A semantics for interrogatives is presented which is based on Karttunen’s theory, but in a flexible manner incorporates both weak and strong exhaustivity. The paper starts out by considering degree questions, which often require an answer picking out the maximal degree from a certain set. However, in some cases, depending on the semantic properties of the question predicate, reference to the minimal degree is required, or neither specifying the maximum nor the minimum is sufficient. What is needed is an operation which defines the maximally informative answer on the basis of the Karttunen question denotation. Shifting attention to non-degree questions, two notions of answerhood are adopted from work by Heim. The first of these is weakly exhaustive and the second strongly exhaustive. The second notion of answerhood is proven to be equivalent to Groenendijk and Stokhof’s interrogative semantics. On the basis of a wide range of empirical data showing that questions often are not interpreted exhaustively, it is argued that a fairly rich system of semantic objects associated with questions is needed to account for the various ways in which questions contribute to the semantics and pragmatics of the utterances in which they appear.

1. Introduction

In this paper we propose a modification and extension of Karttunen’s (1977) semantics for interrogatives which incorporates a flexible approach to the property of questions called exhaustivity. Karttunen’s original proposal was criticized (in particular by Groenendijk and Stokhof 1982, 1984) for failing to account for what has been termed strong exhaustivity. This is a property of embedded questions that licenses inferences like (1), which Groenendijk and Stokhof claim are valid:

(1) John knows who was at the party.
Mary was not at the party.
\[ \therefore \text{John knows that Mary was not at the party.} \]

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1 Throughout this paper we use the terms ‘question’ and ‘interrogative’ interchangeably to refer to syntactic objects in natural language. When we want to refer to the corresponding semantic objects we will use terms like ‘denotation’ or ‘intension’.

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They propose a different semantic analysis of interrogatives, which accounts for (1) by virtue of the basic question interpretation. Their point is accepted in Rullmann (1995), who proceeds to make a proposal that accounts for strong exhaustivity within a Karttunen system. His means of implementing strong exhaustivity is a maximality operator. Rullmann’s motivation for the assumption of a maximality operator is not only exhaustivity, but also an effect in degree questions that we refer to as the ‘maximality effect’. Degree questions like (2) below seem to require an answer that is in some sense maximal:

(2) How many books did John read?

That is, someone who asks (2) will only be satisfied with an answer specifying the largest number of books that John read. This effect is captured in Rullmann (1995) by making maximality part of the basic question denotation by means of a maximality operator. While we agree that maximality and exhaustivity should be viewed as one and the same phenomenon, we suggest a different way of accounting for them.

We will defend a Hamblin/Karttunen-style semantics for questions, in which the basic denotation of a question is a set of propositions which intuitively constitute its possible answers. However, we will also incorporate Groenendijk and Stokhof’s insights about what information questions introduce in embedded constructions by adopting a proposal by Heim (1994). She accounts for properties like strong and weak exhaustivity by defining two semantic notions of answerhood (which she calls answer1 and answer2), which create propositions from Hamblin/Karttunen question intensions. We show that this also captures the maximality effect in degree questions.

Heim’s two notions of answerhood provide us with a fairly rich system of semantic objects definable in terms of the basic question denotation. We argue that this rich system is needed in the analysis of interrogative constructions in natural language. Our proposal is superior to Groenendijk and Stokhof’s and Rullmann’s in that their interrogative semantics does not make available all semantic objects that the analysis of interrogatives requires, as there appears to be considerable variation in what an interrogative contributes to a construction semantically.

We will take as our starting point Rullmann’s (1995) proposal incorporating strong exhaustivity with the help of a maximality operator (section 2). Although part of the motivation for that operator (besides strong exhaustivity) comes from the maximality effect in degree questions, we will see that once a broader range of degree questions is considered, the assumption of a maximality operator is actually problematic (section 3). On the