

Towards a Structural account of Conservativity.

Background: The discovery of the conservativity universal is one of the most cherished results of the introduction of generalized quantifier theory in linguistics (Barwise and Cooper, 1981). A determiner D , modeled as a function from sets to generalized quantifiers $\wp(E) \rightarrow \wp(\wp(E))$, is conservative if given two sets Y, X in E it validates the following biconditional: $D_E(Y, X) \Leftrightarrow D_E(Y, Y \cap X)$. The conservativity universal is the conjecture that all determiners in all languages have this property. Such conjecture, as stated, is a descriptive statement. The question that naturally arises in this connection is where conservativity comes from. Some accounts have been put forth in the literature; they remain, however, largely incomplete or unsatisfactory. My goal in the present work is to propose a new alternative account of the conservativity universal, that crucially exploits the syntax of LF and more specifically the copy theory of traces.

Previous accounts: There are two main approaches to conservativity that I am familiar with and will briefly describe in turn. The first is a pragmatic/cognitive one, according to which conservative determiners would be more ‘useful’ than non-conservative ones, as they restrict on line the domain of discourse to the restrictor set and its intersection with the scope. The main problem with this line of explanation is that it is not clear how to make it precise. Consider for example the equi-cardinality determiner $\lambda P \lambda Q. |P| = |Q|$, which is non conservative: why would such a determiner be less useful than other conservative meanings? Also, the case of *only*, however analyzed, is highly problematic in this respect. A second more ‘semantic’ account has been proposed by Keenan and Stavi (1986), based on their result that the set of determiners generated from \exists and \forall closed under boolean compounds and adjectival restrictions coincides with the set of conservative determiners. This result coupled with the idea that the core lexicon would only contain \exists and \forall could explain the exclusion of non-conservative determiners. The problems I see with this second approach are mainly two: (i) there seems to be no independent (e.g. morphological) evidence that all D ’s are formed out of \exists and \forall (ii) it is not clear why conservativity is associated to the syntactic category D rather than with quantification in general.

Proposal: I explore here a more ‘structural’ account of conservativity (SC henceforth), which derives it as a by product of the copy theory of movement and some assumptions on how chains are interpreted, following schematic hints that can be found in Chierchia (1995) and in Fox (2002). The gist of the idea is that if non-conservative determiner existed and formed chains in canonical ways, the outcome would always be trivial (i.e. tautological or contradictory). This, coupled with an explicit account of triviality as ungrammaticality (see Gajewski (2009) for an overview), would explain the absence of non-conservative natural language determiners. My proposal is compatible with different ways of interpreting chains. For the sake of explicitness, I will adopt Fox’s (2002) system summarized in what follows, with an example in (3).

(2) Trace conversion: in a chain [...X_{Pi} ... X_{Pi}..], (i) replace D from the lower copy with the definite description *the*; (ii) add the equation $\lambda x[x = i]$ to the restriction of the definite description.

- (3) i. Polanski likes every movie
 ii. LF₁: [every movie] λi [Polanski likes [every movie]_i]
 iii. LF₂: [every movie] λi [Polanski likes [~~every~~ the [λx movie(x) & $x = i$]]
 iv. Semantic Interpretation: $\forall x[\text{movie}(x) \rightarrow \text{Likes}(t_y[\text{movie}(y) \ \& \ y = x])(p)]$

Now consider what would happen if we apply this procedure to a hypothetical non conservative determiner, say *nall* or *only* defined as follows:

(5) [[nall]](Y)(X) = $\forall x[\neg Y(x) \rightarrow X(x)]$; [[only]] (Y)(X) = $\forall x[X(x) \rightarrow Y(x)]$

- (6) a. Polansky likes nall movie
 b. LF: [nall movie] λi [Polansky [likes [the [λx movie(x) & $x = i$]]]

c. Semantic Interpretation: $\forall x[\neg \text{Movie}(x) \rightarrow \text{likes}(\iota y[y = x \ \& \ \text{movie}(y)])(p)]$

Clearly, (6c) is contradictory, as it says: “for every x that is *not* a movie then Polansky likes the unique movie y equal to x ”. As it can be easily verified, *only* defined as a determiner in (5) would give rise to a tautology. It is interesting to remark in this connection that not all ways of interpreting chains yield this result: approaches that interpret the NP part only downstairs, such as Heim (2005) or Johnson (2008) predict non trivial meanings for hypothetical non conservative determiners. So SC might constitute a reason for choosing an approach like Fox’s over these alternatives.

Implications of SC: A challenge for the present proposal comes from the adoption of late merge. Consider a sentence like (7a) under a derivation in which the relative clause is late merged after QR (to the right) as sketched in (7b).

- (7) a. Polansky likes nall movies that are Italian
b. [Polanski likes nall movies] [nall movies [that are Italian]]
c. $\forall x[\neg(\text{movie}(x) \ \& \ \text{italian}(x)) \rightarrow \text{likes}(\iota y[y = x \ \& \ \text{movie}(y)])(p)]$

This would result in the interpretation in (7c), which is non trivial. In order to block these cases I propose to extend the formulation of late merge by Fox’s (2002), by making it contingent upon the derivation being non trivial both before and after its application.

A further interesting consequence of the present proposal is that it seems to predict that non conservative Ds can be ruled out as trivial only if the corresponding DPs always move (for if interpretations in situ were possible, the trace conversion would not be able to apply). This is of course plausible for non subject positions; less so, however, for the subject position. There are two strategies one might pursue in this connection: (i) force DPs to always move (if through very short moves) and (ii) adopt an ‘optimization principle’ that requires a DP to be never trivial (i.e. if there are grammatically legitimate positions in which a D gives rise to trivial interpretations, such a D is discarded). I will explore and compare the consequences of these two lines of inquiry. A final problem for the present proposal comes from *only*. There is little doubt that *only* can attach to DPs and be assigned scope together with their host. Rooth (1985) shows that this must be so in connection with the two interpretations associated with sentences like (8a)

- (8) a. We are required to study only syntax
i. we are required [only syntax] λi [PRO_{we} to study [only syntax]_i]
ii. [only syntax] λi [we are required [PRO_{we} to study [only syntax]_i]]

The question that arises in this connection is whether this gives rise to trivial interpretations, thereby erroneously ruling out the grammatical interpretations of sentences like (8a). We will show that the chain interpretation principle sketched above coupled with Rooth’s (1985) cross-categorical semantics for *only* avoids this unwelcomed result.

In conclusion, we submit that the conservativity universal is a by product of the architecture of LF. It follows from the fact that non-conservative functions, given such architecture, would result in trivial meanings. This account, besides its simplicity, provides strong support for the copy theory of traces and has consequences that invest all aspects of the quantificational modules (like, e.g. adverbial quantification, comparative quantifiers) that deserve close scrutiny.

References: Barwise, J. and Cooper, R. (1981). “Generalized Quantifiers and Natural Language”. *Linguistics and Philosophy*, 4: 159–219. Keenan, E. and Stavi, J. (1986). “A Semantic Characterization of Natural Language Determiners”. *Linguistics and Philosophy*, 9: 253–326. Fox, D. (2002) Antecedent-contained deletion and the copy theory of movement, *Linguistic Inquiry* 33(1), 63–96. Chierchia, G. (1995). Class lecture notes, Utrecht. Heim, I. (2005). “Functional questions and relatives, and binding into heads”. Class Notes LSA, MIT-Harvard. Johnson, K. (2008). Class Notes Topics in Syntax, MIT. Rooth, M. (1985). “Association with focus” Ph.D. dissertation, University of Massachusetts, Amherst.

