

## CHAPTER 1

### OVERVIEW

Quantifiers such as *every*, *some*, *a*, and *many* are used frequently in day to day language. Hence, a theory of human language comprehension ought to include a theory of how quantifiers are interpreted. The primary goal of this study is to develop a theory of the processing of doubly-quantified sentences such as *A squirrel picked up every nut*. A major part of this problem is how the scope ambiguity in such sentences is resolved. The previous example can mean either that one squirrel picked up all the nuts and it was the same squirrel each time; or it can mean that for every nut there was some squirrel or other that picked it up, with the possibility of there being a number of different squirrels involved. Which reading is obtained depends on the relative position of the quantifier phrases *a squirrel* and *every nut* at LF (the level of representation from which semantic structures are built). How scope ambiguities are resolved thus depends in part on how LF structures are constructed. Yet, the building of LF has not been a prevalent topic of study in psycholinguistics. Moreover, while syntactic theory has been drawn on repeatedly in the study of the construction of S-structures, semantic theory has largely been ignored. The research described here departs from that vein, drawing upon current linguistic theories of LF, the syntax-semantics interface, and formal semantics.

Chapter 2 presents the linguistic and psycholinguistic background for the study. The semantic properties of quantifiers and the syntax of quantifier scope are considered. Previous research in psychology and psycholinguistics on the interpretation of quantifiers and quantifier scope is also reviewed. The chapter raises the question of what factors influence the resolution of scope ambiguities. Two factors are readily identified: (some aspect of) syntactic structure and choice of quantifier. Yet identifying these two main factors does not get us very far. What we

really would like to know is how and why they matter, and how they interact. I offer answers to these questions in the following chapters.

The issue of how structural factors affect quantifier scope preferences is investigated in Chapter 3. According to my theory, the processor takes an economic stance towards scope assignment. The preferred relative scoping of two quantified phrases is computed from the ‘required’ LF structure– the LF constructed from required grammatical operations acting on S-structure. Furthermore, I argue that when *every* has scope over *a*, the processor does not commit to how many entities the *a*-phrase represents (one or more than one). The theory is supported by an experiment on scope preferences in dative sentences such as *Kelly showed a photo to every critic last night* and what is known about scope preferences in other constructions.

In Chapter 4 I present an analysis of the semantic differences between *each* and *every* with respect to event distributivity, in preparation for considering the influence that individual quantifiers may have in determining scope preferences. I demonstrate that whether a sentence containing *each* or *every* can be truthfully asserted about an event depends on how the parts of that event, the subevents, are associated with the members of the quantifier’s restrictor set. *Each* and *every* differ with respect to the conditions they place on this association. *Each* requires total event distributivity, where each individual object in the restrictor set of the quantified phrase is associated with its own subevent, and all the subevents are differentiated on some relevant dimension. *Every* is subject to the weaker requirement that there be at least two different subevents. Evidence for these claims comes from examining the kinds of sentences and contexts in which *each* and *every* can and cannot occur and from an experiment in which participants chose whether *each* or *every* was more appropriate in describing a particular scenario.

Finally, in Chapter 5, I apply the semantic analysis of *each* and *every* developed in Chapter 4 to the question of how individual quantifiers affect scope preferences. *Each* has often been said to have a stronger preference for wide scope than *every*. I argue that this observation arises from cases where *each* takes wide scope in order to fulfill its condition requiring total event distributivity and differentiation of subevents. Otherwise the scope behavior of *each* and *every* is quite

similar; they preferentially take wide scope only when that is the scoping computed off the required LF structure. More generally, I hypothesize that a quantifier's scope behavior is driven by the lexical condition(s) which are part of its meaning. These claims are supported by informant responses and two questionnaire studies investigating scope preferences in sentences containing *each* and *every*.

Overall, the dissertation provides insight into how semantic ambiguity is handled by the language processor.