Bodyguards Under Cover: The Status of Individual Concepts

I argue that individual concepts are not directly denoted by common nouns or intensions of definite descriptions, but enter semantic computation because quantification is sensitive to how we individuate the entities in the world.

Problem: In subject position of a verb like *rise* or *change*, a noun phrase like *the temperature* has to contribute not just its actual value, but also values for neighbouring indices. Hence, Montague (1974) proposes that, at an index, common nouns denote sets of individual concepts $\langle\langle \underline{s}, e\rangle, t\rangle$ instead of individuals $\langle e, t\rangle$. But this doubles the index dependence for the ultimate type e values, failing to account for intuitively valid inferences (cf. Dowty, Wall, Peters 1976, Romero 2006). Lasersohn (2005) avoids this by assuming that nouns denote sets of individuals. In intensional argument positions, he derives individual concepts by using the intension of the Fregean definite description:

(1) $[\![\text{the temperature}]\!] = \lambda\langle w, t\rangle.u$ s.t. u is the unique temperature value at t in w, if such a u exists, undefined else.

Romero (2006) points out that the solution cannot be applied when more than one object of the given type is under consideration (e.g. (2a)). Moreover, we want to account for Nathan's (2006) observation that (2a) can be true if the mayors of three cities have exchanged jobs among the three of them (*pointwise change*, PC), whereas for (2b), the set of bodyguards needs to change (*set-change*, SC).

(2) a. After last weekend's elections, three mayors changed.
b. (What about Arnold's staff? Last week,) three bodyguards changed.

Proposal: Lasersohn's solution can be extended to (2a), if we take into account the implicit arguments and quantify over the set of functions M = $\{\lambda w \lambda t$.the unique mayor of x at $\langle w, t\rangle \mid x$ among the contextually salient cities$\}$. This works for functional nouns like *temperature* or *mayor*, but fails for properly relational ones. (3) can only be true if Smith has more than one more than one critical value, but exactly in such a scenario the description *the unique critical value of Smith* is undefined, rendering an analysis along the lines of (1) inapplicable.

(3) Three critical values of patient Smith are rising.

For (3), uniqueness could be forced by sticking in particular roles they play with respect to the one patient. For (2b), this can fail because bodyguards need not come with such individuating roles. At this point we should reconsider the status of individual concepts. Aloni (2000) claims that quantification, questioning and belief attribution proceed with respect to a conxtually salient way of how we individuate the individuals in the discourse domain. These perspectives are captured as conceptual covers:

(4) A `conceptual cover CC` based on a set of possible worlds W and a domain of individuals D is a set of functions W $\rightarrow$ D such that:
$\forall w \in W : \forall d \in D : \exists! c \in CC : c(w) = d$

Now, interpretation proceeds w.r.t. a set of contextually salient conceptual covers Π. To account for (2), I assume that for all CC in Π that have a subset describing the set of bodyguards/mayors before and after the change, we quantify over the elements

of that subset (cf. (6), where $F[w,t] := \{f_i(w,t) \mid f_i \in F\}$). The difference between PC and SC follows from the kinds of CC contained in Π. For nouns like *mayor* that invoke individuating subproperties, these are likely to constitute the most salient cover ($\{$*the mayor of NY, the mayor of Berlin,...*$\}$). Bodyguards lack comparable roles; if we want to talk about change, we have to supervaluate over equally salient ways of covering the set of bodyguards throughout the relevant interval. Unless the set itself changes, a cover consisting only of individual concepts that pick the same individual at t^- and t^+ is considered as well, falsifying (2b).

(5) $[\![\text{change}]\!]^\Pi(w,t)(f) = 1$ iff $f(w,t)$ undefined, and $f(w,t^-) \neq f(w,t^+)$
(with t successor of t^-, t^+successor of t).

(6) $[\![\text{Three bodyguards changed.}]\!]^\Pi(w,t) = 1$ iff
for every $F \in \Pi$ and $F_1 = \{f_1, \ldots, f_n\} \subseteq F$ such that either
(i) for all $f_i \in F_1$: $f_i(w,t)$ defined and $F_1[w,t] = [\![\text{bodyguard}]\!]^\Pi(w,t)$, or
(ii) $F_1[w,t^-] = [\![\text{bodyguard}]\!]^\Pi(w,t^-)$ and $F_1[w,t^+] = [\![\text{bodyguard}]\!]^\Pi(w,t^+)$:
$|\{f_i \in F_1 \mid [\![\text{change}]\!]^\Pi(w,t)(f_i)\}| \geq 3$; otherwise 0.

The pragmatic solution also accounts for: (i) Context dependence (e.g. for (2b), some informants come up with scenarios where the bodyguards are distinguished with respect to what exactly they have to guard, giving then rise to a PC interpretation); (ii) The ambiguity of (7a), without lexcial ambiguities: $\Pi = \{\{$*the highest temperature,..., the lowest temperature*$\}\}$ gives rise to the reading: in a series of measuring events, the lowest value measured increases (can be true if at different indices (different) sets of falling temperatures are considered). The preferred reading arises with $\Pi = \{\{$*the temperature of NY, ..., the temperature of Berlin*$\}\}$ where the actually lowest one is observed to be rising (and thus might cease to be lowest); (iii) Variable readings with names (cf. (7b)).

(7) a. The lowest temperature is rising.
b. The temperature in my office is 34 degrees Celsius, and the 34 degrees will certainly increase.

Conclusion: Individual concepts in the nominal domain are neither lexical denotations nor intensions of Fregean definite descriptions, but part of the perspective taken on individuals in the context. This accounts for quantificational examples with functional as well as with properly relational nouns. The predicted context dependence fits speaker intuitions, and allows for variable readings of putatively rigid expressions. Of course, it has to be investigated in more detail how CC are rendered salient (cf. Aloni 2000). (7a) is surprisingly similar to Heim's (1979) problematic ambiguities with concealed questions; it would be interesting to extend the under cover analysis to this related phenomenon.

References: Aloni (2000) *Quantification under Conceptual Covers.* Amsterdam. **Dowty, Wall** & **Peters** (1981) *Introduction to Montague Semantics.* Dordrecht. **Heim** (1979) Concealed Questions. In: Bäuerle, Egli & v. Stechow (Eds.) *Semantics from Different Points of View.* Berlin, 51-60. **Lasersohn** (2005) The temperature paradox as evidence for a presuppositional analysis of definite descriptions. *LI* 36, 127-144. **Montague** (1974) The proper treatment of quantification in English. In: Thomason (Ed.) *Formal Philosophy. Selected Papers of Richard Montague.* New Haven/London, 247-365. **Nathan** (2006) *On the Interpretation of Concealed Questions.* PhDthesis, MIT. **Romero** (2006) Some paradoxes about individual concepts. Invited Talk at *Sinn & Bedeutung 11*, Barcelona.