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

I. What needs explaining


(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$_j$/j 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: \( and = (\alpha/L\alpha)/R\alpha \)
(b) Curry’ed and introduced syncategorematically: \( and \Rightarrow \alpha/L\alpha \)
(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 \( \alpha \) to my left and one of category \( \alpha \) to my right and I’ll give you an \( \alpha \)
(d) flat, syncategorematic: \( \alpha and \alpha \Rightarrow \alpha \)

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) $\alpha \rightarrow \alpha^* \alpha$ and $\alpha$

partially flat, syncategorematic:

(18) a. $\alpha \rightarrow \alpha^* \alpha$[and]
    b. $\alpha$[and] $\rightarrow \alpha$ and $\alpha$

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: $(\alpha/L\alpha)[/L\alpha]^*/R\alpha$

(21) a. $\alpha$[and] $\rightarrow \alpha$
    b. $\alpha$[and] $\rightarrow \alpha \alpha$[and]
    c. $\alpha \rightarrow \alpha \alpha$[and]

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

(22) and: $(\alpha[\&]/L\alpha)/R\alpha$

  type shift rule: $\alpha[\&] \rightarrow \alpha[\&]/L\alpha$ ; $\lambda A[\alpha[\&]'] \ A$
  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., $\alpha$ 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 $\alpha$ can differ

III. If do and in lexicon and Curry'ed, then should also 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)

\[ A/B \implies A[SL:C]/B[SL:C] \]

-- 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:
\[ drove \text{ home and proceeded to drink} \]
should compose together to give \( VP/RVP \)
this then can combine with bought which is also a \( VP/RNP \)

the catch is: to allow \( drove \text{ home and proceeded to drink} \) - we need to be dealing with the and which is of category \( (VP/LVP)/RVP \)

(it composes with \( proceeded \text{ to drink} \) and the result then composes with the \( VP \text{ drove home} \))

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"