



Comparative and Equative Correlatives as Anaphora to Differentials

Adrian Brasoveanu
Stanford University

I. Non-Conditional Comparative and Equative Correlatives

Three main contributions:

- (i) there are comparative and equative correlatives that are not conditionals (against McCawley 1988, Wold 1991, Beck 1997 a.o.)
- (ii) their semantics crucially involves a relation – possibly the identity relation – between differentials (against Beck 1997 a.o.)
- (iii) a unified analysis should be given for such non-conditional, differential-based correlatives and the more familiar, conditional-like comparative correlatives

Correlatives: "biclausal topic-comment structures [in which] the dependent clause introduces one or more topical referents to be commented on by the matrix clause, where each topical referent must be picked up by – correlated with – an anaphoric proform." (Bittner 2001)

Differentials: *2 inches*, for example, is a differential in the comparative *Gabby is two inches taller than Linus* because it specifies the difference between Gabby's and Linus' height.

Points (i) and (ii) are established by the Romanian examples in (1) – a comparative correlative and (2) – an equative correlative – below.

- (1) Cu cît e mai înalt fratele decît sora,
With how much is more tall brother.the than sister.the,
(tot) cu atît e mai înalt tatăl decît mama.
(also) with that much is more tall father.the than mother.the
'The brother is taller than the sister by a certain amount and the father is taller than the mother by the same amount.'

The comparative correlative in (1) is true iff:

- (a) the brother is taller than the sister and the father is taller than the mother; that is, there is no conditionality (no "if the brother is taller than the sister, then ..." kind of interpretation)
- (b) the difference in height between the brother and the sister is the same as the difference in height between the father and the mother – this is particularly clear if the particle *tot* (also) is present; that is, the comparative correlative equates the two differentials

- (2) Pe cît e Irina de frumoasă,
PE how much is Irina DE beautiful,
(tot) PE atît e DE deşteaptă.
(also) PE that much is DE smart

'Irina is beautiful to a certain, significant extent and she is smart to the same, equally significant extent.'

On its most salient reading, the equative correlative in (2) is true iff:

- (a) Irina is (significantly) beautiful and (significantly) smart (this is not a necessary part of the interpretation of equative correlatives)
- (b) the extent to which Irina is beautiful and the extent to which she is smart are in some sense equated / similar / comparable

II. Conditional Comparative and Equative Correlatives

Point (iii) is established by the conditional comparative correlatives in (3) and (4) below – they have (a) the same basic syntax (modulo the overt vs. covert *than* phrases) and (b) the same morphology (a wh-indefinite in the topic clause and an anaphoric demonstrative in the comment clause) as sentence (1).

- (3) Cu cît e mai agresiv un avocat,
With how much is more aggressive a lawyer,
cu atît e mai eficient.
with that much is more efficient
'The more aggressive a lawyer is, the more efficient s/he is.'

- (4) Cu cît e un număr natural mai mare decît altul,
With how much is a number natural more great than another,
(#tot) cu atît e pătratul lui mai mare decît pătratul celui alt.
(#also) with that much is square.the it.Gen more great than square.the other.Gen
'The greater one natural number is (than another), the greater its square is (than the square of the other one).'

Also, the interpretations of (3) and (4) are very closely related to the interpretation of (1). Sentence (3) has two salient readings (as Beck 1997 points out with respect to similar examples in German):

- (a) if a lawyer *x* is more aggressive than a lawyer *y* by a certain amount, then *x* is more efficient than *y* by a corresponding amount
- (b) if a lawyer *x* is more aggressive at time *t* than at time *t'* by a certain amount, then *x* is more efficient at *t* than at *t'* by a corresponding amount.

Conditional comparative correlatives crucially involve a relation between differentials, just as their non-conditional counterparts (e.g. (1)) do. This is clearly shown by (4) when the particle *tot* is present: (4) with the particle *tot* is true iff $\forall m, n \in \mathbb{N} (m > n \rightarrow m - n = m^2 - n^2)$, which is why (4) with *tot* is false and intuitively not acceptable.

This intuitive unacceptability cannot be derived if (4) does not involve a relation between differentials, which is forced by the particle *tot* to be the identity relation.

In contrast, (4) without the particle *tot* is intuitively true because it simply requires that: for any two natural numbers *m* and *n* such that $m > n$, the positive difference $m - n$ corresponds to a positive difference between their squares $m^2 - n^2$.

Point (iii) is further supported by the conditional equative correlative in (5) below, interpreted roughly as the comparative correlative in (3) (the interpretation of such equatives is in fact more constrained).

- (5) Pe cît e de agresiv un avocat,
PE how much is DE aggressive a lawyer,
pe atît e de eficient.
PE that much is DE efficient
 \approx 'The more aggressive a lawyer is, the more efficient s/he is.'

III. Degree Based Correlatives as Anaphora to Differentials

The main proposal:

- (i) the demonstrative differential *atît* (that much) is anaphoric to intervals, i.e. *atît* is a proform in the degree domain
- (ii) the wh-differential *cît* (how much) is an indefinite introducing a non-empty interval, anaphorically retrieved by *atît*

The idea that *atît* is an interval-based proform is further supported by (a) its anaphoric use in (6) below (compare with (1)), (b) its deictic use in (7) and (c) its cataphoric use in (8).

- (6) Fratele e mai înalt decît sora cu 2 cm,
Brother.the is more tall than sister.the with 2 cm,
iar tatăl e mai înalt decît mama tot cu atît.
and father.the is more tall than mother.the also with that much
'The brother is 2 cm taller than the sister and the father is taller than the mother by the same amount.'

- (7) E atît de obosită.
Is that much DE tired.f.sg
'She is so tired.'

- (8) E atît de obosită încît o = doare capul.
Is that much DE tired.f.sg that her.Acc = hurts head.the
'She is so tired that she has a headache.'

The **non-conditional** comparative correlative in (1) relates **two cases / situations** (in the terminology of Lewis 1975 / Heim 1990):

- (a) each case features two heights and their differential
- (b) the two cases are related by means of the two differentials – and the differentials are equated

The interpretation of the conditional comparative correlatives in (3) and (4) is just a generalization of this basic pattern: they do not involve a single pair of cases related by means of their respective differentials, but involve multiple pairs of such cases.

What is characterized in the literature as the **conditionality** of comparative correlatives is just the fact that they correlate **sets of pairs of cases** and not a single pair of cases.

Given a suitable framework, even run-of-the-mill conditionals like (9) below can be analyzed as correlative structures involving sets of cases (Brasoveanu 2007, building on Stone 1999 and Bittner 2001).

- (9) If a wolf came in, it would / might eat you first.

The only difference between comparative correlatives and ordinary conditionals is that the former correlate cases by means of differentials, while the latter correlate them by means of the possible scenarios they evoke – hence the conditionality / hypothetical reasoning present in the latter, but not (necessarily) in the former.

IV. Parallels between Degree and Individual Based Anaphora

The account captures the parallel between the interpretations of correlatives in the degree and individual domains, illustrated by:

- (i) reference to a single individual in the 'singular' / referential correlative in (10) below – parallel to reference to a single differential interval / a single pair of differential intervals in (1) and (2)

- (ii) reference to a set of individuals in the 'plural' / quantificational correlative in (11) below – parallel to reference to sets of (pairs of) differential intervals in (3) and (4)

- (10) Care fată şi = a uitat ieri haina,
Which girl her.Dat = HAS forgotten yesterday coat.the,
pe aceea o = caută tatăl ei.
PE that one her.Acc = look for father.the her.Gen
'The father of the girl that forgot her coat yesterday is looking for her.'

- (11) Pe care om l = a = interogat Securitatea,
PE which person him.Acc = HAS = interrogated security.the,
în acela nu am încredere.
in that one not have.1sg trust
'I do not trust any person (whatsoever) that the secret police interrogated.'

Extending the investigation of anaphoric parallels across domains (initiated in Partee 1973) to encompass the degree domain is further supported by the following English examples:

(12) Donkey anaphora:

- a. Every child that ate a lot of vanilla ice cream yesterday ate twice as much chocolate ice cream today.
- b. Every farmer who owns a donkey beats it. (Geach 1962)

(13) Quantificational subordination:

- a. Harvey eats a lot of vanilla ice cream at every convention, but Linus always eats twice as much chocolate ice cream.
- b. Harvey courts a woman at every convention. She always comes to the banquet with him. (Karttunen 1976)

(14) Modal subordination:

- a. Harvey might bring a lot of vanilla ice cream to the party tomorrow. In which case Linus would get competitive and bring twice as much chocolate ice cream.
- b. A wolf might come in. It would eat you first. (Roberts 1987)

(15) Topicalization:

- a. As smart as Linus is, Gabby is even smarter.
- b. Megan, I like her.