

### Quantificational DPs, Part 3: Covert Movement vs. Type Shifting <sup>1</sup>

#### 1. Introduction

Thus far, we've considered two competing analyses of sentences like those in (1).

#### (1) Sentences Where a Quantificational DP is not in Subject Position

- a. Barack likes every boy.
- b. Joe likes some boys.

#### (2) The Movement Account (Syntactic Account)

While sentences like those in (1) are *pronounced* with the quantificational DPs in object position, their semantics is derived from a more abstract structure where the quantificational DP has undergone (covert / silent / 'invisible' ) movement.

- a. *Pronounced Form:* / bəɹɪk lɑjks ɛvɹi bɔj /
- b. *Surface Structure:* [ Barack [ likes [ every boy ] ] ]
- b. *Logical Form:* [ [ every boy ] [ 1 [ Barack likes  $t_1$  ] ] ]

#### (3) The Type-Shifting Account (Semantic Account)

In sentences like (1), the quantificational DP is *not* of type  $\langle et, t \rangle$ , but of type  $\langle eet, et \rangle$ . There is a phonologically empty type-shifting operator (SHIFT<sub>QD</sub>) which can combine with the determiner *every* to create a derived  $\langle et, \langle eet, et \rangle \rangle$  determiner.

$$[[ \text{SHIFT}_{\text{QD}} ] ] = [ \lambda d_{\langle et, \langle et, t \rangle \rangle} : [ \lambda g_{\langle et \rangle} [ \lambda f_{\langle eet \rangle} [ \lambda y_e : \mathbf{d}(g)( [ \lambda z_e : \mathbf{f}(z)(y) = \mathbf{T} ] ) ] ] ] ] ]$$

#### (4) Burning Question

Is there any way to empirically decide which of these analyses is correct?

#### (5) The Truth

- There is no obvious answer as to which is the better of the two analyses.
- Both analyses face problems, but the problems they face are different.
- Both analyses have been adjusted to deal with the sorts of problems they face, to the point that the debate is really over entire *frameworks* (or 'world-views', really...)

<sup>1</sup> These notes are based upon the material in Heim & Kratzer (1998: 193-238).



## 2.2 Pronominal Binding

In the last unit, we saw that sentences like (10a) can receive a ‘bound reading’ like that in (10b).

### (10) Binding by Quantificational Subjects

- a. Dave gave every man his favorite book.
- b. For all  $x$ , if  $x$  is a man, then Dave gave  $x$ ’s favorite book to  $x$ .

We also saw that, under our theory of binding, we could only derive the ‘bound reading’ in (10b) from the movement LF in (11a).

- Even if we have a type-shifter like (8), the non-movement LF in (11b) will only be assigned the referential reading.

### (11) Movement and Binding

- a. *LF Receiving the Bound Reading of (10a)*  
[ [Every man] [ **1** [ Dave gave  $t_1$  [ **his**<sub>1</sub> favorite book ] ] ] ]
- b. *LF Receiving the Referential Reading of (10a)*  
[ Dave gave [every man]<sub>1</sub> [ **his**<sub>1</sub> favorite book ] ]

### (13) The Challenge for the Type-Shifting Account

- It looks like we need to assume some variety of ‘invisible movement’ in order to obtain the bound-reading of (10a).
- So, why not suppose that such movement is also at play in examples like (1)?

### (14) The Obvious Answer to the Challenge: A Different Syntax/Semantics for Binding

The challenge in (13) stems from the assumption that only *movement* can introduce the lambda operators that effectuate pronominal binding...  
... so maybe we’re just wrong about that...

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## 2.3 Antecedent Contained Deletion (The ‘Gold Standard’)

*For many folks, the key empirical argument for covert movement of quantificational DPs is the phenomenon of ‘Antecedent Contained Deletion’.*

### (15) Initial Observation Regarding VP-Ellipsis

Ellipsis of a VP can only take place if there is some ‘matching VP’ in the context.

- a. Dave **went to school**, and I did too. (= I **went to school**.) ( $\neq$  I **went to work** )

If the generalization in (15) is correct, then what are we to make of the following sentences?

(16) **Antecedent Contained Deletion (ACD)**

- a. Dave read every book Phil did.
- b. Dave saw something Phil didn't.

(17) **The Nature of The Elided VPs**

If we were to 'spell out' the elided VPs in (16), they would intuitively be the following.

- a. Dave read every book Phil [ **read  $t_1$**  ]
- b. Dave saw something Phil didn't [ **see  $t_1$**  ]

(18) **The Crucial Question**

Where is the 'matching VP' in (16)/(17)? In the surface forms in (17), there is no other VP of the form '[ read/saw  $t_1$  ]'!

(19) **The Solution (Movement Account)**

The movement account provides a solution to the puzzle in (18). Note that the LFs derived from the surface forms in (17) would have to be as follows:

- a. [ [ every book [ Phil [ **read  $t_1$**  ] ] ] [ 2 [ Dave [ **read  $t_2$**  ] ... ]
- b. [ [ something [ Phil didn't [ **see  $t_1$**  ] ] ] [ 2 [ Dave [ **saw  $t_2$**  ] ... ]

Key Observations

- The LFs in (19) will be assigned the correct T-conditions for (16)/(17)
- **In these LFs, there is a VP which 'matches' the elided VP in the relative clause! Namely, the VP created by (covert) movement of the quantificational DP!**

(20) **The Challenge (For the Type-Shifting Account)**

- Because the movement account hypothesizes that the quantificational DPs in (16)/(17) undergo covert movement, that account automatically generates a possible antecedent for the ellipsis in (16).
- Under the type-shifting account, the quantificational DPs do *not* undergo movement from the VP at any stage of the derivation...  
... so the question remains: *where is the matching VP that licenses the ellipsis?*

(21) **A Possible Response to the Challenge (Jacobson 1998)**

- It is possible to analyze ‘ACD’ sentences like (16) as cases of *verb* ellipsis, and not VP ellipsis.
  - If this kind of analysis is correct (and that’s where the debate lies), then (16) is not a problem for a type-shifting account
    - That is, we only need to find the ‘matching’ verb *read/saw*, and so we don’t need to have a trace in the matrix VP.
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**2.4 Inverse Scope**

A classic observation about sentences like (22a) is that they are ambiguous, and admit of both the readings in (22b) and (22c).

(22) **Inverse Scope in English**

- a. A girl likes every boy.
- b. ‘Surface Scope’ Reading  
**There is some x** such that x is a girl and **for all y**, if y is a boy, then x likes y
- (i) *Verifying Scenario*: Mary likes Bill, Tom, and Dave.
- (ii) *Falsifying Scenario*: Mary likes Bill, but not Tom and Dave.  
Sue likes Tom and Dave, but not Bill.
- c. ‘Inverse Scope’ Reading  
**For all y**, if y is a boy, then **there is some x** such that x is a girl and x likes y.
- (i) *Verifying Scenario*: Mary likes Bill, but not Tom and Dave.  
Sue likes Tom and Dave, but not Bill.

(23) **Key Observation**

Our movement account predicts the existence of the ‘inverse scope’ reading in (22c).

- Our movement account would predict the following is a possible LF structure for sentence (22a):

$[S' [DP \text{ every boy } ] [S' 1 [S \text{ a girl likes } t_1 ] ] ]$

- The structure above will be computed to have the T-conditions in (22c) (Exercise for the reader)



## 2.5 Constraints on Quantifier Scope

The following is a central prediction of the movement-based account:

### (32) The Movement-Scope Generalization

If *general principles of movement* prevent a DP in a sentence S from moving to a position above X, then S will not admit of an interpretation where DP has scope above X.

#### Why Does the Generalization Hold?

- Suppose that DP is in a position in S where it can't move to XP (for reasons relating to general principles of movement)

[S ... [XP ... X ... [YP ... DP ... ] ... ]



- (All things being equal), it follows that DP can't move to XP *covertly* either. Consequently, S can't be interpreted as if DP has scope over X.

### (33) Illustration: Complex NP Islands

General principles entail that movement cannot extract from the modifier of an NP.

- a. \* No boy, Dave knows a woman in love with.

Consequently, the movement theory predicts that (33c) is not a possible LF for (33b).

- b. Dave knows a woman in love with no boy.  
 c. [ [ No boy ] [ 1 [ Dave knows a woman in love with  $t_1$  ] ] ]

Thus, the theory correctly predicts that (33b) *does not* have a reading with the T-conditions in (33d).

- d. There is no x such that x is a boy and Dave knows a woman in love with x.

#### How Do We Know That (33d) is Not a Reading of (33b)?

If it were a reading, then (33b) could be understood as true in the following scenario, and this doesn't seem to be the case.

*Verifying Scenario for (33d):*

Dave knows a man in love with Mary  
 Dave knows a girl in love with Frank  
 Dave knows a dog in love with John.  
 Done doesn't know any woman.

(34) **Illustration: Adjunct Islands**

General principles entail that movement cannot extract something from a clausal adjunct.

- a. \* No boy, Dave went home before seeing.

Consequently, the movement theory predicts that (34c) is not a possible LF for (34b).

- b. (??) Dave went home before seeing no boy.  
c. [ [ No boy ] [ 1 [ Dave went home before seeing  $t_1$  ] ]

Thus, the theory correctly predicts that (34b) *does not* have a reading with the T-conditions in (34d).

- d. There is no x such that x is a boy, and Dave went home before seeing x.  
(= Dave didn't go home until he saw every boy.)

How Do We Know That (34d) is Not a Reading of (34b)?

As indicated above, under the reading in (34d), sentence (34b) would be equivalent to the statement that Dave didn't go home until he saw *every boy*...

... and it's just really hard to construe sentence (34b) as meaning that...

(35) **Illustration: Wh-Islands**

General principles entail that movement cannot extract something from a wh-clause.

- a. \* This book, Dave knows who to give to.

Consequently, the movement theory predicts that (35c) is not a possible LF for (35b).

- b. Dave knows who to give no book to.  
c. [ [ No book ] [ 1 [ Dave knows who to give  $t_1$  to ] ] ]

Thus, the theory correctly predicts that (35b) *does not* have a reading with the T-conditions in (35d).

- d. There is no x such that x is a book and Dave knows who to give x to.

How Do We Know That (35d) is Not a Reading of (35b)?

- The truth-conditions in (35d) are consistent with the following statement:  
*Dave does not know what to give to anybody.*
- However, sentence (34b) doesn't seem consistent with that statement.
  - That is, (34b) strongly implies that there's a person x such that Dave knows to give no book to x.

(36) **The Criticism (for Type-Shifting Account)**

- The movement account straightforwardly predicts the generalization in (32) and thus the data in (33)-(35).
- It's not at all clear how the type-shifting account can capture the overall generalization in (32).

(37) **A Counter-Criticism (for the Movement Account)**

As we will see in a moment, the parallels between (i) the constraints on overt movement, and (ii) the constraints on the possible scopes of a DP, are not necessarily as close as the movement account predicts in (32)...

- a. There seem to be cases where a quantificational DP can have scope over positions that it *shouldn't* be able to move to.
- b. There seem to be cases where a quantificational DP *can't* have scope over positions that it *should* be able to move to.

(And there are type-shifting accounts that are able to capture *some* of the parallels above...  
...all the parallels above show is that 'long-distance dependencies' and scope share some of the same mechanisms... *but that mechanism isn't necessarily 'movement'...*)

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**3. Some Challenges to the Movement Account**

We will now take a look at some challenges that the movement account faces. Interestingly, while the type-shifting account seems to be immune to one of these challenges, it isn't obviously immune to all of them...

**3.1 DPs Scoping Out of Subjects**

Consider the sentence in (38a); it seems to have the T-conditions in (38b).

(38) **A DP Scoping Out of the Subject**

- a. An apple in every basket was rotten.
- b. **For every x**, if x is a basket, then **there is a y** such that y is an apple in x, and y was rotten.

In order to derive the observed T-conditions in (38b), the movement-account must (it seems) allow for the LF in (39a) to be derived from the SS in (38a)....

... However, as illustrated in (39b), general principles of movement are generally taken to preclude extraction from subjects.

(39) **Necessary Appeal to Illicit Extraction From Subjects**

- a. The LF that Reading (38b) Requires:  
[<sub>S'</sub> [ every basket ] [<sub>S'</sub> 1 [<sub>S</sub> [<sub>DP</sub> an apple in  $t_1$  ] [<sub>VP</sub> was rotten ] ] ] ]
- b. Extraction from Subjects is Generally Impossible  
\* Every basket, an apple in was rotten.

(40) **The Solutions (for the Movement Account)**

- a. Conclusion 1:  
Maybe, for some reason, subjects don't function as islands for *covert* movement?
- Problem:* At the moment, it's an unprincipled, stipulative weakening of the theory of movement.
- b. Conclusion 2:  
Maybe the DP in (38a) isn't moving **out** of the subject, but only to the **edge** of the subject? (See Heim & Kratzer (1998: 230-235))
- Problem:* This will still not result in an interpretable structure, unless you assume some kind of type-shifting of *every basket* takes place.  
... in which case, why not suppose that such type-shifting operators also account for sentences like (1)...

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3.2 **DPs Scoping Out of Finite Clauses**

(41) **Observation 1: Overt Movement from Finite Clauses is Easy**

English readily allows for phrases to be overtly moved out of finite clauses.

- a. Dave, I knew that Mary liked.

(42) **Observation 2: Scoping Out of Finite Clauses is Hard**

Generally speaking, it's 'hard' for a sentence containing a DP inside a finite subordinate clause to receive an interpretation where the DP has scope above the subordinate clause.

- a. Sentence: I knew that Mary liked no boy.
- b. Impossible Reading: There is no x such that x is a boy and I knew Mary liked x.  
(= 'I didn't know that Mary liked any boy')

Note:

- If (42b) were a reading of (42a), then (42a) could be understood as consistent with the statement "But, Mary did like some boy" (but it can't).

(43) **Observation 3: Scoping Out of Non-Finite Clauses is Easier**

Generally speaking, it's not very difficult for a sentence with a DP inside a *non-finite* clause to receive an interpretation where the DP has scope above the clause.

- a. Sentence: I wanted [ my sister to marry every one of her boyfriends ]
- b. Possible Reading:  
For all y, if y is a boyfriend of my sister, then I wanted my sister to marry y.

(44) **The Challenge (for the Movement Account)**

If the reading in (43b) of (43a) is generated via covert movement of the DP *no boy* to a position above the matrix subject...

... and if such movement from a *finite* clause as in (41a) is possible in general...

... then **why isn't (42b) a possible reading for (42a)??**

(45) **Solution (for the Movement Account)**

Maybe, for some reason, covert movement can't take place across finite clauses?

- *This would make sense if the covert movement of quantificational DPs were a type of so-called 'A-movement' (rather than 'A-bar movement').*  
[Ask a syntactician for more details...]

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### 3.3 DPs Scoping Below Negation

A classic observation about sentences like (46a) is that they are ambiguous, and admit of both the readings in (46b) and (46c).

(46) **Scoping Above and Below Negation**

- a. Dave didn't see a dog.
- b. 'Wide Scope' Reading of A Dog  
There is an x such that x is a dog and Dave didn't see x.  
(True if there is some particular dog – Snoopy – which Dave didn't see...  
Consistent with there being other dogs Dave *did* see...)
- c. 'Narrow Scope' Reading of A Dog  
It is not the case that there exists an x such that x is a dog and Dave saw x.  
(True only if Dave didn't see *any* dog...  
Inconsistent with there being any dog seen by Dave...)

(47) **Key Observation 1**

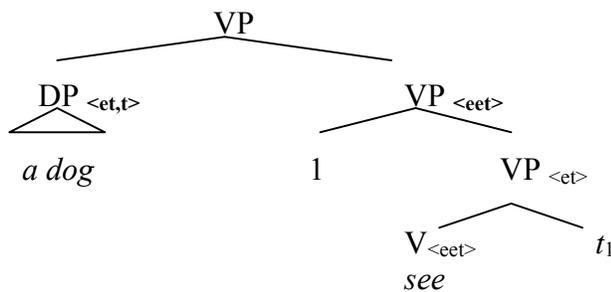
The movement account easily predicts the ‘wide scope’ reading in (46b).

- a. Possible LF for (46a)       $[[ [ a \text{ dog } ] [ 1 [ \text{Dave didn't see } t_1 ] ] ]$
- b. T-Conditions Assigned to (46a):  
There is an  $x$  such that  $x$  is a dog and Dave didn't see  $x$ .

(48) **Potential Problem**

How does the movement account generate the ‘narrow scope’ reading in (46c)?

- To generate the ‘narrow scope reading’, the DP *a dog* has to be in a position where it is in the scope of *not*.
- However, simply moving the DP to a position internal to the VP won't result in an interpretable structure (without type-shifting).



(49) **Minor Observation**

Our type-shifting operator in (3) predicts the ‘narrow scope’ reading in (46c).  
(...however it doesn't predict the ‘wide scope’ reading...)

Sample Derivation

- a.  $[[ \text{Dave didn't see a dog } ] ] = T \text{ iff}$       (by FA)
- b.  $[[ \text{didn't see a dog } ] ] (\text{Dave}) = T \text{ iff}$       (by FA, LC, notation)
- c.  $[[ \text{see a dog } ] ] (\text{Dave}) = F \text{ iff}$       (by FA, notation)
- d.  $[ \lambda x : \text{there exists a } y \text{ such that } y \text{ is a dog and } x \text{ saw } y ] (\text{Dave}) = F \text{ iff}$
- e. It is not the case that there exists a  $y$  such that  $y$  is a dog and Dave saw  $y$ .

(50) **Possible Solution: Movement of *Neg*? (Chierchia & McConnell-Ginet 2000)**

Perhaps it's possible to covertly move negation from the clause-internal position to some position above *a dog*?

a. The (Vaguely) Imagined LF for (46c)

[ not [ [ a dog ] [ 1 [ Dave saw  $t_1$  ] ] ] ]

If we suppose that 'not' in this position receives the same meaning as *it is not the case that*, then we might be able to derive the T-conditions in (46c).

Problems:

- This analysis requires some significant adjustment to our theory of movement: (The following points will be most clear to those with some syntax background:)
  - (i) The movement of *not* in (50a) seems not to leave a trace, which is otherwise expected of movement.
  - (ii) The movement of *not* in (50a) would seem to violate the so-called 'Head Movement Constraint' in syntax.

... a solution that's more commonly accepted nowadays trades on the following, now-common view regarding the syntax of subjects...

(51) **VP-Internal Subject Hypothesis**

- a. The subject of a sentence is initially generated in a position *inside* the VP (below negation, and any adverbs or auxiliaries).

Base Structure of "Barack doesn't smoke"

[<sub>TP</sub> does [<sub>NegP</sub> not [<sub>VP</sub> **Barack**<sub>1</sub> smoke ] ] ]

- b. In English, the subject must be moved outside of the VP before the pronunciation of the sentence is determined.

Surface Structure of "Barack doesn't smoke"

[<sub>TP'</sub> **Barack**<sub>1</sub> [<sub>TP</sub> 1 [<sub>TP</sub> does [<sub>NegP</sub> not [<sub>VP</sub>  $t_1$  smoke ] ] ] ] ]

(52) **New Semantics for *Not***

Under the syntactic proposal in (51), a VP is now of type  $t$ . Consequently, we must employ the following semantics for sentential negation:

$$[[ \text{not} ]] = [ \lambda p_t : \underline{p = F} ]$$

Exercise to the reader:

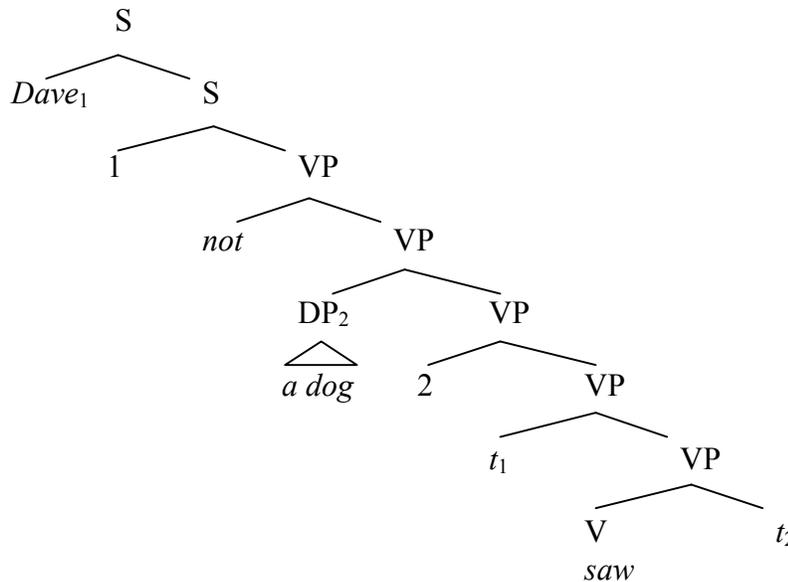
Confirm that this semantics for *not* will assign the correct T-conditions to the LF in (51b).

(53) **Solution to (48): Covert Movement to VP**

a. Key Assumption

Let us assume that a direct object can covertly move to VP, just below negation; that is, let us assume that (46a) can have the LF below.

b. A New LF for (46a):



c. Key Observation:

**The LF in (53b) will be assigned the ‘narrow scope’ T-conditions in (46c).**

(54) **Criticism (for the Movement Account)**

The postulated covert movement in (53b) cannot occur overtly (*cf.* our earlier criticism of the movement analysis of inverse scope).

- a. \* Dave didn't a dog see.

(55) **An Overall Criticism of the Movement Account**

In order for the movement account to capture basic features of the semantics of English, it must assume that covert movement differs in crucial respects from overt movement:

Properties of Covert, but Not Overt Movement:

- a. Subjects are not islands for covert movement (*maybe*)
- b. Covert movement (of quantificational DPs) cannot apply across finite clauses
- c. Covert movement (of quantificational DPs) can ‘stop’ at SpecVP
- d. Covert movement can adjoin multiple DPs to S

Nowadays, linguists are comfortable with these assumptions, but we should never forget that *they represent a weakening of the theory of movement...*

*...so remember the funny properties in (55) the next time you or someone you love is inclined to criticize type-shifting accounts for ‘having too many stipulated operators (or rules)’...*