Comparatives and standards of precision

It is natural to assume that the truth-value appropriately assigned to a vague sentence can depend on context and in particular on a 'standard of precision' in operation in the conversation. For example, the standard for assessment of 'France is hexagonal' would be higher in the context of a geography conference than when describing the countries to a child. I will argue that this standard of precision is important for comparatives as well.

As noted by Von Stechow (1984) the standard appporaches towards comparatives (Seuren, Klein, but also his own approach) have a problem with sentences of the following form:

(1) a. John is taller than Mary *and* Sue. $\exists c[T(j,c) \wedge \neg(T(m,c) \wedge T(s,c))]$
b. John is taller than everybody else is. $\exists c[T(j,c) \rightarrow \neg\forall x[x \neq j \rightarrow T(x,c)]]$

Intuitively, (1-a) is true iff John is taller than Mary *and* John is taller than Sue. But on the standard analyses, this comes out only in case Mary and Sue (or everybody else) are considered to be equally tall. For suppose that John is taller than Sue, but that Mary is taller than John. In that case, (1-a) is predicted to be true on the degree-approach because there is a degree of tallness that John has, but not Sue, while (1-a) is predicted to be true on the delineation-approach because there is a context, $\{j,s\}$, where John is tall but not Sue. Of course, this prediction is false. Obviously, (1-b) gives rise to the same problem. Note that simply scoping the conjunction and quantifier over the existential quantifier '$\exists c$' is not allowed, because it not only violates a standard syntactic constraint on (quantifier) movement (cf. Larsson, 1988), Schwarzchild & Wilkinson (2002) show that it also can't give the correct truth conditions for a sentence like *Bill did better than John predicted most of his students would do*. Schwarzchild and Wilkinson (2002) propose to solve this problem in the context of a degree-based analysis of comparatives by assuming that we should not work with degrees thought of as *points*, but rather with degrees thought of as *intervals*. We would like to claim that it is more natural to solve the problem by making the standard of precision such that it blurs any differences between individuals that 'witness' the comparative clause.

Let us define a *context structure*, M, to be a triple $\langle I, C, V\rangle$, where I is a non-empty set of individuals, the set of contexts, C, consists of all finite subsets of I, and the valuation V assigns to each context $c \in C$ and each property P those individuals in c which are to count as 'being P in c'. Say that $P(c)$ denotes the set of individuals in c that have property P with respect to c: $P(c) = \{x \in c : P(x,c)\}$ Now we state the following principle of choice (C), and the cross-contextual constraint (A) to limit the possible variation:

(C) $\forall c : P(c) \neq \emptyset$;

(A) If $c \subseteq c'$ and $P(c') \cap c \neq \emptyset$, then $P(c') \cap c = P(c)$.

If we say that 'John is P-er than Mary' iff $j \in P(\{j,m\}) \wedge m \notin P(\{j,m\})$, one can easily show that the comparative as defined above is (i) irreflexive, (ii) transitive, and (iii) almost connected, where R is almost connected iff $\forall x,y,z : xRy \rightarrow (xRz \vee zRy)$. Such relations R can be turned into *linear* orderings R^* of equivalence classes of individuals that are connected ($\forall v,z : vR^*z \vee zR^*v$). First, say that x is R-equivalent to y, $x \approx_R y$, iff$_{def}$ neither xRy nor yRx. Take $[x]_\approx$ to be the equivalence class $\{y \in D_e | y \approx_R x\}$. Then we say that $[x]_{\approx_R} R^* [y]_{\approx_R}$ iff$_{def}$ xRy or $x \approx_R y$. In measurement theory, measures, or *degrees*, are defined in terms of such linear orders (cf. Klein, 1980).

Until now we have assumed that we always works with a *fixed* model, or context structure $M = \langle I, C, V\rangle$. Each context structure gives rise to an ordering relation '$>_P$' and a set of equivalence classes of individuals *being as* P *as* or '$\approx_P$'. Note that in a different context structure M', the relations '$>_P$' and '$\approx_P$' might come out very differently.

Let us now look at a *set* of context structures $\mathcal{M}$. Let us say that in all contexts structures M, M' of $\mathcal{M}$, the set of individuals, I, and the set of contexts, C, is the same: $I_M = I_{M'}$ and $C_M = C_{M'}$. This means that M and M' of $\mathcal{M}$ only differ with respect to their valuation functions, $V_M \neq V_{M'}$. Now we can define a *refinement* relation between models M and M' as follows: $M \leq_P M'$ iff (i) $V_M(P^>) \subseteq V_{M'}(P^>)$ and (ii) $V_M(\approx_P) \supseteq V_{M'}(\approx_P)$.

Now we say that (1-a) *John is taller than Mary and Sue* is true in $M \in \mathcal{M}$ iff $\exists M' \leq M$ and $M' \models m \approx_T s$ and $\exists c[M' \models T(j,c) \wedge \neg(T(m,c) \wedge T(s,c))]$. From this we can conclude that in M it cannot be that John is either shorter than Mary or shorter than Sue. By our new suggested truth conditions for comparatives this means that both *John is taller than Mary* and *John is taller than Sue* are predicted to be true in M, just as desired. The reasoning goes as follows: Because $M' \models m \approx_T s$, it follows by our constraint on models that $\forall x \in I$: if $M \models m \geq_T x \geq_T s$, then $M' \models m \approx_T x \approx_T s$. Now suppose that in M John is counted as being taller than Sue, but not as being taller than Mary. It follows by our above reasoning that in the more coarse-grained model M', John must be counted as being equally tall as Mary and Sue. But that means that $\exists c[M' \models T(j,c) \wedge \neg(T(m,c) \wedge T(s,c))]$ is false, which is in contradiction with what we assumed.

The original analysis predicted that the *than*-clause was a Downward Entailing context, and thus correctly predicts that it allows for negative polarity items like *any* and *ever*. Can our new proposal still account for this? Yes, we can claim that the *than*-clause of a comparative is *always* downward entailing, but only in context structures where the comparative can be used appropriately. So, the standard cases of NPIs can be accounted for without a problem. But what about our reasoning from (1-a) *John is taller than Mary and Sue* to *John is taller than Mary*? Well, we have just seen that (1-a) can only be used appropriately in a context structure M where Mary is (considered to be) equally tall as Sue. But in such a context structure, the sentence *Mary is tall* is true iff *Mary is tall and Sue is tall* is true (in contexts that contain at least Mary and Sue). But that means that in M the conditional *If Mary is tall, Mary and Sue are tall* is true. But this is enough to show that the inference from *John is taller than Mary and Sue* to *John is taller than Mary* is not in conflict with the *than*-clause of the comparative to be Downward Entailing.

In the talk I will show how to (slightly) improve this account such that it can also account for other examples of Schwarzchild & Wilkinson (2002), like *John is taller than Bill expected most students would be* and *John is taller than exactly 3 others are*. It will also be shown how the same construction can account for (i) vagueness of comparatives and (ii) the difference between *John is 2m tall* and *John is <u>exactly</u> 2m tall*. Finally we would like to discuss to what extent our analysis helps to account for the difference between absolute and relative gradable adjectives as recently discussed by Kennedy (to apppear).

References: Kennedy, (to appear) 'Vagueness and grammar: the semantics of relative and absolute gradable adjectives', *L&P*. Klein (1980), 'The semantics of positive and comparative adjectives', *L&P*. Schwarzchild & Wilkinson (2002) 'Quantifiers in comparatives' *NLS*. von Stechow (1984) 'Comparing semantic theories of comparison', *J. of Semantics*.