Logic in syntax[*]

Fiorieneke Bonthuis

Department of Linguistics, University of Cambridge

This paper will explore the possibility of explaining the syntax of sentences involving negation in terms of the nature of negation in logic. The idea is that negation as expressed in language is in fact the same thing as negation as understood in logic. Thus, the structural properties of the negative element 'NEG' in syntax may be seen to mirror the way the negative operator '¬' in logic works. This will not only give an insight into the structure and interpretation of sentences with (different scopes of) negation and the interaction with quantification, it will also suggest how particular constructs in syntactic theory might be understood as correlating with logical notions.

1   INTRODUCTION

This paper may be read as a preliminary study investigating how logic might be directly involved in the syntactic structure of language.
Launching the Minimalist Program in syntax, Chomsky asks:

(1)   "i. What are the general conditions that the human language faculty should be expected to satisfy? ii. To what extent is the human language faculty determined by these conditions, without special structure that lies beyond them? The first question in turn has two aspects: what conditions are imposed on the human language faculty in virtue of a. its place within the array of cognitive systems of the mind/brain b. general considerations of conceptual naturalness that have some independent plausibility, namely, simplicity, economy, symmetry, non-redundancy and the like?" (Chomsky 1995:1)

Minimalism, although conceived within the Principles and Parameters tradition and explicitly sharing the fundamental assumptions and objectives of this approach, asks a radically new question: What properties must the human language system have in order to be usable at all?
In one sense, the Minimalist Program takes linguistics beyond the traditional goals of descriptive and explanatory adequacy. It pushes yet further the idea that linguistic theory shouldn't stop at a correct description of the grammatical properties of a language, but should aim to explain the observed grammatical properties in terms of properties of the Universal Grammar encoded in the language faculty: it asks whether these properties in turn have an explanation – in terms of the conditions that the human language faculty should minimally be expected to satisfy. But moreover, the Minimalist Program seeks to explore to what extent the human language faculty (and the Universal Grammar it encodes) is an optimal solution to those minimal conditions (the Strongest Minimalist Thesis). And in this sense, Minimalism doesn't just go a step further in its explanation of grammatical phenomena, but approaches the problem of linguistic explanation from a new point of view. It assumes that syntactic structure in itself involves 'optimal design' in some sense. This makes the task of constructing a theory of syntax quite different: the effort to develop the best possible theory of syntactic structure is complemented with the idea that syntax itself is somehow designed in the best possible way.

---

[*]   Thanks to Ian Roberts and Theresa Biberauer for helpful discussions and comments, to Lisa Cheng and Crit Cremers for comments on an earlier paper, and to Marc Richards for his interpretation of 'deadline'.