Chinese ‘dou’ and Cumulative Quantification

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Introduction

1. Previous Analysis: Dou is a distributivity operator (Lin, 1998, and references therein).

(1) Only cumulative reading san-ge haizi chi-le shi-ge pingguo three-CL kid eat-ASP ten-CL apple.
(2) Only distributive reading san-ge haizi dou chi-le shi-ge pingguo three-CL kid dou eat-ASP ten-CL apple.

DOU with Distributive and Cumulative Readings

The distributive reading of (2) with dou under this analysis is (2’).

(2’) E ⨀ X (three-kids(X) ∧ (∀x(E) ∧ ∃[agent(e) = x] ∧ ∃[theme(e) = X] ∧ ∃[agent(e) = x] ∧ ∃[theme(e) = Y])) DOU in BE-constructions is compatible with both distributive and cumulative readings.

A be-construction has the surface word order of “DP1+be+DP2+VP”. As is claimed to be a spell-out of little v that introduces the agent DP1 (Zhai 2003; DP2 is the theme or patient.

(4) DP1+be+DP2+VP
(5) DP1+be+DP2+be+VP
(6) DOU+be+DP2+VP

Only cumulative reading san-ge haizi be shi-ge pingguo dou chi-le three-CL kid BA ten-CL apple dou eat-ASP. “Three kids between them ate ten apples."

In (6), ba places the event into a relation with the agent and dou determines that this is done to each member of the agent. If dou was absent in (6), ba would place the event into a relation with the entire set of three kids, giving the cumulative reading (4).

A distribution of the expression over verb as indicated by its over position. Since Chinese scope seems to follow the surface order (Huang 1982). As a result, the contribution of dou is minimal: the only thing it contributes is that each apple was the theme of an eating event.

The idea in a nutshell

• dou contains a “operator over two-place predicates with an argument and an event position; the verb phrase is distributed over the parts of the event argument, and the event argument remains accessible for modifiers higher up the tree such as agent and existential closures.
• A theta role modified by dou causes its bearer to take distributive scope on the event predicate it commands.

If that predicate contains a quantifier, dou distributes over it. Otherwise, the effect of dou is almost vacuous.

Problem: dou is compatible with cumulative readings involving numeral quantifiers, which is unexpected if dou is uniformly translated as a “place-distributor” (Lin, 1983).

Background: A Neo-Davidsonian Framework

We adopt a Neo-Davidsonian framework, whereby verbs, VPs, and IPs denote predicates over events.

(1) The cumulative reading of (1)  ⨀ X (three-kids(X) ∧ (∃[agent(e) = X] ∧ ∃[theme(e) = Y]))

*The essential X of three kids, a set Y of ten apples, and a set E of eating events, each member of X is an agent of a member of E, each member of E has a member of X as its agent, each member of Y is a theme of a member of E, each member of E has a member of Y as its theme*.

Two cumulative relations in (1), not just one:

a. between the sum event and the sum agent,
   b. between the sum event and the sum theme.

They are introduced by the thematic roles agent and patient.

Claim: dou is a theta role modifier.

(3) [(dou)] ⨀ X (agent(e) ∧ theme(e)) ⨀ X ⨀ X (three-kids(X) ∧ (∃[agent(e) = X] ∧ ∃[theme(e) = Y]))

In (3), e ranges over events and sum of events; x ranges over individuals, and X over individuals and sum of individuals.

DOU is a Theta Role Modifier

Hypothesis 1: The semantics of be is similar to the semantics of ba. While ba introduces an agent, be does not. Be has been proposed as a verbal category (Feng 1980).

References