Direct Comparisons: Resurrecting the Direct Analysis of Phrasal Comparatives

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1 The inventory of Lexical Items

A case study from Phrasal Comparatives:

(1) 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).
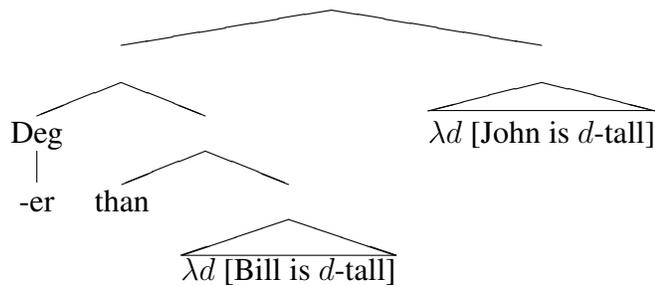
b. Bulgarian and Greek: ???

c. Hindi-Urdu: yes

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

1.1 2-place *-er* and Clausal Comparatives

(2) 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)

In clausal comparatives, *-er* combines with a degree description. Given the syntax we assume below, this yields a 2-place predicate.

(3) P, Q are degree predicates (sets of degrees)

a. -er(P)(Q) $\leftrightarrow \exists d[Q(d) \wedge \neg P(d)]$

b. -er [λd Bill is d-tall] [λd John is d-tall]

The tree diagram:

Deg ── -er, than ── λd [Bill is d-tall], with λd [John is d-tall]

- Deg
  - -er   than
    - λd [Bill is d-tall]
- λd [John is d-tall]

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

(4)   a. John is taller than six feet.

   b. Hindi-Urdu:

   Atif-ne   tiin-se   zyaadaa kitaabẽ khariid-ii thĩ:
   Atif-Erg three-than more   books.f buy-Pfv.f be.Pst.FPl

   'Atif bought more than three books.'

1.2   3-place *-er* and Phrasal Comparatives

On the surface, *-er* in phrasal comparatives does not combine with a degree description.

(5)   Phrasal:

   a. John is taller **than Bill**.

   b. Hindi-Urdu:

   John **Bill-se**   zyaadaa lambaa hai
   John **Bill-than** more   tall   is

   'John is taller than Bill.'

This aspect of phrasal comparatives leads to two kinds of analyses.

(6)   Option 1: Reduction Analyses

   a. There is only one *-er*, which takes two arguments.

   b. 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) and what the size of the reduced object is (Pancheva 2006, 2007).
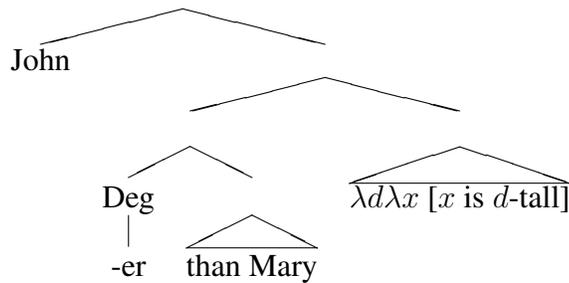
(7)   Option 2: Direct Analysis

   a. There is also a 3-place *-er* that combines with two individual arguments and a predicate of individuals and degrees.

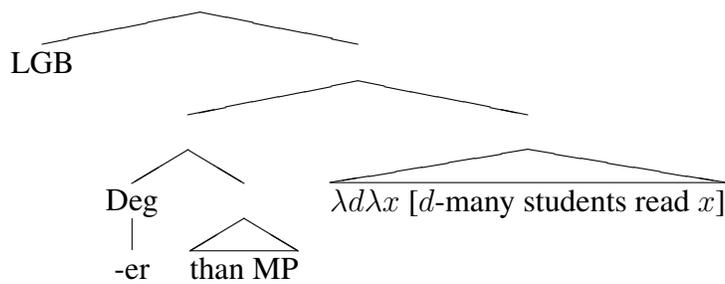   b. -er(x)(P)(y) $\leftrightarrow \exists d[P(y,d) \wedge \neg P(x,d)]$

   c. The predicate of individuals and degrees is created by movement of the associate and the degree operator.

(8)   a. John is taller than Mary.

```
                John
                      Deg        λdλx [x is d-tall]
                       |
                      -er    than Mary
```

$\exists d$ [tall(j,d) $\wedge \neg$ tall(m,d)]

   b. More students read LGB than the MP.

```
                LGB
                      Deg        λdλx [d-many students read x]
                       |
                      -er    than MP
```

$\exists d$ [$\exists x$ [students(x) $\wedge$ card(x) = d $\wedge$ read(x,LGB)]
          $\wedge \neg \exists x$ [students(x) $\wedge$ card(x) = d $\wedge$ read(x,MP)]]

2   The Direct Analysis in English

We begin with certain arguments that 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.

2.1 Pinkham's Contrast

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

(9)   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 (10) within a Reduction Analysis:

(10)   *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)

(11)   a.   *[$_A$ More men [$_B$ than ~~wear~~ suits] wear sports jackets].

     b.   [$_A$ More men wear sports jackets] [$_B$ than wear suits].

Lechner: under the Direct Analysis, (9a, b) both have the same LF (=12) and should therefore be equally grammatical.

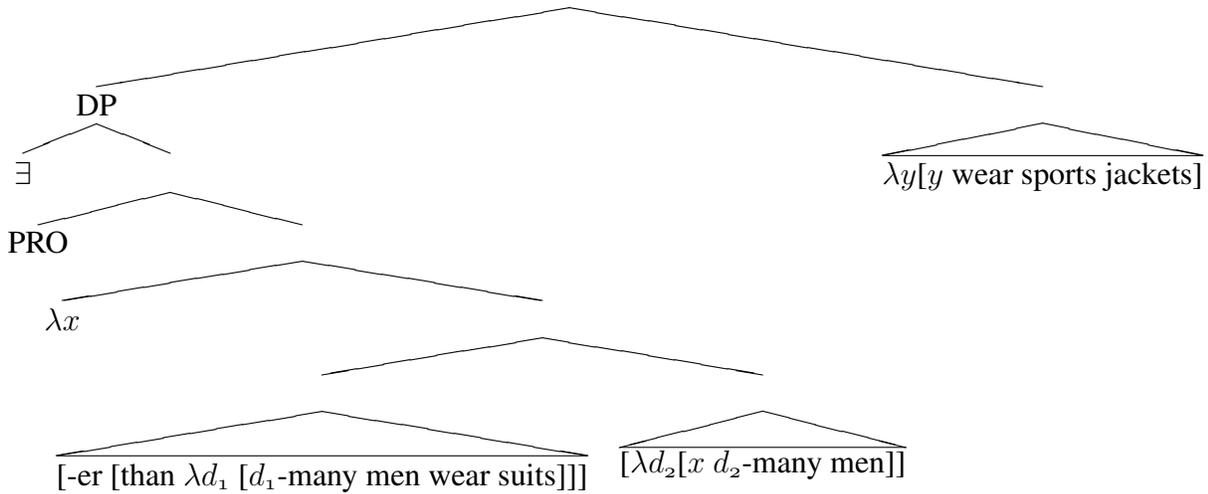(12)   [[sports jackets] [[-er [than suits]] [$\lambda d \lambda x$ [d-many men wear x]]]]

However, the Direct Analysis is also capable of capturing the contrast because (9a) does not in fact have the same LF as (9b). The actual LF representation which the Direct Analysis assigns to (9a) 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 (9b), the degree operator does not take clausal scope in (9a) and (9c) (Note that finite VPs cannot be extraposed).

To deal with (9c), 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 (13)) 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.)

(13)   [More men [than [___ wear suits]]] wear sports jackets.

DP

∃

PRO

λx

$\lambda y[y$ wear sports jackets]

[-er [than λd_1 [d_1-many men wear suits]]]   [$\lambda d_2[x\ d_2$-many men]]

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 (14).

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

DP

∃

PRO

λy

[y

wear   DP

[-er [than suits]] $\lambda d\ \lambda x$ [$x\ d$-many men]

[**sports jackets**]]
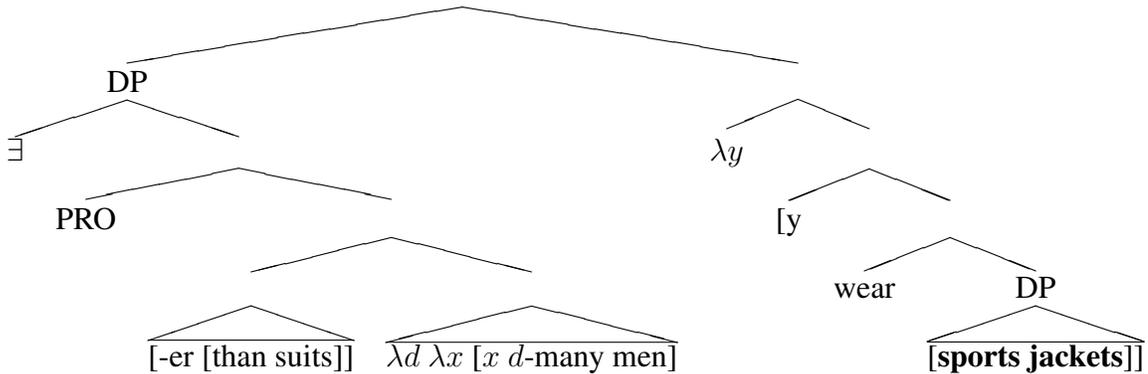
However, movement of this sort would not be allowed. (In fact, even if the movement into DP was permitted, the types would not work out.) Consequently, the Direct Analysis captures the ungrammaticality of (9a).

Finally both analyses can account for the grammaticality of (9b).

(15)   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]] $\lambda d\ \lambda x$ [d-many men wear x]]]

To sum up, the contrast in (9) does not either argue for or against one of the two analyses.

2.2 Binding by Subjects

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

(16) 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 (17). Consequently, only (17b) is ruled out by a violation of Condition C.

(17) 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 (18a/b) to (16a/b) and based on these representations concludes that the contrast is not caputred by the Direct Analysis.

(18) 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 (18) 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 (16). In these, we only QR to the vP level and the resulting structures correctly represent the binding relationships.

(19) 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.

2.3 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:

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

As shown in (21a) and (22a), if a pronoun c-commands the associate, it cannot co-refer to an R-expression inside a remnant.

(21)   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.)

(22)   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.

(23)   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.

(24)   [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.

(25)   *[-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 (21/22a).

3 Hindi-Urdu: A case for the Direct Analysis

3.1 Basic Description

3.1.1 *than*-phrase precedes *more*

(26)   a. associate > remnant > more: ok

        Atif-ne **Boman-se zyaadaa** kitaabẽ paṛh-ĩ:
        Atif-Erg Boman-than more   books.f read-Pfv.FPl

        'Atif read more books than Boman.'

     b. associate > more > remnant: *

        *Atif-ne **zyaadaa** kitaabẽ Boman-se   paṛh-ĩ:
        Atif-Erg more   books Boman-than read-Pfv.FPl

        '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

(27)   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; (5)

     b. associate = ergative subject; (26)

     c. associate = dative IO:

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

        '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.Pl

        'More people live in America than in Russia.'

    The absence of case-marking on the remnant can lead to ambiguity - (27c) 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.

(28) Phrasal Comparatives 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 kitaabẽ paṛh-ĩ:
     Tina-Erg today Pim yesterday-than more   books.f read-Pfv.FPl

     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.

(29) Hindi-Urdu

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

   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 (28a) 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 (28b): 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.

(30) 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.

(31) [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.

(32) [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*.

(33) 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.

(34) 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).

(35) *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.

(36) 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.
      d. *More people live in the country that Putin governs than Bush.
      e. *Nikos saw more movies when Nana recommended them to him than Elena.
      f. *That the dean is going to invite the cleaning lady is more noteworthy than Maria.
      (Heim 1985:26, Merchant 2007:22)

Similar constraints hold for Hindi-Urdu phrasal comparatives. There are certain additional complexities to the data for which see Appendix 6.7.

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 (see Nevins & Anand 2003 for some qualifications).

(37)   a.   some > all, unavailable: all > some

      kisi   larke-ne har   ṭiicar-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   ṭiicar-se   kisi   larke-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 (39a), the Hindi-Urdu counterpart of (38), to be deviant.

(38)   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. (39b) shows that this is, in fact, the case.

(39)   a.   remnant > more > associate

      *MP-se zyaadaa logõ-ne   LGB   paṛh-ii
      MP-than more   people-Erg LGB.f read-Pfv.f

      'More people read LGB than MP.' (intended, but unavailable)
      (available 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 logõ-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:

(40) 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.

(41) a. anaphoric binding, pronominal obviation by subject:

koi-bhii$_i$ apne aap-se$_i$/us-se$_{j/*i}$ lambaa nahĩ: 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   nahĩ: diye   ho sak-te
Atif-Erg Sita-Dat s/he-than more   presents Neg   give.Pfv.MPl be can-Hab.MPl

'Atif can't have given Sita$_i$ more presents than her$_{j/*i}$.'

(42) a. ...[than Peter's$_i$ sister]....pron$_i$..... : coreference is ok

Sally-ne   Peter-kii$_i$ behen-se   us-ko$_{i/j}$ zyaadaa logõ-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 logõ-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.

(43) a. ...[than Peter's$_i$ sister]....pron$_i$..... : coreference is ok

Sally-kii   foto Peter-kii$_i$ behen-kii   foto-se   zyaadaa logõ-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 logõ-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 Scope inside and outside *than*-phrases

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.

(44)   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*.

Cases like the following seem to require scoping of a QP out of a *than*-phrase.

(45)   Mary, a first grader, is taller than every third grader in our school.

   a.   unavailable: *-er > every*
       -er [λd [every third grader is d-tall]] [λd Mary is d-tall]
       ($\approx$ Mary is taller than the shortest third grader. (assuming monotonicity))

   b.   available: *every > -er*
       [every third grader] λx [-er [λd [x is d-tall]] [λd Mary is d-tall]]
       ($\approx$ For every third grader x, Mary is taller than x.)

   (see Larson (1988), Schwarzschild and Wilkinson (2002), Heim (2006) for analyses)

But there are also cases where *than*-phrase internal QPs take scope within the *than*-phrase. It is not clear to us whether these QPs can (seem to) take scope out of the *than*-phrase.

(46)   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.)

When can a QP take scope inside a *than*-phrase? When must it (seem to) scope out?

(47)   If a QP c-commands the site of degree abstraction, it must scope out. Otherwise it takes scope within the *than*-phrase.

   a.   degree abstraction c-commands QP: *than*-phrase internal scope ok
       Craigie assigned more students every paper by Hellan than every paper by Klein.

   b.   QP c-commands degree abstraction: QP must scope out
       Craigie assigned every first year student more papers than every second yr. student.

   $\rightarrow$ thus the subject/non-subject asymmetry is not what is behind the ability/need of a QP to scope out.

Somewhat strikingly, the Hindi-Urdu counterpart of (46) does not allow for the *than*-phrase-internal scope reading. The only interpretation available is the external scope reading.

(48) [har syntax paper] [har semantics paper]-se zyaadaa logõ-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.

(49) [jitne logõ-ne har semantics paper paṛh-aa] [us-se zyaadaa logõ-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.'

5 Handling Crosslinguistic Variation

(50) 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

(51) Hindi-Urdu:

   a. The binding data is compatible with the Direct Analysis.

   b. The Single Remnant Restriction/Scope Facts argue against 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:

(52) 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*?

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

        i. 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).

        ii. 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).

6 Appendix

6.1 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.

(53) 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.

(54) [[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 (53) to be ungrammatical, due to the disjoint referent constraint on Gapping and Stripping.

(55) 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.

6.2 Locality Effects on Movement of the Degree Operator

(56) 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 (56a) and (56b). The degree operator involved in (56a) is a 2-place one, but the one in (56b) 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.

(57) 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 (56b) to the following gapping sentence, which suggests that a finite clause boundary cannot intervene between the two remnants.

(58)   *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 the Stripping counterpart of (56b) is grammatical.

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

See Pancheva (2007) for an alternative proposal that derives the locality effects found with phrasal comparatives from the absence of A' degree-movement inside the *than*-constituent.

6.3   Extraction and Other Transparency Effects

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

(60)   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 is 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.

(61)   a.   John met Sue more often than Mary.
       b.   ??Which girl did John meet Sue more often than?

(62)   a.   John gave more people LGB than MP.
       b.   *Which book did John give more people LGB than?

(63)   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.

6.4 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).

(64) 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.

(65) 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.

(66) 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.

(67) 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 (2007)'s analysis according to which there is no *what* because there is no A'-movement in phrasal comparatives.

6.5 Locality Effects in Ellipsis

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

(68) 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 strightforwardly.

(69) [[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.

(70) 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)

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

6.6   Russell's Ambiguity

The ambiguity found in clausal comparatives like (72a) 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.

(72) 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)

(73) Direct Analysis Treatment of (72b):
Bo thinks$_w$ that $\lambda w'$ [[the table] [[-er [than itself]] $\lambda d \lambda x$ [x is$_{w'}$ d-much wide]]]

(74) Deriving the ambiguity of (72a):

    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 (72a), 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 (72b) and hence, its value must be identical to one of the world variable in the antecedent clause. Consequently, (72b) only has the contradiction reading.

6.7 Island Effects

We have already seen in (35-36) 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.

(75) 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. (Bob Levine, Craigie Roberts p.c.)

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.

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