Ambiguous *than*-clauses and the mention-some reading

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**Overview.** The goal of this paper is to account for the ambiguity of those comparative *than*-clauses that contain an existential priority modal. As illustrated in (1), here the *than*-clause can be interpreted as the required minimum speed (i.e., 35 mph) or the speed limit (i.e., 50 mph) (see Rullmann 1995, Beck 2012, etc). We dub this kind of comparatives ‘Lucinda sentences’, and we argue that the ambiguity of the *than*-clause in (1) is derived from the mention-some/mention-all ambiguity in answering ‘how fast was Lucinda allowed to drive’.

(1) (This highway has a required minimum speed of 35 mph and a speed limit of 50 mph.)
Lucinda was driving **less fast than allowed.** ✓ <MIN, ✓ <MAX

**Empirical observations.** (I) Lucinda sentences are not necessarily **less**-comparatives; **more**-comparatives show this kind of ambiguity as well (see (2)). According to Beck (2012), for more-comparative (2), the ‘> MIN’ reading is the less preferred one, but it is not impossible.

(2) (This highway has a required minimum speed of 35 mph and a speed limit of 50 mph. Lucinda was transporting eggs and she needed to drive as slowly as possible.)
Lucinda was driving **faster than allowed.** ✓ >MIN, ✓ >MAX

Consequently, those analyses (e.g., Heim 2006b) based on the scopal interaction between **little** and *than*-clause internal modals cannot explain the ambiguity of all Lucinda sentences.

(II) Only existential modals, but not existential nominal quantifiers (e.g., *a boy*), lead to ambiguous readings of *than*-clauses. Thus, analyses (e.g., Crnić 2016) that use (i) existential closure and (ii) maximality operator respectively to derive the two readings of *than*-clauses in Lucinda sentences would over-generate unattested readings for sentences like (3).

(3) Lucinda drove **less fast than a/some boy did.** # <MIN, ✓ <MAX (see Crnić 2016)
   a. #Maximality: [than a boy did] ≈ the maximal interval *i* such that some boy drove *i* fast, i.e., the interval that includes every boy’s speed \# slowest boy < speed *Lu*
   b. Existential Closure: [than a boy did] ≈ an interval *i* such that some boy drove *i* fast

(III) *Than*-clauses containing universal quantifiers are not ambiguous (see (4) and (5) for examples containing modal and non-modal universal quantifiers). Moreover, if *than*-clauses contain exhaustifiers in addition to existential modals, there is no ambiguity (see (6)). In all these cases, *than*-clauses mean the maximal contextually-relevant interval: **more**-comparatives have only the ‘> MAX’ reading, while **less**-comparatives have only the ‘< MIN’ reading.

(4) (Lucinda should drive at a speed between 35 and 50 mph.)
   a. Lucinda was driving **less fast than she should.** ✓ <MIN, # <MAX
   b. Lucinda was driving **faster than she should.** # >MIN, ✓ >MAX

(5) a. Lucinda drove **less fast than every boy did.** ✓ <MIN, # <MAX
   b. Lucinda drove **faster than every boy did.** # >MIN, ✓ >MAX

(6) a. Lucinda drove **less fast than anyone was allowed to.** ✓ <MIN, # <MAX
   b. Lucinda drove **faster than anyone was allowed to.** # >MIN, ✓ >MAX

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1 *Less* is decomposed as (i) negation operator **little** and (ii) comparative morpheme **more/-er**.
Thus, our generalization is that comparatives are in general non-ambiguous, and Lucinda sentences are exclusively those that contain an existential priority modal in their than-clause. **Proposal.** Following previous studies (Heim 2006a, Zhang and Ling 2015, etc), we analyze the meaning of than-clauses as definite descriptions of degree-related expressions. In other words, than allowed in (1) is interpreted as ‘the speed at which Lucinda was allowed to drive’.

Based on this, we propose that these definite descriptions should be analyzed as free relatives or answers to corresponding wh-questions. I.e., in (1) than allowed actually denotes the answer to the question how fast was Lucinda allowed to drive. Thus, according to Xiang (2016), when a wh-question contains an existential priority modal and no exhaustifier, its answerhood is ambiguous between mention-all and mention-some readings.

Therefore, in (1) the mention-all interpretation of the than-clause is the interval between 35 and 50 mph, and the interval that denotes the speed lower than this interval is (−∞, 35mph), corresponding to the ‘< MIN’ reading. The mention-some answer to the wh-question ‘how fast was Lucinda allowed to drive’ can be a singleton set containing any speed degree between 35 and 50 mph, e.g., [50mph, 50mph], and the '< max' reading of (1) can therefore be derived.

**Formal implementation.** Following Zhang and Ling (2015), we interpret comparatives as relations among three degree-related expressions: (i) the one corresponding to the than-clause, (ii) the one corresponding to the comparative subject, and (iii) the differential between these two on a contextually relevant scale. In addition, we analyze all these three degree-related expressions as intervals, and in particular, comparative morphemes, i.e., more/−er, are analyzed as intervals of type ⟨dt⟩ that serve as default differentials in comparatives.

[7]–[9] show the definitions in interval semantics. [10]–[14] show the derivation of comparative sentences. In [13], we can consider that little combines with more/−er and changes the polarity of differentials so that the direction of inequality is shifted.

(7) Interval notation:
Type of degree: d; type of interval: ⟨dt⟩
An interval λδd, {δ | Imin ≤ δ ≤ Imax} can be written as [Imin, Imax].

(8) Interval subtraction: [x1, x2] − [y1, y2] = [x1 − y2, x2 − y1]

(9) a. If X − [a, b] = [c, d], then generally speaking, it is not the case that X = [a+c, b+d].
b. If X − [a, b] = [c, d], X is undefined when b+c > a+d (i.e., when the lower bound of X is larger than the upper bound of X); when defined, X = [b+c, a+d].

(10) [fast]⟨dt,dt⟩ def = λI(d,dt),λx.e, [speed(e,dt)(x) ⊆ I] i.e., the speed of x is in the interval I

(11) [more/−er]⟨dt⟩ def = I such that I ⊆ (0, +∞) i.e., a default differential

(12) [than]⟨dt,dt,dt⟩ def = λIstandard,λI differential, I[I − Istandard = I differential]

(13) [less than]⟨dt,dt,dt⟩ def = λIstandard,λI differential, I[Istandard − I = I differential]

(14) [Lucinda was driving less fast than (she was) allowed (to drive)]
⇔ speed(Lucinda) ⊆ I[THE(λI′.speed allowed ⊆ I′) − I = (0, +∞)]
With a mention-all answer, speed(Lucinda) ⊆ (−∞, the lower bound of speed allowed);
With a mention-some answer, speed(Lucinda) ⊆ (−∞, a certain degree in speed allowed).

Since mention-some answers are only available for questions with existential modals, we do not over-generate unattested readings for comparatives with existential nominal quantifiers.
References


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