Quantifiers in the than-clause

Rullmann section 2.8:

(1) John weighs more than everybody else weighs.
   'for everybody else x, J weighs more than x'
(2) John weighs more than most people weigh.
   'for most people x, J weighs more than x'
(3) John weighs more than many people weigh.
   'for many people x, J weighs more than x'
(4) John weighs more than some people weigh.
   'for some people x, J weighs more than x'
(5) John weighs more than Bill and Sam weigh.
   'J weighs more than Bill & J weighs more than Sam'
(6) *John weighs more than nobody else weighs.
(7) *John weighs more than few people weigh.
(8) John weighs more than it seems that everybody else weighs.
   "... does presuppose that everyone other than John has (at least roughly) the same weight"

Schwarzschild & Wilkinson:

(9) Q is taller than everybody else is.
    'for everybody else x, Q is taller than x'
(10) H is taller than exactly five of the others are.
     'for exactly five x of the others, H is taller than x'
(11) H is taller than only one of the others is.
     'for only one x of the others, H is taller than x'
(12) Alice is richer than George was and most of his children will ever be.
     'A is richer than George was & for most of George's children x, A is richer than x will ever be'
(13) Bill did better than John predicted most of his students would do.
   'for every w that conforms to John's predictions, for most of John's students x, Bill did better (in the actual world) than x did in w' [?]

(14) Lucy paid more for her suit than they both paid in taxes last year.
   'for both x, Lucy paid more for her suit than x paid in taxes last year'

(15) It is colder in Stony Brook today than it usually is in New Brunswick.
   'for most times t, it is colder in Stony Brook today than it is in New Brunswick at t' [?]

Apparent generalization:

(16) All quantifiers in the than-clause – including floated quantifiers, quantificational adverbs, time operators, and intensional verbs (=quantifiers over worlds) – scope over the comparison operator.

(17) Exception (?): Downward entailing quantifiers cannot scope out.

Apparent counterexamples explained away as Free Choice or generic:

(18) John is taller than Mary or Susan is.
   'or' = wide scope conjunction
   Cf.: Either John or Bill is acceptable to me.

(19) John is taller than anyone else is.
   'any' = wide scope universal
   Cf.: Anyone of them will do.

(20) John is happier than he ever was.
   'ever' = wide scope universal over times
   Cf.: ?? (no attested other cases)

(21) John makes more money than a professor does.
   'a professor': generic indefinite with roughly universal force
   Cf.: A professor needs a library.

(22) I made it stronger than I ever made a cabinet door before.
   'a cabinet door': generic?
   intended meaning: 'for all t before now, all cabinet doors x: I made it stronger than I made x at t'
(23) Er stieg höher, als je zuvor jemand gestiegen war.
he climbed higher than ever before someone climbed had
'he climbed higher than anyone ever had climbed before'
'jemand' does not normally have generic uses (like English 'someone')

(24) More people ate something than drank something.

(25) She drove faster than she was allowed to drive.
'allowed' = universal quantification over world, taking wide scope ??

(26) He has more money than he needs.
'need' = existential with wide scope ??

Wrong predictions
With relational adjective meanings and comparative semantics so far entertained:

(27) John is taller than everyone else is.
predicted: 'J is taller than the shortest other person'

(28) John weighs more than some people weigh.
predicted: 'J weighs more than the heaviest person' (contradictory?)

(29) John weighs more than some other people weigh.
predicted: 'J weighs more than the heaviest other person'

(30) H is taller than exactly two of the others are.
predicted: 'H is taller than at least two of the others' (?)

(31) John weighs more than most people do.
predicted: 'J weighs more than at least half of the people do' (?)

Containing the damage by means of functional adj meanings?

(32) John is taller than everyone else is.
predicted: presupposes that everyone else is the same height and asserts that J is taller than that

(33) H is taller than exactly two of the others are.
predicted: Presupposes that there is at least one pair of people who are the same height and different from anyone else. Asserts that H is taller than the people in the tallest such couple.
(34) John weighs more than some people weigh.
predicted: ‘J weighs more than the heaviest person’ (same as with relational meanings)

Functional adj meanings don't seem to help much.

Larson 1988

(35) \([\text{-er} \] = \(\exists R_{<d,et}>\exists P_{<t,et>}\exists Q_{<et,t>}\). \(\forall y_{\text{e}}. \exists x_{\text{e}}. \max_{d}R(d)(y) > \max_{d}R(d)(x))\)

(36) or, more accurately:
\([\text{-er} \] = \(\exists R_{<s,<d,et>>}\exists P_{<<s,et>,t>}\exists Q_{<<s,et>,t>}\).
\(\forall i_{\text{i}}, \exists y_{\text{e}, i}. \exists x_{\text{e}}. \max_{d}R(i)(d)(y) > \max_{d}R(i')(d)(x))\)

(37) John is taller than every girl is.
LF: [-er tall (than) \(\exists P_{<e, t>}\). every girl is P] \(\exists P_{<e, t>}\). John is P

(38) Boston is hotter today than it usually is.
[-er hot (than) \(\exists P_{<s, et>}\). usually[Boston is P] \(\exists P_{<s, et>}\). today[Boston is P]
[-er hot (than) \(\exists P_{<s, et>}\). for most t, P(t)(Boston) = 1] \(\exists P_{<s, et>}\). P(today)(Boston) = 1

Limitation (noted by Larson): does not generalize to subdeletion comparatives.

A variant of Larson's analysis

Retain the idea that the comparative expresses a relation between two 2nd-order properties, but let them be 2nd-order properties of degrees rather than of individuals.

(39) New adjective meanings:
\([\text{[tall]} \] = \(\exists D_{<d,t>}\). TALL(x) \(\exists D\)
(where TALL is, as before, the measure function)

(40) Familiar LFs, except that former degree variables are now vbls over sets of degrees.
[-er tall (than) \(\exists D_{<d,t>}\). every girl is D-tall] \(\exists D_{<d,t>}\). John is D-tall

(41) New meaning for comparison operator (analogous to Larson's):
\([\text{-er} \] = \(\exists P_{<dt,t>}\exists Q_{<dt,t>}\). \(\forall d_{d}. \exists d'_{d}. d > d'\))
(42) Simple matrix clause of the form \(x\) is \(t\) adj:

\[ Q = \square D. \text{ADJ}(x) \square D \]

\[[\text{-er}] (\mathcal{P})(Q) = 1 \quad \text{iff} \quad \mathcal{P}(\square d'. \text{ADJ}(x) > d') = 1 \]

**Schwarzschild & Wilkinson's proposal**

(43) simplified version for comparatives without differential phrases:

\[[\text{-er}] = \square \mathcal{P}_{<I,t>} \square \mathcal{Q}_{<I,t>}. Q(\max I. \square K \square I: \mathcal{P}(\max J. K > J) = 1) = 1 \]

cf. (86) on p. 26

(44) \(I, J\): variables for intervals on the degree scale.

(Intervals are sets of degrees, but not every set is an interval.)

(45) \(I > J\) : \(\square d \square I. \square d' \square J. d > d'\)

(46) Simple matrix clause of the form \(x\) is \(t\) adj:

\[ Q = \square I. \text{ADJ}(x) \square I \]

\[[\text{-er}] (\mathcal{P})(Q) = 1 \quad \text{iff} \quad \text{ADJ}(x) \square \max I. \square K \square I: \mathcal{P}(\max J. K > J) = 1 \]

Question: Is (46) equivalent to (42)? I suspect that it is, but don't have a proof.