A seeming violation to the Monotonicity Constraint: evidence from Spanish verbal comparatives.

<u>Degrees & Monotonicity.</u> VPs (and certain domains within NPs) can only give rise to dimensions for measurement and comparison that track the part-whole structure of their domain. This is known as the **Monotonicity Constraint (MC)** ([1]; [2]; [3]; [4]; [5]) (1a). The MC prevents unattested readings in comparatives and other degree constructions. For example, atelic predicates can be interpreted in terms of e.g. duration, but never in terms of speed (1b): subparts of a running event do not necessarily have the same degrees of speed, so the comparison cannot be interpreted in terms of speed ([3]). Thus, speed violates MC.

(1) a. A measurement μ is MONOTONIC relative to a domain D iff for all x and y in D, if x is a proper subpart of y, then $\mu(x) < \mu(y)$.

    b. Bolt runs more than Powell does for an hour   [FREQUENCY/*SPEED]

<u>A challenge for MC</u>. The MC has been attested cross-linguitically ([2]; [3]). In Spanish, comparison always obeys the MC when the predicate is telic, i.e. (2a). However, *más* 'more' can also be ambiguous between a monotonic and non-monotonic interpretation with the subclass of atelic manner of directed motion predicates (*run, swim, walk* etc.): (2b). In fact, when using *in terms of speed* with these predicates, *más* gives rise to non-monotonic interpretations (2c). Crucially non-monotonic readings are never available with *tanto* 'as much' (2b & 2c). Thus, despite the descriptive adequacy of the MC, some Spanish verbal comparatives seem to violate it. The goal of this paper is to (i) identify what drives the ambiguity of *más* that sometimes can be exempt from the MC, (ii) compare it to English *more* and (iii) compare it to *tanto*, both of which must obey the MC.

(2) a. Mario corre {más que/ tanto   como} Inés en una hora
         Mario runs more than as-much as   Inés in an   hour

         'Mario runs {more/ as much as} Inés in an hour'   [FREQUENCY/DISTANCE/*SPEED]

    b. Mario coree {más que/ tanto   como} Inés durante una hora
         Mario runs more than as-much as   Inés for   an   hour

         'Mario corre {more/ as fast as} Inés for an hour'   [FREQUENCY/SPEED (*tanto)]

    c. Hablando de velocidad, Mario corre {más que/ *tanto   como} Inés durante una hora
         speaking of speed   Mario runs more than as-much as   Inés for   an hour

         '(In terms of speed) Mario runs {faster/ *as fast as} Inés for an hour'   [*FREQUENCY/SPEED]

The proposal. To solve this puzzle, I make two proposals. First, I formulate the hypotheses in (3):

(3) a. ***más* is just *-er***, i.e. a generalized degree quantifier $\lambda P_{<dt>}.\ \lambda Q_{<dt>}.\ [\text{MAX}(Q) > \text{MAX}(P)]$.

    b. ***tanto* is the spell-out of a degree head *t-* 'as' and a quantity degree morpheme *-nto*.**

As opposed to English *more* which is decomposed into [*much + -er*] ([6]), there is no evidence that Spanish *más* is a suppletive morpheme composed of a quantity degree adjective and the degree head. This entails that *más* is more underspecified and, by hypothesis, should not be restricted to only combine with quantity denoting measure functions. In fact, *más* combines with a null measure function which is underspecified as well. On the other hand, *tanto* is morphologically complex (3b) and already has the quantity measure built in just like English *more*: *much* is spelled out as *-(n)to*.
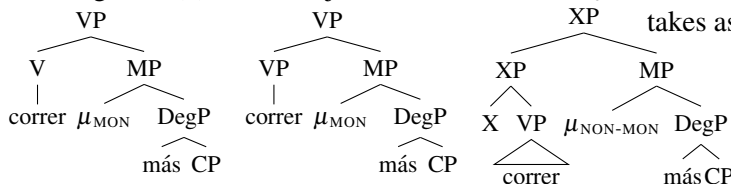
    In addition to this, I propose an elaboration on where the null measure function can be quantity and where it cannot be: **the (non-)monotonic requirements are determined by the syntactic position that the comparative occupies in the VP**. In fact, I argue that that there are three different syntactic positions that the comparative can occupy: an argument position and two distinct adjunction sites.

<u>Three different positions for *más*</u>. $\boxed{1.}$ The comparative can act as an argument of telic manner of directed motion verbs. Like measure verbs (*weigh, measure, cost*), they can take Measure Phrase (MP) complements such as *20km* ([7]): (6). $\boxed{2.}$ As a monotonic adjunct (7), the comparative adjoins to the VP as proposed by [8] for English adverbial comparatives. Here, *más* is compatible with both telic and atelic predicates (4); it cannot be made into a question with *qué*, but *cuánto* 'how much' (4b), as opposed to arguments which are compatible with both; and it can be substituted by degree adverbials (4c) ([9]; [10]). In the two monotonic

positions, a covert measure function μ_{MON}, identical to English *much* ([3]), is responsible for introducing degrees and imposing the monotonicity requirement: (9a). $\boxed{3.}$ As a non-monotonic adjunct *más* is only compatible with atelic manner of directed motion verbs (2c), can only be made into a question with the *wh*-adjunct *cómo* 'how' (5), and cannot be replaced by degree adverbials (4c). The position of the non-monotonic adjunct is higher than the monotonic counterpart in its own functional projection (8), [11]. In this position, $\mu_{\text{NON-MON}}$ introduces a degree and the non-monotonic requirement (9b).

(4) a. Juan {baila/ baila   ese tango} más que Inés
          Juan dances dances that tango   more than Inés

     'Juan {dances/ dances that tango} more than Inés does'   [FREQUENCY/*SPEED]

     b. {*Qué/ Cuánto}   baila   Juan? ⇒ más que Inés
         what   how-much dances Juan   more than Inés

     '{*What/How much} does Juan dance?' ⇒ more than Inés   [FREQUENCY/*SPEED]

     c. Juan {baila/ corre} {bastante/ mucho/ poco}
         Juan dances runs   enough   much   little

     'Juan {dances/ runs} {enough/ a lot/ little}'   [FREQUENCY/DURATION/*SPEED]

(5) {*Qué/ *Cuánto/ Cómo} corre Juan? ⇒ más que Inés
     what   how-much how   runs Juan   more than Inés

     '{*What/*How much/ How} does Juan run?'⇒more than Inés   [*DURATION/*DISTANCE/ SPEED]

(6) Mon Arg.   (7) Mon adj.   (8) Non-Mon adj.   After QR, *más* leaves a trace of type *d* that μ takes as an argument. CP is late-merged [12].

This is the same position that can be occupied by an overt PP headed by *a* '(up) to'. This PP is in complementary distribution with non-monotonic *más* (10). The presence of the *a*-PP blocks the non-monotonic interpretation from the comparative, since the PP itself introduces a non monotonic MP, e.g. *20km/h*.

(9) a. $[\![\mu_{\text{MON}}]\!] = \lambda d.\lambda e_v.\ \mu_{\text{MON}}\ (e) \geq d$;
         μ is monotonic iff $e \sqsubset e' \rightarrow \mu(e) < \mu(e')$, where $<$ is a strict ordering of degrees in the range of μ

     b. $[\![\mu_{\text{NON-MON}}]\!] = \lambda d.\lambda e_v.\ \mu_{\text{NON-MON}}\ (e) \geq d$;
         μ is non-monotonic iff $e \not\sqsubset e' \rightarrow \mu(e)\ \not< \mu(e')$ where $\not<$ is not a strict ordering of degrees in the range of μ

(10) Durante 50 min Juan corre [más que Miguel] [a   20km/h]
      for   50 min Juan runs   more than Miguel   up-to 20km/h

     "For 50', Juan runs more times than Miguel up to a speed of 20km/h" *más* = [FREQUENCY/*SPEED]

Equative *tanto*. *tanto* is incompatible with non-monotonic interpretations. Since *tanto* can be decomposed into a degree head and a quantity degree morpheme it can only be merged in a position compatible with the MC, i.e. (6) and (7). The ungrammaticality of non-monotonic interpretations follows: *[$\mu_{\text{NON-MON}}$ [*tan*-]].

Conclusion. Novel observations from Spanish verbal comparatives illuminates our understanding of dimensions for measurement. The MC, though apparently violated, is in fact not: the underspecificity of *más* allows for non-quantity measure functions and enables an additional adjunction site where a non-monotonic interpretation is composed. This site is only available *iff* the comparative morpheme is not decomposable into a quantity degree morpheme. The MC applies only within a particular syntactic domain in the VP, much like [1] showed that it is syntactically constrained in the NP. A deeper explanation for (8) is still outstanding.

References.[1].**Schwarzschild, R.**.2006.“The Role of Dimensions in the Syntax of Noun Phrases”.*Syntax.*; [2].**Nakanishi, K.**.2007a.*Formal Properties of Measurement Constructions.*[3].**Wellwood, A. Hacquard, V. & Pancheva, R.**.2012. “Measuring and Comparing Individuals and Events”. *JS.*; [4].**Wellwood, A.**.2015.“On the semantics of comparison across categories”.*Ling & Phil.*; [5].**Wellwood, A.**.2019.*The meaning of More.*; [6].**Bresnan, J.**.1973.“Syntax of the Comparative Clause Construction in English.”*LI.*; [7].**Fábregas, A.**.2007. “The Exhaustive Lexicalisation Principle.”*Nordlyd.*; [8]. **Pasternak, R.**.2018 “The mereology of attitudes.”PhD, diss. SBU; [9].**Rizzi, L.**.1990.*Relativized Minimality.*; [10].**Real-Puigdollers, C.**.2013 “Lexicalization by phase.”PhD, diss. UAB; [11].**Cinque, G.**.1999.*Adverbs and functional heads: a cross-linguistic perspective.*[12]. **Bhatt, R. & Pancheva, R.** 2004. “Late merge of degree clauses” *LI.*