

# *Quantifier scope*

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A climber scaled every cliff.

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There was one climber and he scaled every cliff.

Every cliff was scaled by a potentially different climber.

## Logical Form:

- intermediate between surface syntactic structures and meaning
- input to semantic interpretation
- level of representation for scope disambiguation
- derived by quantifier raising/lowering (QR/QL)
- quantifier scope ambiguity: structural ambiguity

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- even following a biasing context
- even in disambiguated sentences:

A different climber scaled every cliff.



Villalta (2003)

scope ambiguity: *how many* and *every*

assumptions:

- LF-style interpretation
- incremental construction of LF
- surface order is “cheaper” (Minimal Cost Hypothesis)

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*how many* questions involve two quantifiers (cf. Cresti 1995)

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LF2: [<sub>CP</sub> How <sub>$n$</sub>  [<sub>C</sub> Q [<sub>IP</sub> [ <sub>$t_n$</sub> -many pieces] <sub>$j$</sub>  every student <sub>$i$</sub>   
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results: surface order dispreferred (37.8% vs. 58.3%)



proposal:

- interrogative phrases need an antecedent in context
- context is accessed immediately
- failure to find unique antecedent delays processing

self-paced reading

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**Question:** How many recipes / did every student / receive / from the chef / in December?

### Results:

- slower RTs on last two segments in Multiple Sets condition
- surface order dispreferred in Multiple Sets condition (34% vs. 53% in other condition)

# *What influences quantifier scope?*

- intrinsic properties of quantifiers
- grammatical function
- linear order/c-command
- topichood
- focusing
- partitiveness/discourse binding
- thematic role
- etc.

# *Theories of quantifier scope*

multi-factor theories (e.g. Ioup 1975, Kuno 1991, Pafel 1997)

- interaction of several properties
- individual properties differ in relative weight
- the sum of the weight values for Q correspond to its scope potential
- scope interpretation determined by Q1's and Q2's scope potential
- large difference → unambiguous scope



## Kurtzman and MacDonald (1993)

- Linear Order
- Surface Subject
- External Argument
- C-command
- Topic
- Thematic Hierarchy

(0) A kid climbed every tree.

- a. The kid was full of energy.
- b. The kids were full of energy.

(0) Every kid climbed a tree.

- a. The tree was full of apples.
- b. The trees were full of apples.

self-paced reading sentence-by sentence, acceptability judgment

conditions: ambiguity X Q order X verb (activity vs. perception) X continuation (scope)

## Experiment 1: active sentences

results:

- preference for forward scope
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Single Reference Principle: simplicity (similar to Fodor 1982)

allows immediate interpretation of an initial indefinite NP