

Systematic Ambiguity

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1 What is simpler?

- (1) Considerations for Language Design/Acquisition
 - a. Option 1: UG provides certain basic lexical entries which can be modified depending upon the other syntactic facts of a language.
→ might lead to expansion of the space of possible lexical meanings.
 - b. Option 2: UG imposes strict restrictions on the lexical inventory. Cases where the syntax seems not to provide the appropriate arguments must be reanalyzed.
→ might lead to postulation of morphosyntactic processes for which there is no language-internal evidence.

A case study from Phrasal Comparatives:

- (2) We seem to need a two place *-er* in every language to handle expressions like *more than n* and clausal comparatives.

Do we also need a 3-place *-er* to handle cases like *John is taller than Bill*?

- a. English: probably not, see Lechner (2001), Lechner (2004).
- b. Bulgarian and Greek: ???
- c. Hindi-Urdu: yes

What constrains the crosslinguistic availability of 3-place *-er*?

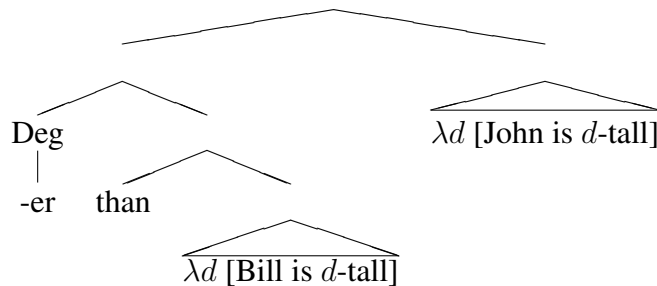
2 The Space of Options

2.1 2-place *-er* and Clausal Comparatives

- (3) Clausal:
 - a. John is taller than [Bill is].
 - b. [Bill jitnaa lambaa hai] [John us-se zyaadaa lambaa hai]
Bill how tall is John that-than more tall is
'John is taller than Bill is.' (Hindi-Urdu)

To handle clausal comparatives, we need a two place *-er*.

- (4) P, Q are degree predicates (sets of degrees)
- $-er(P)(Q) \leftrightarrow \exists d[Q(d) \wedge \neg P(d)]$
 - $-er [\lambda d \text{ Bill is } d\text{-tall}] [\lambda d \text{ John is } d\text{-tall}]$



The two place *-er* is also useful for handling cases where the complement of *than* directly names a degree.

- (5) a. John is taller than six feet.
 b. Hindi:
 Atif-ne tiin-se zyaadaa kitaabē khariid-ii thī:
 Atif-Erg three-than more books.f buy-Pfv.f be.Pst.FPI
 ‘Atif bought more than three books.’

2.2 Three Place *-er* and Phrasal Comparatives

- (6) Phrasal:
- John is taller than Bill.
 - Hindi:
 John Bill-se zyaadaa lambaa hai
 John Bill-than more tall is
 ‘John is taller than Bill.’

On the surface, phrasal comparatives do not provide appropriate arguments for a two place *-er*. To interpret them, the grammar could exploit one of the following options.

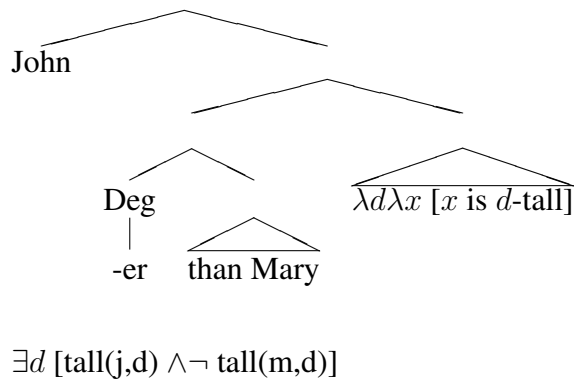
- (7) Option 1: Reduction Analyses
- There is only one *-er*, which takes two arguments.
 - The complement of the *than* involves silent clausal structure.
 John is taller [than [Bill *is tall*]].
 More students ate apples [than *students ate* bananas]

Particular instantiations of the Reduction Analysis differ on exactly what reduction operation is relevant (Gapping, Conjunction Reduction: Lechner 2001, 2004; TP-ellipsis, Stripping: Merchant 2007)

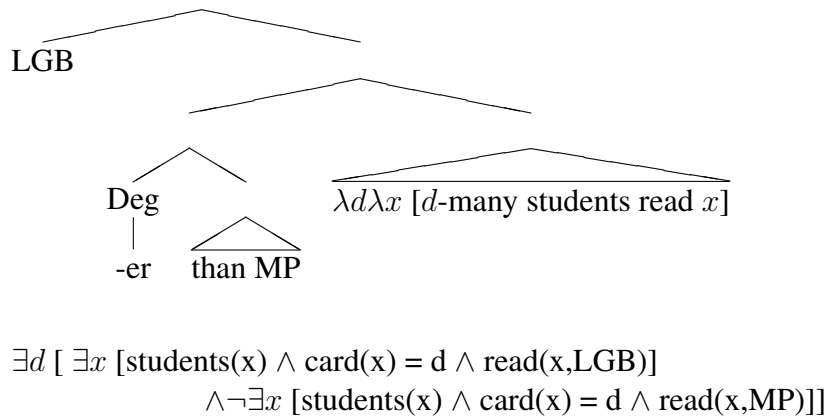
(8) Option 2: Direct Analysis

- a. There is also a 3-place *-er* that combines with two individual arguments and a predicate of individuals and degrees.
- b. $-er(x)(P)(y) \leftrightarrow \exists d[P(y, d) \wedge \neg P(x, d)]$
- c. The predicate of individuals and degrees is created by movement of the associate and the degree operator.

(9) a. John is taller than Mary.



b. More students read LGB than the MP.



3 Hindi-Urdu: A case for the Direct Analysis

3.1 Basic Description

3.1.1 *than*-phrase precedes *more*

- (10) a. associate > remnant > more: ok

Atif-ne **Boman-se zyaadaa** kitaabẽ parh-ĩ:
 Atif-Erg Boman-than more books.f read-Pfv.FPI
 'Atif read more books than Boman.'

b. associate > more > remnant: *

*Atif-ne **zyaadaa** kitaabē Boman-se paṛh-ī:
Atif-Erg more books Boman-than read-Pfv.FPI
'Atif read more books than Boman.'

As long as the remnant precedes *more*, no further restrictions are imposed on the relative order of the associate and the remnant: the remnant may precede the associate and there may be material between the associate and the remnant.

The *than*-phrase is an argument of *more* and arguments precede their heads in Hindi-Urdu. In its merge configuration, the *than* phrase precedes the degree head. From here the *than*-phrase can undergo further scrambling to the left.

3.1.2 Conditions on Associates and Remnants

(11) the associate can be a PP or a DP and have any grammatical function but the remnant can only be a bare DP which is marked by *than*, which is realized by the postpositional *-se*.

a. associate = nominative subject; (6)

b. associate = ergative subject; (10)

c. associate = dative IO:

Atif-ne **Mina-ko** Tina-se zyaadaa tohfe diye
Atif-Erg Mina-Dat Tina-than more presents.m give.Pfv.MPI
'Atif gave more presents to Mina than to Tina.'

d. associate = locative

Amrika-me Rus-se zyaadaa log rah-te haiN
America-in Russia-than more people stay-Hab.MSg be.Prs.PI
'More people live in America than in Russia.'

The absence of case-marking on the remnant can lead to ambiguity - (11c) for example can also be interpreted with the subject as an associate.

- in a Direct Analysis, the remnant is a complement of *than*. *-se*, the Hindi-Urdu *than*, is postpositional and can only combine with DPs.

(12) Phrasal Comparative in Hindi-Urdu only allow for a single remnant. Multiple remnants are not possible.

a. Tina read more books today than **Pim yesterday**.

b. Hindi-Urdu:

*Tina-ne aaj [**Pim kal-se**] zyaadaa kitaabē paṛh-ī:
Tina-Erg today Pim yesterday-than more books.f read-Pfv.FPI
intended: 'Tina read more books today than Pim yesterday.'

To convey this meaning, a clausal structure, which is realized by a correlative, must be used.

(13) Hindi-Urdu

[**Pim-ne kal** jitnii kitaabē paṛh-ī:] [Tina-ne aaj us-se zyaadaa
Pim-Erg yesterday how.many.f books.f read-Pfv.FPI Tina-Erg today that-than more
kitaabē paṛh-ī:]
books read-Pfv.FPI

Literally: ‘How many books Pim read yesterday, Tina read more books than that today.’

Lechner’s Reduction Analysis offers a uniform treatment of comparatives with multiple remnants like (12a) and cases with a single remnant. But under such an analysis the Single Remnant Restriction found in Hindi-Urdu is unexpected.

The Direct Analysis, however, predicts a Single Remnant Restriction.

We could try generalizing the 3-place *-er* into a 5-place *-er* to handle (12b): 2 associates, 2 remnants, and one predicate. But the syntax does not actually give us the right number of arguments: the 2 remnants form a constituent (= *than* clause) and *-er* cannot look into this constituent and extract its arguments.

We take the absence of multiple remnants to show that a Direct Analysis is a viable option for phrasal comparatives in Hindi-Urdu and that a Reduction Analysis of the sort proposed by Lechner is not viable for the Hindi-Urdu data.

We speculate that a Reduction Analysis is ruled out for Hindi-Urdu because of a language particular interaction between the Hindi-Urdu *than*, *-se*, and finite clauses. The relevant reduction processes that could yield the Reduction Analysis, such as Sluicing and Gapping, seem to be restricted to finite clauses in this language. However, finite clauses can never appear as complements of *-se*, or for that matter any postpositional element in Hindi-Urdu.

- (14) a. John has been happy [since [Mary arrived]].
 b. *John [Mary aa-ii hai]-se khush hai
 John Mary come-Pfv.f be.Prs.Sg-from happy be.Prs.Sg

To achieve this meaning, a correlative construction must be used where the finite clause complement of the postposition appears as a correlative which is associated with a pronoun that is the complement of the postposition.

- (15) [jab-se Mary aa-ii hai] [tab-se John khush hai].
 when-from Mary come-Pfv.f be.Prs.Sg then-from John happy be.Prs.Sg
 ‘John has been happy since Mary arrived.’

3.2 A Precedence Constraint

An important aspect of the Direct Analysis is that it assumes that there is a configuration in which *-er* combines with its two individual arguments and a predicate of individuals and degrees.

- (16) [Associate [Remnant *-er* [$\lambda d \lambda x$ Pred(x,d)]]]

When the associate is the subject, it is already in the right place to combine with the *-er*.

- (17) John [[than Mary] *-er* [$\lambda d \lambda x$ [tall(x,d)]]]

But when the associate is not the subject, it must undergo movement to appear as an argument of *-er* and thereby create the compared predicate. In English, this movement is covert.

- (18) More people read LGB than the MP.
LGB [[than MP] *-er* [$\lambda d \lambda x$ [read(d-many people, x)]]]

3.2.1 Locality

Support for the covert movement of the associate comes from the fact that this movement is constrained by locality constraints on movement (Heim 1985).

- (19) *I spent more time with [a woman that played *[the clarinet]*] than the lute.

LF: [[the clarinet] [[than the lute]
-er [$\lambda d \lambda x \exists y$ [spent(I,y,d-much.time) \wedge woman(y) \wedge play(y,x)]]]]]

island-violating movement of the associate out of the relative clause

In general, an island effect is found if the associate is within an island, which follows if the associate needs to covertly move out of the island.

- (20) a. ?*It happens less often that Austin gets snowed in than Buffalo.
b. *More people think they are as good as Dolphy than as Coleman.
c. ?*We were more divided on the question whether John should be admitted than Fred.

(Heim 1985:26)

- (21) a. *More people live in the country that Putin governs than Bush.
b. *Nikos saw more movies when Nana recommended them to him than Elena.
c. *That the dean is going to invite the cleaning lady is more noteworthy than Maria.

(Merchant 2007:22)

Similar constraints hold for Hindi-Urdu phrasal comparatives and also in Greek (Merchant 2007). There are certain additional complexities to the data for which see Appendix 7.7.

3.2.2 Covert vs. Overt Movement

English: covert scope shifting operations are available.

Hindi-Urdu: covert scope shifting operations unavailable, overt scrambling is necessary.

- (22) a. some > all, unavailable: all > some
kisi laṛke-ne har ṭīicar-se aashirvaad liyaa
some boy-Erg every teacher-from blessing.m take.Pfv.MSg
'Some boy took blessings from every teacher.'
- b. all > some, also available: some > all
har ṭīicar-se kisi laṛke-ne aashirvaad liyaa
every teacher-from some boy-Erg blessing.m take.Pfv.MSg
'Some boy took blessings from every teacher.'

Given the unavailability of Covert Movement of DPs in Hindi-Urdu, we predict (24a), the Hindi-Urdu counterpart of (23), to be deviant.

- (23) More people read LGB than the MP.
LGB [[than MP] -er [$\lambda d \lambda x$ [read(d -many people, x)]]]

We also predict that if overt scrambling brings the associate to a position where it can combine with *-er*, the deviance should disappear. (24b) shows that this is, in fact, the case.

- (24) a. remnant > more > associate
*MP-se zyaadaa logō-ne LGB paṛh-ii
MP-than more people-Erg LGB.f read-Pfv.f
'More people read LGB than MP.' (intended, but unavailable)
(possible reading: People read LGB to a greater extent than they read MP.)
LF: *[[*-er* than MP] [λd [d -many people read LGB]]]
- b. associate > remnant > more
LGB MP-se zyaadaa logō-ne paṛh-ii
LGB.f MP-than more people-Erg read-Pfv.f
'More people read LGB than MP.'
LF: [LGB [[*-er* than MP] [$\lambda d \lambda x$ [d -many people read x]]]]]

The precedence requirement provides support for the Direct Analysis.

3.3 Binding Effects

According to the Direct Analysis, the Remnant is a PP associated with the matrix clause and thus we expect it to pattern with other PPs with respect to binding properties. This turns out to be the case.

The binding properties of PPs in Hindi-Urdu are as follows:

- (25) a. They pattern with arguments w.r.t. Principle B.
 b. Subjects can bind reflexives and reflexive possessors into them. Pronominal possessors cannot be coreferent with the subject.
 c. Co-arguments that precede the PP c-command it and the PP c-commands co-arguments that follow it.

The *than*-phrase in Hindi-Urdu has exactly the binding properties outlined above.

- (26) a. anaphoric binding, pronominal obviation by subject:
 koi-bhii_i apne aap-se_{i/us-se_{j/*i}} lambaa nahī: ho sak-taa
 anyone self's self-than/him-than tall Neg be can-Hab.MSg
 'No one_i can be taller than himself_i/him_{j/*i}.'
 b. anaphoric binding, pronominal obviation of possessors by subject:
 Atif_i apnii_{i/us-kii_{j/*i}} behen-se lambaa hai
 Atif self.f/he-Gen.f sister-than tall be.Prs.Sg
 'Atif_i is taller than self_i's sister/his_{j/*i} sister.'
 c. pronominal obviation with respect to object:
 Atif-ne Sita-ko_i us-se_{j/*i} zyaadaa tohfe nahī: diye ho sak-te
 Atif-Erg Sita-Dat s/he-than more presents Neg give.Pfv.MPI be can-Hab.MPI
 'Atif can't have given Sita_i more presents than her_{j/*i}.'
 (27) a. ...[than Peter's_i sister]....pron_i..... : coreference is ok
 Sally-ne Peter-kii_i behen-se us-ko_{i/j} zyaadaa logō-se milvaa-yaa
 Sally-Erg Peter-Gen.f sister-than he-Dat more people-with introduce-Pfv.MSg
 'Sally introduced him_i to more people than Peter's_i sister.
 b.pron_i...[than Peter's_i sister].... : coreference is not ok
 Sally-ne us-ko_i Peter-kii_{j/*i} behen-se zyaadaa logō-se milvaa-yaa
 Sally-Erg he-Dat Peter-Gen.f sister-than more people-with introduce-Pfv.MSg
 'Sally introduced him_i to more people than Peter's_i sister.
 (28) a. ...[than Peter's_i sister]....pron_i..... : coreference is ok
 Sally-kii foto Peter-kii_i behen-kii foto-se zyaadaa logō-ne
 Sally-Gen.f photo Peter-Gen.f sister-Gen.f photo-than more people-Erg
 us-ko_{i/j} dii
 he-Dat give.Pfv.f
 '*More people gave him_i a **picture of Sally** than a picture of Peter_i's sister.
 (ungrammatical in English, good in Hindi-Urdu)
 b.pron_i...[than Peter's_i sister].... : coreference is not ok
 us-ko_i Sally-kii foto Peter-kii_{j/*i} behen-kii foto-se zyaadaa logō-ne
 he-Dat Sally-Gen.f photo Peter-Gen.f sister-Gen.f photo-than more people-Erg
 dii
 give.Pfv.f
 '*More people gave him_i a **picture of Sally** than a picture of Peter_i's sister.

Thus its binding behavior follows directly from its surface syntax. We do not need to postulate covert clausal structure to explain its binding properties.

4 The Direct Analysis in English

Having demonstrated that the Direct Analysis works well for Hindi-Urdu, we now consider English. We examine certain arguments which are taken to show that the Direct Analysis is unavailable in English and show that they can be defused. Then we encounter certain binding data which cannot be similarly defused on the basis of which we conclude that the Direct Analysis cannot be available in English.

4.1 Pinkham's Contrast

The first argument comes from the putative inability of the Direct Analysis to account for Pinkham's Contrast.

- (29) Pinkham's Contrast (Pinkham 1985:108)
- a. *More men [than suits] wear sports jackets.
 - b. More men wear sports jackets [than suits].
 - c. More men [than wear suits] wear sports jackets.

Lechner (2001, 2004): Pinkham's Contrast follows from (30) within a Reduction Analysis:

- (30) *Embedding:
Two nodes A and B satisfy *Embedding if and only if A does not contain B and B does not contain A. (Lechner 2001:700)
- (31) a. * $[_A \text{ More men } [_B \text{ than wear suits}]] \text{ wear sports jackets.}$
b. $[_A \text{ More men wear sports jackets}] [_B \text{ than wear suits.}]$

Lechner: under the Direct Analysis, (29a, b) both have the same LF (=32) and should therefore be equally grammatical.

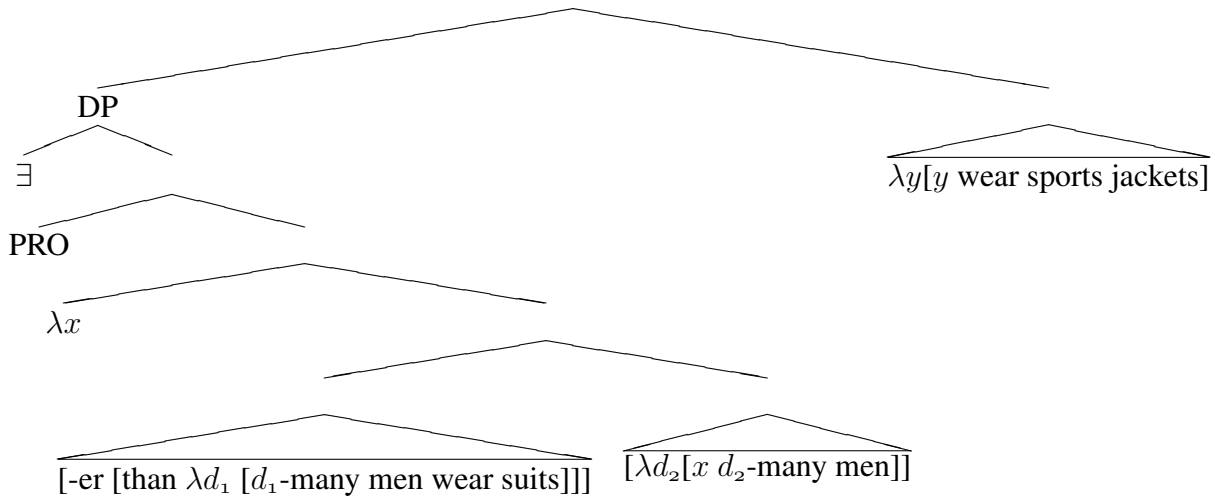
- (32) $[[\text{sports jackets}] [[-\text{er} [\text{than suits}]] [\lambda d \lambda x [d\text{-many men wear } x]]]]$

However, the Direct Analysis is also capable of capturing the contrast because (29a) does not in fact have the same LF as (29b). The actual LF representation which the Direct Analysis assigns to (29a) is uninterpretable.

First, we assume that the overt position of *than* marks the scope of the degree operator *-er* (Bhatt and Pancheva 2004 and Williams 1974). Given this, it follows that as opposed to (29b), the degree operator does not take clausal scope in (29a) and (29c) (Note that finite VPs cannot be extraposed).

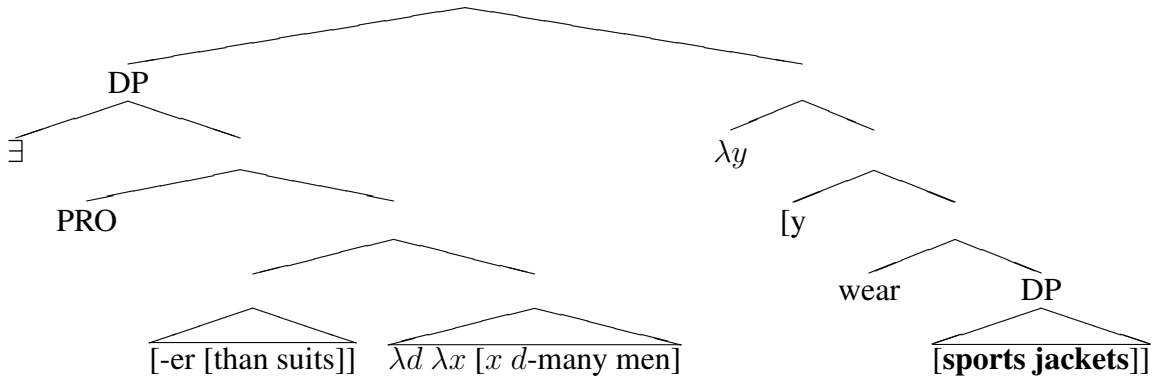
To deal with (29c), we adopt Matushansky's (2002) idea that there is a DP-internal position in which the degree operator can take scope. She postulates a (phonologically and semantically empty) subject inside a DP (represented as PRO in (33)) and it moves DP-internally. This movement creates a configuration suitable for interpreting the 2-place degree operator within a DP. (See Heim and Kratzer 1998 for an analysis of inverse-linking along these lines.)

(33) [More men [than [--- wear suits]]] wear sports jackets.



Now the question is whether the 3-place degree operator is also interpretable within DP. The answer is negative. The most notable problem is that in order for the 3-place comparative operator to take the associate as its third argument, the associate needs to undergo movement into the DP, as illustrated in (34).

(34) *More men [than suits] wear sports jackets.



However, movement of this sort would not be allowed. (In fact, even if the movement into DP was permitted, the types would not work out.) Consequently, the Direct Analysis captures the ungrammaticality of (29a).

Finally both analyses can account for the grammaticality of (29b).

- (35) a. [[-er [than λd_1 [d_1 -many people wear suits]]]
 λd_2 [d_2 -many people wear sports jackets]]
 b. [[sports jackets] [[-er [than suits]] λd λx [d -many men wear x]]]

To sum up, the contrast in (29) does not either argue for or against one of the two analyses.

4.2 Binding by Subjects

Lechner (2004) presents the contrast below as another argument against the Direct Analysis.

- (36) a. **Sally** introduced him_i to more friends than Peter $_i$'s sister.
 b. *He $_i$ introduced **Sally** to more friends than Peter $_i$'s sister.
 (Lechner 2004:214)

Under the Reduction Analysis, ellipsis within the *than*-phrase gets resolved by taking the constituent in the matrix clause, as indicated in (37). Consequently, only (37b) is ruled out by a violation of Condition C.

- (37) a. **Sally** introduced him_i to more friends than Peter $_i$'s sister <introduced him_i to d-many friends>.
 b. *He $_i$ introduced **Sally** to more friends than <he $_i$ introduced> Peter $_i$'s sister <to d-many friends>.
 (Lechner 2004:214)

Lechner assumes that the Direct Analysis assigns the representations in (38a/b) to (36a/b) and based on these representations concludes that the contrast is not captured by the Direct Analysis.

- (38) a. [_{TP} Sally [_{TP} [-er [than Peter $_i$'s sister]] [$\lambda d \lambda x$ [_{TP} x introduced him_i to d -many friends]]]]]
 b. [_{TP} Sally [_{TP} [-er [than Peter $_i$'s sister]] [$\lambda d \lambda x$ [_{TP} he $_i$ introduced x to d -many friends]]]]]

But the representations in (38) are not the ones assigned by the Direct Analysis. The problem with them is that the QR of the degree operator targets TP. This is a step too far. Fox (2000) demonstrates that QR obeys a locality constraint and its application is constrained by Scope Economy. Given these, the following representations should be assigned to (36). In these, we only QR to the vP level and the resulting structures correctly represent the binding relationships.

- (39) a. [_{TP} Sally [_{vP} [-er than Peter $_i$'s sister] $\lambda d \lambda x$ [_{vP} x introduced him_i to d -many friends]]]
 b. *[[_{TP} he $_i$ λx [_{vP} [Sally] [_{vP} [-er than Peter $_i$'s sister] $\lambda d \lambda y$ [_{vP} x introduced y to d -many friends]]]]]

Hence the binding contrast cannot be taken as an argument for/against one of the analyses either.

4.3 The Full Binding Pattern

Having defused certain arguments against the Direct Analysis in English, we now come to an argument that we are unable to defuse and which we therefore take to show that the Direct Analysis is in fact unavailable in English.

What c-commands the Remnant? Building upon Lechner's observations, we argue for the following generalization:

(40) The remnant is c-commanded by everything that c-commands the associate.

As shown in (41a) and (42a), if a pronoun c-commands the associate, it cannot co-refer to an R-expression inside a remnant.

- (41) a. *More people introduced him_i **to Sally** than to Peter_i's sister.
b. More people introduced Peter_i **to Sally** than to his_i sister.
c. More people introduced him_i **to Sally** than to himself_i.

(Note: The acceptability of 'More people introduced him_i **to Sally** than to the popstar that Peter_i actually wanted to meet.' (Carl Pollard p.c.) is not a counterexample; it is another instance of the familiar argument/adjunct asymmetry in Condition C obviation.)

- (42) a. *More people gave him_i **a picture of Sally** than a picture of Peter_i's sister.
b. More people gave Peter_i **a picture of Sally** than a picture of his_i sister.
c. More people gave Peter_i **a picture of Sally** than a picture of himself_i.

It is crucial to note that a direct/indirect object does not always c-command a remnant.

- (43) a. **Mary** gave him_i more presents than John_i's mother.
b. **Mary** gave more presents to him_i than John_i's mother.
(the associate in both cases is the subject.)

The generalization above does not follow from the Direct Analysis straightforwardly. Under the Direct Analysis a remnant is merged with a degree head outside of the c-command domain of the base-generated position of an associate and there is no movement dependency between the LF position of the remnant and the base-generated position of the associate. Thus, one would expect a situation in which a remnant is not c-commanded by an item that c-commands an associate.

- (44) [Sally [-er [than Peter_i's sister] $\lambda d \lambda x$ [d -many people introduced him_i x]]]

In contrast, the generalization is captured by the Reduction Analysis because under this view, exactly the same constituent as the matrix one is present in the ellipsis site in the *than* clause (modulo vehicle change effects). Hence, everything that c-commands an associate c-commands a remnant.

- (45) *[-er [than λd [d -many people introduced him_i to Peter_i's sister]]] [λd [d -many people introduced him_i to Sally]]

We take the binding generalization to show that the Direct Analysis cannot be at work in English. If it was available, it would allow the unavailable coreference in (41/42a).

5 Handling Crosslinguistic Variation

5.1 Where we are

(46) English:

- a. The binding data rules out the Direct Analysis.
 - b. Hence only a Reduction Analysis is viable.
- only two-place *-er*, only Reduction Analysis

(47) Hindi-Urdu:

- a. The binding data is compatible with the Direct Analysis.
 - b. The Single Remnant Restriction argues against the availability of the Reduction Analysis.
 - c. We still need two place *-er* to handle the *more than n* cases.
- both two-place *-er* and three-place *-er*, only Direct Analysis

To explain:

(48) a. Why does Hindi-Urdu lack the Reduction Analysis?

- because the relevant reduction operations apply to finite clauses in Hindi-Urdu and finite clauses cannot appear as complements of postpositions.

b. Why does English lack a 3-place *-er*?

Two Potential Answers:

(49) Answer 1: Only two-place *-er*, Only Reduction Analysis

- a. Maybe because there is only one *-er*, a two-place one crosslinguistically. But this would mean that the Direct Analysis, which assumes a three-place *-er*, is never an option, even for Hindi-Urdu.
- b. Now we need an explanation for the Single Remnant Restriction on phrasal comparatives in Hindi-Urdu within a Reduction Analysis. Merchant (2007) offers such an explanation and its applicability to the Hindi-Urdu data is what we turn to next.

(50) Answer 2: start with two-place *-er*, induce three-place *-er* if there is evidence.

- a. English: Relevant reduction operations are available, no evidence that forces the learner to assume a 3-place *-er* (and a Direct Analysis to go with it).
- b. Hindi-Urdu: Relevant reduction operations are unavailable in the complement of *-se/‘than’*, forcing learner to assume a 3-place *-er* (and a Direct Analysis).

5.2 Merchant's Analysis of Greek Phrasal Comparatives with *apo*

We have argued so far that a Reduction Analysis is not capable of handling the Single Remnant Restriction. However, our argument has been based on the implicit assumptions that there is only one *than* and that the syntactic relation between *than* and the remnant(s) is uniform both in clausal and phrasal comparatives.

However, one can speculate that *than* in phrasal comparatives is different from the one in clausal comparatives and that the remnant needs to bear a particular syntactic relation with *than* only in phrasal comparatives. A Reduction Analysis may make use of this aspect of phrasal comparatives in order to explain the Single Remnant Restriction. This is in fact what Merchant argues for on the basis of the facts from Greek.

In Greek, there are two lexical items corresponding to *than* in English; *apoti* and *apo*. *Apoti* can take a clausal structure as its complement, as in (51).

(51) (Merchant 2007:2-3)

I Maria pezi kithara kalitera apoti pezi kithara o Giannis.
the Maria.nom plays guitar better than.clausal plays guitar the Giannis.nom

‘Maria plays the guitar better than Giannis plays the guitar.’

On the other hand, only a single DP can appear in the complement of *apo* in (52a). Thus, comparatives with *apo* which involve more than one DP result in ungrammaticality, as in (52b).

(52) a. *apo* with a single DP complement: ok; (Merchant 2007:3)

I Maria pezi kithara kalitera apo ton Gianni.
the Maria.nom plays guitar better than.phrasal the Giannis.acc

‘Maria plays the guitar better than Giannis.’

b. *apo* with multiple remnants: *; (Merchant 2007:6-7)

*Perisoteri anthropi milisan me ton Gianni tin kyriaki apo me ton
more people spoke with the Giannis the Sunday than.phrasal with the
Anesti to savato.
Anestis the Saturday

‘More people spoke with Giannis on Sunday than with Anestis on Saturday.’

Merchant argues that *apo* in comparatives behaves as if it is a PP that belongs to the matrix clause in every respect (e.g., pied-piping and binding possibilities). This fact seems to suggest that the remnant is a complement of the preposition *apo*.

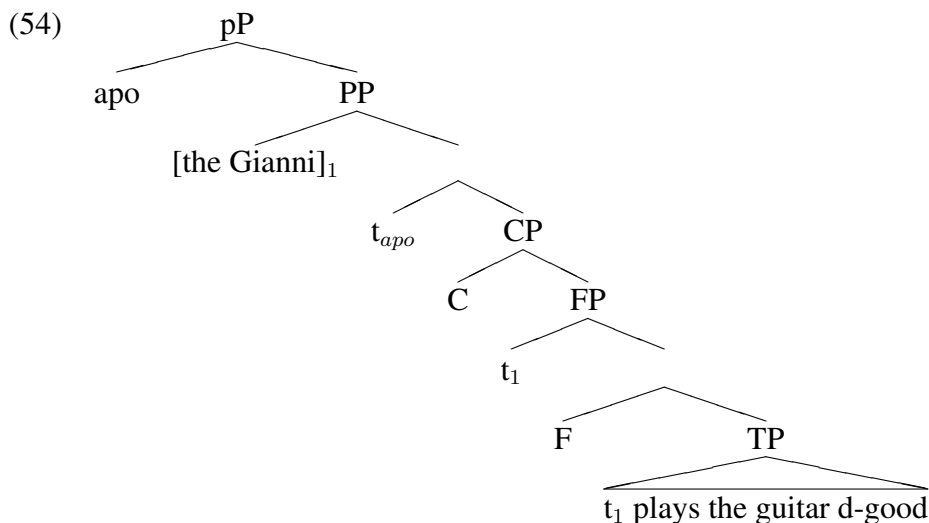
Interestingly, *apo* comparatives exhibits island effects if the associate is within an island.

(53) (Merchant 2007:9)

- a. *Perisoteri anthropi [menun sto kratos pu kivernai o Putin] apo ton
 more people live in.the state that governs the Putin than.phrasal the
 Bush.
 Bush.acc
 ‘More people live in the country that Putin governs than live in the country that
 Bush governs.’
- b. *O Nikos evlepe perisoteres tenies [otan tu tis sistine i Nara]
 the Nikos saw more movies when him them recommended the Nara
 apo tin Elena.
 than.phrasal the Elena.acc
 ‘Nikos saw more movies when Nara recommended them to him than he saw when
 Elena recommended them to him.’
- c. *[To oti o pritanis prokite na kalesi ti katharistria] ine perisotero
 the that the dean is.going to invite the cleaner is more
 aksioperi ergo apo tin Maria.
 noteworthy than.phrasal the Maria.acc
 ‘That the dean is going to invite the cleaning lady is more noteworthy than that he
 is going to invite Maria.’

Both the PP like behavior of *apo* and the island effects are predicted by the Direct Analysis (see 2.2.1 for an analysis of island effects).

However, Merchant (2007) pursues a Reduction Analysis and argues that it can handle these properties of comparatives with *apo*. Merchant argues that the remnant undergoes successive cyclic movement to the Spec of the PP headed by *apo*, as shown in (54).



Integration with matrix clause: the remnant moves to the domain of the preposition.

Island Effects: ellipsis in comparatives with *apo* cannot remedy violations of island conditions, unlike other ellipsis operations (e.g., sluicing).

Single Remnant Restriction: no multiple remnants because prepositions in Greek take only one complement.

This analysis of the Single Remnant Restriction is also applicable to Hindi-Urdu because postpositions in this languages can also take only one complement. Thus, Merchant's Reduction Analysis is able to handle the Single Remnant Restriction in Hindi-Urdu and for that reason emerges as a viable option for Hindi-Urdu phrasal comparatives. But as we see next, there is a significant difference between the Hindi-Urdu data and the Greek data which complicates attempts at a unified analysis.

5.3 A Restriction on PP associates: Greek vs. Hindi-Urdu

Greek and Hindi-Urdu show different results when the associate is PP. In Greek, comparatives with *apo* results in ungrammaticality under this circumstance, regardless of whether the remnant is PP in (55a) or DP in (55b).

(55) (Merchant 2007:6)

a. PP associate, complement of *apo* is PP:

*Perisoteri anthropi menun stin Italia apo sti Rosia.
more people live in.the Italy than.phrasal in.the Russia
'More people live in the Italy than in Russia.'

b. PP associate, complement of *apo* is DP:

*Perisoteri anthropi menun stin Italia apo ti Rosia.
more people live in.the Italy than.phrasal the Russia
'More people live in the Italy than Russia.'

(55a) is ruled out because prepositions cannot take PP complements. Merchant's Reduction Analysis also predicts (55b) to be ungrammatical because its derivation requires P-stranding, which is not permitted in Greek. Note that sluicing does not remedy a P-stranding violation.

(56) (Merchant 2001:94):

a. No P-stranding under overt movement:

*Pjon milise me?
who she.spoke with
'Who did she speak with?'

b. No P-stranding under sluicing:

I Anna milise me kapjon alla dhe ksero *(me) pjon.
the Anna spoke with someone but not I.know with who
'Anna spoke with someone, but I don't know (with) who(m).'

Hence it is reasonable to assume that P-stranding is not allowed in the ellipsis operation involved in the derivation of comparatives with *apo*.

In fact, P-stranding is not allowed in comparatives with *apoti* either, which clearly has underlyingly a clausal structure in its complement. This also points to the conclusion that an ellipsis operation in comparatives cannot ameliorate a P-stranding violation.

(57) (Merchant 2007:8)

*I Maria milai me ton Petro pjo sixna apoti ton Gianni.
 the Maria speaks with the Petro.acc more often than.clausal the Giannis.acc

‘Maria talks with Petros more often than Giannis.’

In contrast, the associate can be a PP in Hindi-Urdu.

- (58) a. **USA-me** Russia-se zyaadaa log rah-te hẽ.
 USA-in Russia-than more people live-Hab.MPl be.Prs.Pl
 ‘More people live in the USA than Russia.’
- b. **mez-par** desk-se zyaadaa kitaabẽ hẽ
 table-on desk-than more books.f be.Prs.Pl
 ‘There are more books on the table than on the desk.’
- c. **John-ke-paas** Ramesh-se zyaadaa kitaabẽ hẽ
 John-Gen-near Ramesh-than more books.f be.Prs.Pl
 ‘John has more books than Ramesh.’

Like Greek, P-stranding is not possible in overt movement in Hindi-Urdu and sluicing does not save sentences from a P-stranding violation.

(59) No P-stranding in Hindi-Urdu:

a. question formation:

*kis lar̥kii Ram -ko pasand kar-taa hai
 which girl.f Ram.m -Dat like do-Hab.MSg be.Prs.Sg

‘Which girl does Ram like?’

b. sluicing:

Ram kisii lar̥kii-ko pasand kar-taa hai, lekin mujhe pataa nahĩ: kis
 Ram some girl-Dat like do-Hab.MSg be.Prs.Sg but I.Dat know Neg which
 lar̥kii-*(ko)
 girl-Dat

‘Ram likes some girl but I don’t know which one.’

5.4 Applying Merchant's Analysis to the Hindi-Urdu cases

Merchant's Reduction Analysis predicts the restriction on PP associates in Greek *apo* comparatives.

Given that this restriction does not extend to Hindi-Urdu, one could conclude that Merchant's Reduction Analysis is not the right analysis for Hindi-Urdu.

Or else:

(60) **The price of uniformity:**

we could stipulate that postpositions can be deleted in Hindi-Urdu in this particular environment (and only this environment) even though there is no other case in the language where they can be deleted.

Once we make this stipulation, we do not need to appeal to a 3-place *-er/a* Direct Analysis for Hindi-Urdu

(61) Deriving properties of Hindi-Urdu Phrasal Comparatives within Merchant's system:

a. **Binding Properties:**

the remnant in a Hindi-Urdu phrasal comparative does not show reconstruction effects comparable to the English one for the simple reason that it gets to its surface position by scrambling and scrambling movements do not obligatorily reconstruct. Consequently we do not get Condition C reconstruction. For *than*-phrase external purposes, the remnant behaves like an ordinary PP.

b. **Associate precedes Degree Abstraction:**

if we assume that the elided clause must be structurally identical to the matrix clause and that covert movement of the associate is unavailable, it follows that the associate must scramble in overt syntax to a position preceding the degree abstraction to create a clausal constituent that can satisfy identity with the elided clause.

6 Open Question

We have seen that it is possible to analyze Hindi-Urdu phrasal comparatives both within a Direct Analysis as well as within a Reduction Analysis.

Tradeoff/Consequences:

(62) Reduction Analysis:

- a. We achieve crosslinguistic uniformity: only one *-er*, which is two place.
- b. But we need to assume a phrasal comparative-specific P-deletion rule for which there is no independent evidence within the language.

(63) Direct Analysis:

- a. Nothing special needs to be assumed about the morphosyntax of the language.
- b. But we do need to assume a 3-place *-er* and a Direct Analysis that goes with it.

We know that the Direct Analysis/3-place *-er* is unavailable in English. What blocks it?

(64) a. Assume 2-place *-er* is available crosslinguistically.

- b. Three place *-er* is assumed by the learner if driven to do so by the data.

(65) a. English: the availability of Reduction Operations means that there is no data that drives the learner to postulating a 3-place *-er*.

- b. Hindi-Urdu: as soon as the learner hears a phrasal comparative with a PP-associate, the child has evidence for a 3-place *-er*.

So what does the learner do?

(66) depends:

a. Direct Analysis:

cheaper/easier to postulate a new lexical entry rather postulate a construction specific P-deletion rule

b. Reduction Analysis:

cheaper/easier to retain crosslinguistic uniformity even if it means assuming construction specific rules/‘illegitimate’ to induce new lexical entry for *-er*.

Adjudication of this question might require evidence from language acquisition.

7 Appendix

7.1 Pronominal vs. Reflexive Binding

For binding purposes, the *than* constituent seems to function as a co-argument of the subject in phrasal comparatives - thus we get disjoint reference effects with pronouns and the use of an anaphor is forced if coreference is desired.

- (67) a. *It is not possible that John_i is taller than him_i.
b. *It is not possible that John_i is taller than he_i.
(compare with ?She is taller than he.)
c. It is not possible that John_i is taller than himself_i.
(Lechner 2004:208)

Given the Direct Analysis, these facts follow directly.

- (68) [[John_i] [[-er [than him_i/he_i/himself_i]] $\lambda d \lambda x$ [x is d -tall]]]

Lechner's approach: ellipsis in phrasal comparatives is an instance of Gapping.

Merchant's approach: ellipsis in phrasal comparatives is an instance of Stripping

Both Gapping and Stripping approaches would predict all the sentences in (67) to be ungrammatical, due to the disjoint referent constraint on Gapping and Stripping.

- (69) a. *John_i drank coffee and he_i <drank> tea.
b. *It is impossible that John_i is taller than Mary, but not he_i/him_i <is taller than Mary>.

The *himself* cases, therefore, seem problematic for the reduction approaches.

7.2 Locality Effects on Movement of the Degree Operator

- (70) a. John thinks that LGB is more expensive than Bill does <think that LGB is d -much expensive>.
b. *John thinks that LGB is more expensive than Bill <thinks that LGB is d -much expensive>.

The direct analysis has a way to make a distinction between (70a) and (70b). The degree operator involved in (70a) is a 2-place one, but the one in (70b) is a 3-place one. What the contrast suggests is that the locality conditions on the two degree operators are different. The movement of the 3-place degree operator is clause-bound, but the one of the 2-place degree operator is not.

- (71) a. [[-er [than λd Bill does <think that LGB is d -much expensive>]] λd [John thinks that LGB is d -much expensive]]
b. *[John [[-er [than Bill]]] $\lambda d \lambda x$ [x thinks that LGB is d -much expensive]]]

Assuming that a gradable adjective is taken as the second remnant in Gapping, the Gapping approach would assimilate the ungrammaticality of (70b) to the following gapping sentence, which suggests that a finite clause boundary cannot intervene between the two remnants.

- (72) *Max said that you should buy bread and Peter <said that you should buy> wine.
(Johnson 1996 and Neijt 1979)

It is less obvious how Stripping approach accounts for the contrast because Stripping counterpart of (70b) is grammatical.

- (73) John thinks that LGB is expensive and Bill, too/but not Bill.

See Pancheva (next talk) for an alternative proposal that derives the locality effects found with phrasal comparatives from the absence of *A'* degree-movement inside the *than*-constituent.

7.3 Extraction and Other Transparency Effects

7.3.1 Overt Movement out of the *than*-phrase

Extraction out of the *than* constituent is not possible in clausal comparatives. In contrast, it is possible in phrasal comparatives.

- (74) a. *Who is John taller than is?
b. Who does she eat faster than?
c. You finally met somebody you're taller than.
(Hankamer 1973:179)

The Direct Analysis explains the contrast straightforwardly. The *than* constituent in phrasal comparatives is a preposition and it does not block movement out of its complement.

On the other hand, both Gapping and Stripping approaches might not be able to predict the contrast. Since those approaches regard phrasal comparatives as coordination of some sort, extraction out of the *than* constituent would be ruled out by a constraint on movement (e.g. coordinate structure constraint).

However, the conditions on extraction out of the *than* constituent are more complicated. Extraction of non-subjects is severely restricted even in phrasal comparatives. None of the existing approaches seems to have a way to capture all of the facts about extraction.

- (75) a. John met Sue more often than Mary.
b. ??Which girl did John meet Sue more often than?
- (76) a. John gave more people LGB than MP.
b. *Which book did John give more people LGB than?
- (77) a. John gave more books to Mary than to Sue.
b. *To who did John give more books to Mary than?

In Hindi-Urdu, a *wh*-in-situ language, the complement of *than* can be a *wh*-expression irrespective of the nature of its associate.

7.3.2 Covert Movement and *than*-phrase-internal scope

Quantifiers inside a phrasal comparative seem to be able to scope out of the *than*-phrase in contrast to quantifiers inside a clausal comparative clause.

- (78) a. John is taller than no one.
 b. #John is taller than no one is.
 (Brame 1983:332)

If negative quantifiers don't exist, the above data can be thought of as indicating that a matrix negation can combine with an indefinite across a phrasal *than* but not across a clausal *than*.

There is evidence that shows that *than*-phrase internal QPs can take scope within the *than*-phrase. It is not clear to us whether they can take scope out of the *than*-phrase.

- (79) More students read every syntax paper than every semantics paper.
 a. *than*-phrase-internal scope:
 [-er [λd [*d*-many students read every semantics paper]]]
 [λd [*d*-many people read every syntax paper]]
 the number of students who read every syntax paper exceeds the number of students who read every semantics paper.
 b. *than*-phrase external scope: ???
 [every syntax paper] λx [every semantics paper] λy
 [[-er [λd [*d*-many students read *y*]]] [λd [*d*-many people read *x*]]]
 the least read syntax paper was still read by more people than any semantics paper.
 (Carl Pollard, p.c.)

Somewhat strikingly, the Hindi-Urdu counterpart of (79) does not allow for the *than*-phrase-internal scope reading. The only interpretation available is the external scope reading.

- (80) [har syntax paper] [har semantics paper]-se zyaadaa logō-ne paṛh-aa
 every syntax paper every semantics paper-than more people-Erg read-Pfv
 'More people read every syntax paper than every semantics paper.'
than-phrase external scope: available; *than*-phrase-internal scope: unavailable

The Hindi-Urdu facts follow from a Direct Analysis. To get the *than*-phrase internal scope, a clausal comparative must be used.

- (81) [jitne logō-ne har semantics paper paṛh-aa] [us-se zyaadaa logō-ne
 how.many people-Erg every semantics paper read-Pfv that-than more people-Erg
 har syntax paper paṛh-aa]
 every syntax paper read-Pfv
 'More people read every syntax paper than did every semantics paper.'

A preliminary exploration of the corresponding Greek data reveals that in Greek (79) is only acceptable with the clausal *apoti* and not with the phrasal *apo*.

7.4 Size of the *than* Constituent

The impossibility of having floating quantifiers in phrasal comparatives suggests that the size of the *than* constituent in phrasal comparatives is smaller than that of the *than* constituent in clausal comparatives (Dowty and Brody 1984 and Sportiche 1988, among others).

- (82) a. *He is taller than they all.
 b. He is taller than they all are.
 (Brame 1983:333)

This is expected under the Direct Analysis because there is no clausal syntactic structure within the *than* constituent in phrasal comparatives.

Similarly, the contrast is explained by both Gapping and Stripping approaches because floating quantifiers are not allowed in these constructions, as well.

- (83) a. The students all/Many of the students ate apples and the professors all ate oranges.
 b. *The students all/Many of the students ate apples and the professors all <ate> oranges.
- (84) a. The students all/Many of the students ate apples and the professors all ate apples, too.
 b. *The students all/Many of the students ate apples and the professors all, too.

The contrast below makes the same point; that the size of the *than* constituent in phrasal comparatives is smaller than that of the *than* constituent in clausal comparatives. This is straightforwardly accounted for by the Direct Analysis.

- (85) a. She did more than what Bill did.
 b. *She did more than what Bill.
 (Brame 1983:334)

This contrast also follows directly within Pancheva (next talk)'s analysis - there is no *what* because there is no *A'*-movement.

7.5 Locality Effects in Ellipsis

As opposed to clausal comparatives, the predicate that is reconstructed in phrasal comparatives is the most local one.

- (86) a. The table is longer than the rug is wide, and the rug is longer than the desk is <d-long>/<d-wide>. (Kennedy 1999:142)
 b. The table is longer than the rug is wide, and the rug is longer than the desk <is d-long>/*<is d-wide>.
 (Kennedy 1999:157)

Under the Direct Analysis, there is only one predicate that can apply to the remnant. Thus, this fact is explained straightforwardly.

- (87) [[the rug] [[-er [than the desk]] $\lambda d.\lambda x.$ [x is longer]]]

In order to deal with the fact, Gapping and Stripping approaches would appeal to a locality constraint on finding the antecedent in Gapping and Stripping by which the antecedent must be the most local one.

- (88) a. [Philip will go to Los Angeles and [[Chuck might end up in Toledo] or [Sara <might end up> in Tromso]]].

- b. *[[Philip will go to Los Angeles] and [Chuck might end up in Toledo]] or [Sara <might end up> in Tromso]].

(Johnson 1996:23 and Sag 1974)

- (89) Philip went to Los Angeles and Chuck ended up in Toledo. But not Bill <ended up in Toledo>/*<went to Los Angeles>.

7.6 Russell's Ambiguity

The ambiguity found in clausal comparatives like (90a) is not observed in phrasal comparatives. As Heim (1985) argues, this is explained by the Direct Analysis. As discussed above, there is only one predicate that can apply to the remnant. Thus, there is only one place onto which we can put a world variable. However, this fact also follows from the theory of ellipsis under Gapping and Stripping approaches, as Heim also discusses.

- (90) a. Bo thinks that the table is wider than it is. (contradiction or confusion)
 b. Bo thinks that the table is wider than itself. (contradiction)
 (Hellan 1981, McCawley 1967, and Napoli 1983)

- (91) Direct Analysis Treatment of (90b):

Bo thinks_w that $\lambda w'$ [[the table] [[-er [than itself]] $\lambda d \lambda x$ [x is_{w'} d -much wide]]]

- (92) Deriving the ambiguity of (90a):

- a. contradiction:

Bo thinks_w that $\lambda w'$ [[-er [than λd_1 it is_{w'} d_1 -much wide]]

λd_2 [the table is_{w'} d_2 -much wide]]

- b. confusion:

Bo thinks_w that $\lambda w'$ [[-er [than λd_1 it is_{w'} d_1 -much wide]]

λd_2 [the table is_w d_2 -much wide]]

However, this fact also follows from the theory of ellipsis under Gapping and Stripping approaches, as Heim also discusses.

In (90a), the AP is elided and the world variable is outside of the elided constituent. Thus, the value of the world variable in the ellipsis clause can be different from one of the world variable in the antecedent clause. In contrast, the world variable is within the elided material in (90b) and hence, its value must be identical to one of the world variable in the antecedent clause. Consequently, (90b) only has the contradiction reading.

7.7 Island Effects

We have already seen in (19-21) that phrasal comparatives display island effects related to the position of the associate. Such effects do not surface with clausal comparatives. In general, phrasal comparatives are ungrammatical if an island intervenes between the level of the comparison and the associate. These effects are expected under the Direct Analysis.

However, some phrasal comparatives do allow for cases where the degree abstraction and the associate are separated by an island.

- (93) a. John knows more people who live in Los Angeles than in Boston. (Jeremy Hartman p.c.)

- b. (?)I met more women who played the clarinet than the bassoon.
- c. (?)Tom knows more people that plaid looks good on than polyester. (Andrew McKenzie, p.c.)

These exceptions to the island effects have the property that the associate is contained within the DP associated with the degree operator. We don't know how to handle these cases yet.

7.8 Greek *apo* comparatives: Reduction or Direct

We could take the restriction on PP associates as arguing against a Direct Analysis for *apo* comparatives in Greek.

However, as far as we know there is no other argument against the Direct Analysis for *apo* comparatives. In particular, we have not seen for Greek the kind of conclusive argument against a Direct Analysis provided by the binding evidence in English.

So given the absence of a conclusive argument against the Direct Analysis in Greek, we explore the possibility that the difference between Hindi-Urdu and Greek should be related to a difference between overt and covert movement. Assuming a Direct Analysis for Greek *apo* comparatives, we would relate the impossibility of PP-associates to a constraint against P-stranding at LF.

- (94) a. Greek:
Overt Syntax:-er.....[P Associate].....
→ extraction of DP out of PP at LF
LF:Associate₁ -er[P t₁].....
- b. Hindi-Urdu:
Overt Syntax:[Associate P]₁ -er.....[Associate P]₁.....
Deletion of higher P and interpretation of lower copy as a variable:
LF:Associate₁ -er[P t₁].....

Unlike Greek, in Hindi-Urdu there is no stage of the derivation in which DP is extracted out of PP and a postposition is stranded.

The form of this explanation is reminiscent of Bayer's explanation of the ungrammaticality of (95) in terms of a prohibition on LF P-stranding.

- (95) German (Bayer 1996:94)
 - a. *Hans verläßt sich auf [nur seinen BRUDER].
Hans relies on only his brother
'Hans relies only on his brother.'
 - b. *Maria schreibt über [sogar SUBJAZENZ].
Maria wrote about even subjacency
'Maria even wrote about subjacency.'

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