

Binding, Extraction, and Coordinate Structure Constraint Effects

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The Question: Do Coordinate Structure Constraint effects reduce to "No conjunction of unlike syntactic categories and/or semantic types?"

I. What needs explaining

A. Across-the-Board Binding is possible out of two conjuncts (Dahl, 1981; Hohle, 1990; von Stechow, 1990; Jacobson, 1994, 1996; etc.)

- (1) His_i /_j mother, every man_i loves and no man_j wants to marry.
- (2) Every man_i loves and no man_j wants to marry his_{i/j} mother.

B. But, binding out of just one conjunct is (robustly) impossible:

- (3) a. Every man loves and no man marries his mother.
b. Every man_i loves his_i mother and no man_j marries his_k mother.
- (4) a. Each boy believes that every man loves and (that) no man marries his mother.
b. Each boy_k believes that every man_i loves his_i mother and (that) no man_j marries his_k mother.
- (5) *Every man_i thought that every other man_j had already deposited and that the bursar_k still had his_{j/i} paycheck.

C. But, binding into just one conjunct is fine:

- (6) a. Every man_i thinks that he_i lost and that Mary won.
b. Every man_i thinks that Mary won and that he_i lost.
etc.

D. Binding of one conjunct is also fine:

- (7) Every man_i thinks that Mary and he_i will (both) win.

E. Leftward extraction out of just one conjunct is not great, but this is arguably a pragmatic effect (cf., Lakoff, 1986, and others)

- (8) a. How much beer can you drink and still stay sober? (Goldsmith, 1985)
b. What did you go to the store and buy?
c. What did you go to the store, buy, load into the car, drive home, and unload? (Lakoff, 1986)

- (9) a. ?? I want to find the frozen food which John cooks and Bill then does the dishes.
 b. ?? I want to find the frozen food which Bill sets the table and John then cooks.
 c. ??? Which semanticist did the linguistics department hire and lose a phonologist?

F. But rightward "extraction" out of one conjunct is impossible:

- (10) a. *I can drink and still stay sober 15 bottles of beer.
 b. *John cooks and Bill then does the dishes that wonderful frozen pizza.
 c. *The department hired and lost a phonologist a semanticist.

F'. Or, is it?

- (11) a. ?? I bought __, drove home, and proceeded to drink __ 15 bottles of beer.
 b. ?? I went to the store, bought __, drove home, and proceeded to drink __ 15 bottles of beer.

G. Leftward extraction of one conjunct is awful (even when it's ATB extraction)

- (12) a. *every man who I saw __ and a picture of Bill
 b. *every man who I saw a picture of Bill and __
 c. *every man who I saw __ and a picture of __
 d. *every man who I saw a picture of __ and __
- (13) a. ?? every man who I saw him and a picture of Bill
 b. ?? every man who I saw a picture of Bill and him (hard to get on relevant reading, but probably for irrelevant reasons)
 c. ?? every man who I saw him and a picture of him
 d. ?? every man who I saw a picture of him and him (himself)

II. Accounting for A-D

- (i) -- Variable free semantics
 (ii) -- implementation of this in Jacobson (1992, 1994, 1996, etc.)
 (iii) -- *and* as Curry'ed, and listed in lexicon (not introduced syncategorematically)

Some notes on *and*

- note: Curry'ed vs. flat is a separate issue from syncategorematic vs. in the lexicon

- (a) Curry'ed *and* in the lexicon: $and = (/L)/R$
 (b) Curry'ed and introduced syncategorematically: $and ==> /L$
 (c) flat *and* in lexicon: (need some convention to allow for more than one argument at a time, but this perfectly doable): *and*: give me one argument of category α to my left and one of category β to my right and I'll give you an
 (d) flat, syncategorematic: $and ==>$

the way things are set up here, need both Curry'ed and in lexicon to get binding into either of the conjuncts; need to be able to **g** on either argument slot

Independent evidence for *and* as Curry'ed - Binding from one conjunct (Munn, 1993)

- (14) a. Every man_i and his_i dog went to the park.
- b. I saw no man_i nor his_i dog.
- c. No man_i and his_i dog should be separated.

and, Weak Crossover Effects (Munn, 1993)

- (15) a. *His_i dog and every man_i went to the park.
- b. *His_i dog and no man_i should be separated.

(14) = z on *and*

Iterated conjunction:

- (16) Bill, Mary, and Sue came in.

GPSG-type solution: (flat, syncategorematic)

- (17) --> * and

partially flat, syncategorematic:

- (18) a. ----> * [and]
- b. [and] ---> and

but, whole thing needs to be done non-flat (if binding arguments are correct):

- (19) a. Every man_i, his_i dog, and his_i cat came in.
- b. A woman, every man_i, and his_i dog all walked in the park.
- c. *A woman, his_i dog, and every man_i all walked in the park.

(20) and: (/_L)/_L]*/_R

- (21) a. [and] ---> and
- b. [and] ---> [and]
- c. ----> [and]

Note: no direct analogue of this in CG terms; the problem is that there's no way to specify the result

(22) and: ([&] /_L) /_R

type shift rule: [&] ==> [&] /_L ; A [[&] ' A]

but, this still won't allow binding from a conjunct the way z is formulated; either reformulate z or have a null lexical item which does what the type shift rule does (hence it takes two arguments)

Note one important thing: the kind of solutions in (17), (18), and (20) use the same *and* throughout the conjunct stackings - i.e., will be instantiated once and for all

the kind of recursive solutions in (21) and (22) do not; more than one rule application is involved in the stacked cases, so the instantiation of can differ

III. If do *and* in lexicon and Curry'ed, then should also be able to have extraction from just

one conjunct

i.e. -the insight begun in GPSG that CSC effects on extraction reduce to: "no conjunction of unlike types" is undone

- extraction by function composition
- extraction by some feature plus Geaching (exactly analogous to pronoun case)
A/B ==> A[SL:C]/B[SL:C]
- original GPSG solution had same problem: SL feature passed from mother onto one or more than one daughter - hence should be able to pass onto just one conjunct

hence - it would be welcome if CSC effects on leftward extraction are really pragmatic

IV. But, the plot thickens when we turn to rightward "extraction"....

Generalization in F: not a fact about extraction, but about coordination (and Heavy NP Shift)
Heavy NP Shift: only shift direct objects; no non-local shift

"RNR" always two conjuncts both with gaps on right: see Oehrle, 1990

Oehrle, 1990: leftward extraction - via a feature; RNR via composition

no mixed composition: gap can only be on right

(23) I gave to Mary and sent to Sue a beautiful photograph.
but here, gap can be in "shifted" position

- (24) a. *I showed a picture of to Mary the most boring candidate.
b. ??Who did you show a picture of to Mary.
c. *I showed a picture of to Mary and a book about to Sue the most boring candidate.

but - F' -

- (11) a. ??I bought __, drove home, and proceeded to drink __ 15 bottles of beer.
b. ??I went to the store, bought __, drove home, and proceeded to drink __ 15 bottles of beer.

intuitively:

drove home and proceeded to drink should compose together to give VP/RNP
this then can combine with *bought* which is also a VP/RNP

the catch is: to allow *drove home and proceeded to drink* - we need to be dealing with the *and* which is of category (VP/LVP)/RNP

(it composes with *proceeded to drink* and the result then composes with the VP *drove home*)

but to then combine that with *bought*, we need to be dealing with the "null and" that wants two arguments, both of category VP/RNP

hence, need solutions along the lines of (21), (22), or the "null lexical item" version of (22)

Note: this provides additional evidence for hierarchial *and*

Given A, B, and C

if the combining of B and C requires a different rule application from the introduction of A, then necessarily this is done in one step at a time

if this was done by a * rule, introducing A and B at the same time, then it would have to be the same *and* all the way through

- (25) a. the beer that bought __, drove home, proceeded to drink __, and then fell asleep
b. *I bought __, drove home, proceeded to drink __, and then fell asleep 15 bottles of beer.

V. Finally, G remains a problem

Very tentative conclusions:

all follows pretty well, provided: (a) variable-free semantics; (b) *and* Curry'ed and in lexicon; (c) CSC effects leftward are pragmatic; (d) RNR is not "extraction" but just the effect of composition (or something else)

remaining problems: -- iterated conjunction has no entirely natural solution (the obvious possibilities are a bit baroque), and we seem to need some kind of null lexical item; no account of "no extraction of a conjunct"