# Higher-order DP quantification and the monotonicity puzzle

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Certain DPs like *something*, *two things* and *the same thing* (German *etwas*, *zwei Dinge/Sachen* and *dasselbe*) appear to show more type-flexibility than other DPs (e.g. Nathan 2006, Moltmann 2008, 2013, Elliott 2017). In particular, they can appear in the object position of various classes of predicates that are standardly analyzed as taking sets or set-valued functions as their arguments, such as intensional transitive verbs (1-a), attitude predicates (1-b) and certain question-embedding predicates.

(1)  a.  *John is looking for two things.*
     b.  *John believes something.*

A simple way of capturing this observation is to assign a cross-categorial semantics to the functional elements within the DP: Unless constrained by the meaning of the NP, DPs may quantify over objects of the type required by the opaque predicate and have their usual quantificational force relative to the domain of that type.

Taking this naive analysis of (1) as my starting point, I will take a closer look at quantification over domains that are structured by an entailment relation. In particular, I am interested in the question how natural language semantics deals with the individuation problem such quantifiers give rise to. For instance, under which conditions do two propositions $p$ and $q$, where $p$ asymmetrically entails $q$, count as distinct elements of the domain? I will focus on a particularly clear instance of this problem, the 'monotonicity puzzle' noted by Zimmermann 2006. Zimmermann observes that if we interpret *something* in (2) as an unrestricted quantifier over properties and assume a standard semantics for the opaque predicate *look for*, we predict excessively weak truth conditions for sentences like (2).

(2)  *John is looking for something Mary is looking for.*

Using examples from German, I show that this problem is more general than previously noted and persists even if the quantifier is contextually restricted. Concentrating on quantifiers in the object position of proposition-embedding predicates, I then propose a new constraint on the domains of such quantifiers that is sensitive to the extensions of the two predicates related by the determiner, but also to a contextually provided subset of the domain. The influence of context can be studied by introducing an explicit question that restricts the domain of a quantifier over propositions, as in (3).

(3)  *Zur Frage, wer heute zum Essen kommt, glaubt der Hans etwas, das die Maria auch glaubt.*
     'As for the question who will come to dinner tonight, Hans believes something Maria also believes.'

The constraint makes reference to the part-whole structure (cf. Beck and Sharvit 2002) of this domain-restricting question. It could be implemented either via a nonstandard interpretation of opaque predicates (following Zimmermann 2006) or via a nonstandard semantics for DP quantification. I conclude by briefly sketching potential empirical consequences of these two options, as well as several open problems that stand in the way of a plausible compositional implementation of the constraint.

**References:**   S. Beck and Y. Sharvit. Pluralities of questions. *Journal of Semantics*, 19:105–157, 2002. P. D. Elliott. Explaining DPs vs. CPs without syntax. In *Proceedings of CLS 52*, pp. 171–185. Chicago Linguistic Society, 2017. F. Moltmann. Intensional verbs and their intentional objects. *Natural Language Semantics*, 16:239–270, 2008. F. Moltmann. *Abstract Objects and the Semantics of Natural Language*. Oxford University Press, Oxford, 2013. L. Nathan. *On the interpretation of concealed questions*. PhD thesis, MIT, 2006. T. E. Zimmermann. Monotonicity in opaque verbs. *Linguistics and Philosophy*, 29:715–761, 2006.