Beyond demonstratives: direct reference in perceptually-grounded descriptions

Background. Percus (2003) noticed that while (1) and (2) both seem to ask about the identity of a certain individual, they require different answers. For example, if the interlocutors know that Wouter Vossen is a member of the string trio that will perform tonight, (1) can be answered with (3a) but not (3b), whereas (2) prefers (3b) over (3a).

(1) Who do you think __ is Wouter Vossen?

(2) Who do you think Wouter Vossen is __ ?

(3) a. The guy on the left. b. The violinist.
c. That guy. d. The concertmaster of the Brabants Orchestra.
e. The first one.

Puzzle. We focus on questions like (1), developing Percus' observation, and showing that the restriction on answers depends on the physical context of utterance. If we see the members of the trio without their instruments before the concert (context A), both (3a) and (3c) are felicitous, but (3b) and (3d) are not. But when the context is such that they are holding their instruments (context B), (3b) becomes felicitous, but (3d) is still not. Intuitively, interpreting (3b) in context B draws on perceptual information; we will call such descriptions "perceptually grounded." Context A, by contrast, does not contain perceptual information pertinent to the interpretation of (3b). Further evidence that the felicity of answers depends on perception comes from contexts where perception is auditory. For example, if we hear the trio playing on the radio (context C), the temporal (3e) can be used like the spatial (3a) in contexts (A-B). Crucially, the status of (3b) depends on whether it is perceptually grounded via audition: it can be used only if the interlocutors are assumed to be able to tell a violin from, say, a cello. Importantly, perceptual grounding is *not* merely successful reference. If a speaker utters (4) prior to (1) (context D), a discourse referent is established for (3b). Nonetheless, if the physical context is like in (A), (3b) and (3d) are still not felicitous answers to (1).

(4) It says in the program that the violinist, who is also concertmaster of the Brabants Orchestra, plays a Guarnari violin worth a million dollars!

Our puzzle is then is to explain why answers to (1) must be perceptually grounded, i.e. why their interpretation must draw on perceptual information from the context of utterance.

Copular questions with names. In order to account for the range of their answers, we consider the meaning of questions like (1), asking whether these are predicational, specificational or identity questions. Analyzing (1) as specificational may seem attractive because the pre-copular phrase in specificational sentences is known to be "given", and the preferred answers to (1) can also been seen as "given" if we assume that all perceptual information is available in the common ground. However, context D showed that a ("given") discourse referent is not sufficient to license answers to (1). Moreover, because specificational sentences do not allow for any type of extraction, Higgins (1973) argues that all copular questions are predicational. A predicational analysis, however, does not immediately give a handle on the range of answers. If proper names denote individual constants (*v* for Wouter Vossen), composing (1) as a predicational structure using Partee's (1987) IDENT type-shifting operator yields a trivial interpretation. The question would ask which individual is identical to *v*, but only *Wouter Vossen* is such an individual, and this is of course not a possible answer (the same problem arises if the question is analyzed as an identity construction, cf. Aloni 2001). An alternative is to take the post-copular name in (1) to denote a predicate (Percus 2003). This alone cannot account for the restriction on answers, as ordinary predicational questions (*Who do you think is best suited for the job?*) are not subject to the restriction we observe for (1). The predicational structure, therefore, requires a different semantics of proper names to address the puzzle.

Names as sorts. We adopt an analysis of names inspired by Geach's (1968) and Gupta's (1980) analysis of common nouns. Geach argues that a common noun such as *person* expresses both a *principle of application* that determines which entities are people in the world of evaluation and a

principle of identity that determines what is *the same person* across possible worlds. We follow Gupta's (1980) logic of common nouns, and take names to denote *sorts*. The principle of application in (5a) guarantees that the value of each individual concept denotes a bearer of the name *Wouter Vossen* in the world of evaluation. The principle of identity in (5b) states that each individual concept denotes *the same Wouter Vossen* across possible worlds.

(5) [[Wouter Vossen]]^{w} (type <s,<<s,e>,t>>) is the function from worlds w to sets of individual concepts I such that

a. $\forall i \in$ I, $i(w)$ is a Wouter Vossen;

b. $\forall w', w''$: if $i(w')$ and $i(w'')$ are defined, then $i(w')$ is the same Wouter Vossen as $i(w'')$.

A sort-denoting post-copular name in a predicational structure results in a question which asks which individual concept belongs to the set of individual concepts denoted by the name. An ordinary (non perceptually grounded) definite description like (3b) in context A cannot belong to this set: it is a contingent fact that Wouter Vossen is the violinist in the trio, so (3b) will inevitably denote something other than "the same Wouter Vossen" in some possible world(s).

Direct reference. We first consider the felicitous (3c). Kaplan (1989) shows that (certain uses of) demonstratives depend on speaker demonstrations or intentions and fail to interact with the compositional semantics. He separates demonstrative meaning into the meaning contributed to the semantic composition (=content), and a function from contexts to contents (=character). The nominal head in (3c) contributes only to the character, while the content denotes the actual referent in all worlds. Since in a Geach-Gupta model transworld identity is only defined relative to a nominal sort, we propose that the individual concept denoted by (3c) denotes the referent in the actual world, which will be identified in other possible world by some nominal sort; this sort is under-specified in the content (formally, this is expressed by belonging to the grand union of all nominal sorts). Therefore, (3c) is a possible answer to (1) because the individual concept in (6b) which lacks a nominal sort can be a member of the set of individual concepts denoted by *Wouter Vossen*.

(6)[[that guy]]^{w}

a. Character: function from contexts to d, the unique guy intended by the speaker.

b. Content: individual concept i such that $i(w) = d$ and $i \in \cup S$ interpreted relative to w

We argue that perceptual grounding has a pragmatic function similar to that of demonstratives. (7) gives the denotation of (3b) when it is perceptually grounded; *violinist* contributes to the character, and the content is identical to the content of the demonstrative in (6b), making it a felicitous answer to (1). The content of a non perceptually grounded (3b) will involve a sort, and will therefore not be a possible answer to (1) -- see above.

(7) [[the violinist]]^{w} (perceptually-grounded)

a. Character: function from contexts to d, the unique violinist intended by the speaker.

b. Content: [same as 6b]

Conclusions. We argue that copular questions with post-copular names require perceptually grounded answers. We account for this restriction by (i) analyzing these questions as predicational with a post-copular sort; and (ii) analyzing perceptually-grounded descriptions as directly referential, like demonstratives. This suggests that, contrary to previous work in the reference literature, direct reference is not a purely lexical phenomenon, but rather pragmatic in nature.

References. Aloni, M. 2001. *Quantification Under Conceptual Covers*. Ph.D. Dissertation, University of Amsterdam ◆ Geach, P. T. 1968. *Reference and Generality (emended edition)*. Cornell UP ◆ Gupta, A. 1980. *The Logic of Common Nouns*. Yale UP ◆ Kaplan, D. 1989. Demonstratives. In J. Almog, J. Perry, & H. Wettstein, eds., *Themes from Kaplan*, 481–563. Oxford UP ◆ Higgins, F.R. 1973. *The Pseudocleft Construction in English*, Ph.D. dissertation, MIT ◆ Partee, B. H. 1987. Noun phrase interpretation and type shifting principles. In J. Groenendijk, D. de Jongh and M. Stokhof, eds., *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers,* 115-143. Foris ◆ Percus, Orin. 2003. Copular questions and the common ground. In P. Blackburn et al., eds., *CONTEXT'03*. Springer.