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June 3, 2008

On Seuren-Rullmann's ambiguity

■ Readings from Heim 2001: scopal ambiguity, pragmatic vagueness, or something else?

(1) The paper is required to be less long than that (15pp.).
a. "The longest acceptable paper is less than 15 pp."
b. "The shortest acceptable paper is less than 15 pp."

- Minimal vs. maximal boundary ambiguity: PRAGMATIC VAGUENESS

(2) The paper is required to be 15pp.
a. Maximal boundary: $\forall w$ Acc w_0 [**max**{d: long(p,d,w)} < 15pp]
⇒ "This is required: the length of the paper be under 15pp."
b. Minimal boundary: $\forall w$ Acc w_0 [**min**{d: long(p,d,w)} ≥ 15pp]
⇒ With "at least d-tall" meaning, impossible desire.
With "exactly d-tall" meaning: "This is required: the exact length of the paper to be 15pp or more."

(3) The paper is required to be less long than that (=15pp).
a. "Surface": $\forall w$ Acc w_0 [**max**{d: long(p,d,w)} < 15pp]
⇒ "This is required: the length of the paper be under 15pp."
b. "Inverse":
b'. $\forall w$ Acc w_0 [**min**{d: long(p,d,w)} ≥ 15pp]
⇒ With "at least d-tall" meaning, impossible desire.
With "exactly d-tall" meaning, unavailable reading:
* "This is required: the exact length of paper be 15pp or more."
b". $\forall w$ Acc w_0 [**min**{d: long(p,d,w)} < 15pp]
⇒ With "at least d-tall" meaning, trivial desire.
With "exactly d-tall" meaning, it equals (3a):
"This is required: the exact length of paper be under 15pp."

- [NEG split approach: it is not obvious how to derive the relevant reading for *exactly 5pp –er than that*; it also overgenerates a wide opaque reading.]

- *-er than IP* can QR / quantify-in over the intensional verb *require*: SCOPAL AMBIGUITY.

(4) The paper is required to be less long than that (15pp.).
a. Surface: $\forall w$ Acc w_0 [max{d: long(p,d,w)} < 15pp]
= "The longest acceptable paper is less than 15 pp."
b. Inverse: max {d: $\forall w$ Acc w_0 [long(p,d,w)]} < 15pp
= "The shortest acceptable paper is less than 15 pp."
= "The paper is not required to be as long as 15pp."

■ A related ambiguity: Seuren-Rullmann's ambiguity.

(5) Lucinda was driving less fast than is allowed on this highway. (Rullmann 1995)
a. Maximal boundary: She drove below the speed limit.
b. Minimal boundary: she drove below the required minimum speed.

(6) The helicopter was flying less high than a plane can fly. (Rullmann 1995)
a. Max: A plane can fly higher than the helicopter was flying.
b. Min: A plane cannot fly as low as the helicopter was flying.

Note that, in these cases, the intensional verb is in the *than*-clause, rather than in the matrix clause. According to the rules of Relative Clause formation, that means that the *wh*- over degrees has surface scope over the intensional verb, rather than surface scope under it: (7). That is, the challenge in previous handout was to try to derive the ambiguity from the surface scope [verb >> *less*]; the challenge now is to derive the ambiguity from the surface scope [*less* >> verb].

(7) a. [[*(than) wh$_1$ the bed is t$_1$-long*]] = λd. long(the bed,d)
b. [[*(than) a plane can fly*]] = λd. $\exists w$ Acc w_0 [a plane flies at d-altitude]

■ Rullmann's approach 1: *Less* is lexicaly ambiguous, as in (8)-(9).

Rullmann assumes the "exactly d-tall" meaning for gradable adjectives in this approach. I.e., x is d-high does not entails x is d'-high for any d'<d.
This approach yields the desired ambiguity in (10). Note that we need the "exactly d-tall" meaning; otherwise, min{d:$\exists w$ Acc w [fast(x,d,w)]} = 0, which would make (13) automatically false.

(8) [less$_1$ than α] β = 1 iff max(β) < max(α)
(9) [less$_2$ than α] β = 1 iff max(β) < min(α)

(10) John drives less fast than is allowed.

(11) LF: [less (than) wh 1 [for John to drive t$_1$-fast is allowed]] 2 [John drives t$_2$ fast]

(12) With *less$_1$*:
max{d: fast(j,d,w_0)} < max{d:$\exists w$ Acc w_0 [fast(x,d,w)] }

(13) With *less$_2$*:
max{d: fast(j,d,w_0)] < min{d:$\exists w$ Acc w_0 [fast(x,d,w)] }

QUESTION 1 (based on Heim's 1998 lecture notes): Why does (14) pose a problem for this approach?

(14) John drives less fast than is required.

■ Rullmann's approach 2: Decomposition of *less* into *–er little*, plus ellipsis.

We can assume the "at least d-tall" meaning or the "exactly d-tall" meaning of gradable adjectives.
Less is decomposed into *er* and *little*, and we can do either of the bracketings in (15) at LF.
The morphemes LESS and MORE are interpreted as in (16)-(17).
The bracketing chosen determines the shape of the adjective in the elided part of the *than*-clause, as exemplified in (18) and (19). Note that the ordering of the degrees of shortness is the reverse from the order of the degrees of tallness.
With these assumptions, the desired readings are derived.

(15) a. *[er little] fas*t means "LESS fast".
b. *er [little fast]* means "MORE slow".

(16) [LESS than α] $\beta = 1$ iff $\max(\beta) < \max(\alpha)$
(17) [MORE than α] $\beta = 1$ iff $\max(\beta) > \max(\alpha)$
(18) $[\![\textbf{fast}]\!]^{w,g}$ = $\lambda d.\lambda x.\text{fast}(x,d,w)$
(19) $[\![\textbf{little fast}]\!]^{w,g} = [\![\textbf{slow}]\!]^{w,g}$ = $\lambda d.\lambda x.\text{slow}(x,d,w)$

(20) John drives less fast than is allowed.

(21) With the bracketing *[er little] fas*t:
a. [**[er little]** (than) wh 1 [for John to drive t_1-**fast** is allowed]] 2 [John drives t_2-**fast**]
b. $\max\{d: \text{fast}(j,d,w_0)\} < \max\{d:\exists w \text{ Acc } w_0 [\text{fast}(x,d,w)]\}$
c. Maximal boundary: "He drives below the maximal speed limit."

(22) With the bracketing *er [little fast]*:
a. [**er** (than) wh 1 [for John to drive t_1-**[little fast]** is allowed]]
2 [John drives t_2-**[little fast]**]
b. $\max\{d: \text{slow}(j,d,w_0)\} > \max\{d:\exists w \text{ Acc } w_0 [\text{slow}(x,d,w)]\}$
c. Minimal boundary: "He drives below the minimal speed limit."

QUESTION 2: From last handout, we tentatively concluded that DegPs like *[er than IP]* or *[less than IP]* can QR over an intensional verb in the matrix clause. Now, Rullmann proposes a bracketing ambiguity for *less*. If we combine the two types of ambiguity, we obtain four logically possible LFs for (23). Spell them out. Do we intuitively get all the readings predicted by these LFs?

(23) John is required to drive less fast than than (=60mph)

QUESTION 3: Do we obtain Seuren-Rullmann's ambiguity with *more* and *exactly n –er*?
(24) John drives faster than is allowed.
(24') John drives faster than is required.

(25) John drives exactly 1mph faster than is allowed.
(25') John drives exactly 1mph faster than is required.