may appear embedded inside another QP and scope above it.
  - Un-nesting (i.e. scoping out the **wh-phrase**) derives the intended meaning

(26) Pelin [<sub>QP<sub>1</sub></sub> sadece [<sub>QP<sub>2</sub></sub> **hangi soruyu**] ] cevapladı?  
 Pelin only which question.ACC answered  
 ‘Which question x is such that Pelin only answered x?’

See: Li and Law (2014) for parallel data in Mandarin

(27)  $\lambda p. \exists x: \text{question}(x) \ \& \ [ p = \lambda w. [\{x\} = \{y: \text{Pelin answered } y \text{ in } w\}] ]$



- There is, of course, the question of whether this logical form is permissible for this string. The **wh-phrase** is scoped-out but does not linearly precede its host QP.
  - Notice that QP<sub>1</sub> starts out as dominating QP<sub>2</sub> but QP<sub>2</sub> ends up c-commanding QP<sub>1</sub>
  - Building on this peculiarity of un-nesting derivations, I tentatively suggest that Scope Rigidity is only relevant for the relative linearization of QPs where one *c-commands* the other in the first merge site. ( $\approx$  QP<sub>1</sub> is a linearization island?)
- Unfortunately, I cannot freely test this hypothesis against others because in Turkish when a DP contains another DP, their left edges align: [DP<sub>1</sub> [DP<sub>2</sub>] **D** NP ] due to a peculiar position for Determiners. RCs, PPs, even APs most naturally precede the determiner.

(28) Saldırıda [<sub>QP<sub>1</sub></sub> [<sub>QP<sub>2</sub></sub> hangi ülke-den] hiçbir temsilci] hayatını  
 attack.LOC which country-from any<sub>NCI</sub> representative their.lives  
 kaybet-me-di  
 lost-NEG-PST  
 ‘Which country x is such that no representative from x lost their lives in the attack?’  
 a. Saldırıda [Afganistan-dan hiçbir temsilci] hayatını kaybet-me-di  
 b. \*Saldırıda [**hiçbir** Afganistan-dan temsilci] hayatını kaybet-me-di

## Appendix - 1: deriving exceptional scope with cyclic-scope taking

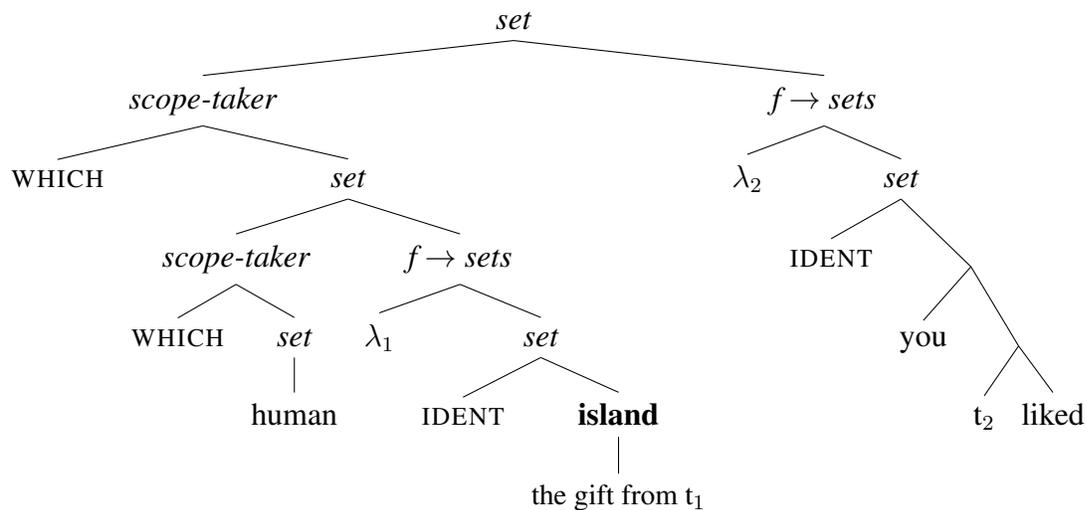
Charlow (2020) upgrading Heim (2000) proposes the following logic of cyclic scope-taking:

- (29) cyclic scope-taking involves a recursive procedure of
- forming sets via type-flexible IDENT
  - forming complex scope-takers out of sets via type-flexible WHICH  
 $\rightsquigarrow$  The output of the former can be input to the latter.

**syntax assumption:** wh-phrase moves to the edge of the island, and pied-pipes it.

- (30) [<sub>island</sub> **kim-den** gelen hediye-yi] beğen-di-n?  
 who-ABL come.REL gift-ACC like-PST-2  
 ✓‘Who<sub>1</sub> is such that you liked [the gift that came from them<sub>1</sub>]?’

logical form for (30):



- IDENT builds *sets*
- WHICH builds *scope-takers* that combine with functions into sets (notated above as  $f \rightarrow sets$ )

for discussion, see also: Elliott (2015); Demirok (2019)

Q: How does cyclic scope-taking interact with Scope Rigidity?

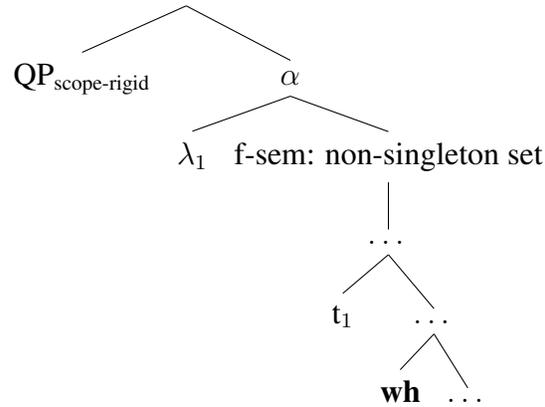
A: You expect overt island piped-piping. E.g. if island remains in-situ, we have intervention:

- (31) [<sub>island</sub> **kim-den**<sub>1</sub> gelen hediye-yi]<sub>2</sub> [sadece Pelin]<sub>3</sub> t<sub>2</sub> beğen-di?  
 who-ABL come.REL gift-ACC only Pelin like-PST  
 ✓‘Who<sub>1</sub> is such that only Pelin liked [the gift that came from them<sub>1</sub>]?’

## Appendix - 2: Reconstruction obviates intervention

- Erlewine and Kotek (2017a) argue that only scope rigid expressions cause intervention in Japanese. See also: Kotek (2019a); Erlewine and Kotek (2017b)
  - the intervention effect is attributed to the fact that there is no way to retrieve the correct set of functions for the meaning of  $\alpha$  (Shan, 2004).

(32)



- Crucially: if QP is not scope-rigid, it *can* syntactically reconstruct, in which case the trouble-causing  $\lambda$ -binder is not there. Hence, the claim that only scope-rigid QPs should cause intervention.
- Assumption: if a QP can scope below  $\neg$ , it's because it can reconstruct below  $\neg$ . i.e. QP is not scope-rigid.

(33) NP-P-only is scope-rigid; NP-only-P is not

- Taro-wa Hanako-to-dake hanasa-nak-atta.  
Taro-TOP Hanako-with-only talk-NEG-PST  
Lit: 'Taro didn't talk only with Hanako' (only >  $\neg$ , \* $\neg$  > only)
- Taro-wa Hanako-dake-to hanasa-nak-atta.  
Taro-TOP Hanako-only-with talk-NEG-PST  
Lit: 'Taro didn't talk with only Hanako' (only >  $\neg$ ,  $\neg$  > only)

(34) only NP-P-only causes intervention

- \*Taro-wa Hanako-to-dake nani-o tabe-ta-no?  
Taro-TOP Hanako-with-only what-ACC eat-PST-Q
- Taro-wa Hanako-dake-to nani-o tabe-ta-no?  
Taro-TOP Hanako-only-with what-ACC eat-PST-Q  
'What did Taro eat (only) with (only) Hanako?'

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