Resurrecting Rule H: A revision of Fox’s analysis of the Dahl paradigm
Alex Drummond, Queen Mary University of London

- **Background** The interpretation of the elided VP in (1) is restricted in a surprising way. When both pronouns in the first conjunct are anteceded by John, the elided pronouns may receive either strict or sloppy readings. However, the second pronoun may receive a sloppy reading only if the first does also:

\[ \text{(1) John knows that he loves his mother and Bill does too.} \]

\[ \text{Dahl (1973, 1974)} \]

(2) John knows that John loves John’s mother and

a. ... Bill knows that Bill loves Bill’s mother. b. ... Bill knows that John loves John’s mother.

c. ... Bill knows that Bill loves John’s mother. d. *... Bill knows that John loves Bill’s mother.

Fox (1998, 2000) presents an analysis of the Dahl paradigm in terms of a constraint he terms Rule H:

(3) **Rule H**: A pronoun A can be bound by an antecedent B only if there is no closer potential antecedent C such that it is possible to bind A by C and get the same interpretation.

(C is closer if B c-commands C and C c-commands A.)

Fox assumes that a bound pronoun within an elided VP must be bound in a configuration structurally parallel to that of the corresponding pronoun in the antecedent VP. The only LF consistent with this requirement that derives the unattested reading (2d) is (4). The binding dependency in the first conjunct of (4) violates Rule H, since binding his by the closer potential antecedent he yields the same interpretation:

\[ \text{(4) John knows that he loves his mother} \]

\[ \text{and (} \text{he\textsubscript{1}} \text{knows that he\textsubscript{2} loves his\textsubscript{2} mother} \text{) and (*Rule H)} \]

\[ \text{BILL \{} \text{he\textsubscript{1} knows that he\textsubscript{2} loves his\textsubscript{2} mother}\text{]} \text{too} \]

**Fox’s analysis of the Dahl paradigm faces a number of problems. I first revise Fox’s analysis, then outline the problems, and then explain how my revised analysis resolves them.**

- **Analysis** I propose that reading (2d) is ruled out directly by restrictions on binding within the second conjunct of (1). The basic intuition is that Rule H is in a sense violated in the calculation of the Focus Semantic Value (FSV) of the second conjunct of (4). For VP ellipsis to be licensed, a member of the FSV of a superconstituent of the elided VP must be identical to the semantic value of an antecedent in the discourse (Rooth 1992). The putative member of the FSV required to license VP ellipsis in (4) is derived by taking John as the alternative to Bill, creating in effect the same Rule-H-violating configuration as in the first conjunct of (4). The FSV of a constituent \( \phi \) for an assignment \( g \), \( \text{FSV}\textsuperscript{g}(\phi) \), is defined as follows (assuming binary branching, and that semantic composition is via function application):

\[ \text{\{ ALT}\textsuperscript{g}(\phi) = \left\{ \begin{array}{ll} \text{\{ }\phi\text{\} if } \phi \text{ is unfocused and simplex}, \\
\{ \psi | \psi \text{ has the same semantic type as } \phi \} \text{ if } \phi \text{ is focused, or} \\
\{ f(x) | f \in \text{FSV}\textsuperscript{g}(\psi), x \in \text{FSV}\textsuperscript{g}(\psi) \} \text{ where } \phi = [\psi_1 \psi_2] \text{ or } [\psi_2 \psi_1]. \end{array} \right.} \]

\( \text{FSV}\textsuperscript{g}(\phi) = \text{ALT}\textsuperscript{g}(\phi) \cup \{ \text{ALT}\textsuperscript{g}(\psi) | \psi \text{ is a Rule H competitor to } \phi \} \)

(6) \( \psi \) is a **Rule H competitor** to \( \phi \) if \( \psi \) is obtained from \( \phi \) by choosing a closer binder for a bound pronoun in \( \phi \).

The preceding definition of the FSV roughly follows Rooth (1992) and Heim (2000). The twist is that the FSV of a constituent does not include any members of the FSVs of any of its Rule H competitors.

The second conjunct of (4) has a single Rule H competitor:

\[ \text{(7) BILL does } [\text{know that he\textsubscript{1} loves his\textsubscript{3} mother}] \text{ too} \]

The pronoun [he\textsubscript{1}] in (7) refers to John. Thus, the FSV of (7) contains the proposition ‘John knows that John loves his mother’ (since John is one possible alternative to the focused subject BILL). As this proposition is a member of the FSV of (7), it cannot be a member of the FSV of the second conjunct of (4). This proposition must be a member of the FSV of the second conjunct of (4) in order for VP ellipsis to be licensed, so VP ellipsis is not licensed in (4).

My analysis of the Dahl paradigm crucially differs from Fox’s analysis in that the binding dependency in the first conjunct of (4) is irrelevant. It is the binding dependency in the second conjunct that ultimately blocks reading (2d), via its interaction with constraints on VP ellipsis.

*I now review three problems for Fox’s analysis and explain how my revision of it overcomes them.*
• **Problem 1: Parallelism** Structural parallelism can be enforced via an LF identity requirement on VP ellipsis (Sag 1976), but this requirement is known to be far too strong. If structural parallelism is stated as a constraint in its own right, an additional constraint is then required on unbound/referential pronouns within elided VPs. Heim (2007) notes that the resulting disjunctive definition of Parallelism, which Fox adopts, does not derive from any independently motivated constraints on VP ellipsis. My revision of Fox’s analysis relies on constraints on VP ellipsis deriving from Rooth’s theory of focus.

• **Problem 2: Embedded Dahl** Roelofsen (2011) discusses the variant of the Dahl paradigm in (8):

(8) Every worker says that he knows when he can take home his tools, and that the boss does too.

(9) a. TB knows when TB can take home TB’s tools. b. TB knows when TW can take home TW’s tools. c. TB knows when TB can take home TW’s tools. d. *TB knows when TB can take home TB’s tools.

Fox’s theory incorrectly blocks all of the readings in (9) except for (9a). For example, to derive reading (9b) while respecting structural parallelism, it is necessary to have the first and second pronouns in the first conjunct bound by *every worker*, as in (10). However, binding of the second pronoun violates Rule H, since the same interpretation could be derived by having the second pronoun bound by the first.

(10) [EW] [λ₁ [t₁ says that [α he₁ [knows when he₂ [λ₂ [t₂ can take home his₃ tools]]]]] (*Rule H)

On my analysis, the pattern of binding dependencies in the first conjunct of (10) is irrelevant. With regard to licensing of VP ellipsis, the only relevant property of the antecedent constituent, labeled α in (10), is its semantic value. Taking [he₁] as the alternative to THE BOSS, one of the members of the FSV of the constituent labeled β is the proposition ‘the worker knows when the worker takes home the worker’s tools,’ which is identical to the semantic value of α. The semantic value of α is the same regardless of whether the pronouns are linked to *every worker* directly or indirectly. Thus, if the second pronoun is bound instead by the first pronoun — so that Rule H is satisfied — VP ellipsis is still licensed.

Why is reading (9d) unavailable? This reading requires the LF in (11) for the second conjunct. The sole Rule H competitor to (11) is (12):

(11) and that [β THE BOSS does [know when he₁ can take home his₃ tools] too]

(12) and that [β THE BOSS does [know when he₁ [λ₃ [t₃ can take home his₃ tools] too]]]

For VP ellipsis to be licensed, the semantic value of α, the proposition ‘the worker knows when the worker can take home the worker’s tools’, must be one of the members of the FSV of (11). However, this proposition is one of the members of the FSV of (12), derived by taking [he₁] as the alternative to THE BOSS. The proposition is therefore not a member of the FSV of (11), and VP ellipsis is not licensed.

• **Problem 3: Co-binding** Roelofsen (2011) points out that co-binding is required in the first conjunct of examples such as (13) in order to satisfy structural parallelism. Rule H is violated in the first conjunct of (13), since binding his by *he* instead of by every student yields the same interpretation:

(13) Every student [λ₁ [t₁ said that he₁ loved his₁ essay]], but NO STUDENT [λ₂ [t₂ said that THE TEACHER did [love his₂ essay]].

Once again, the pattern of binding dependencies in the first conjunct is irrelevant on my analysis. For VP ellipsis to be licensed, the FSV of the second conjunct must contain the proposition derived by taking *every student* as the alternative to *no student*, and [he₂] as the alternative to the teacher (‘every student said that he loved his essay’). The question is now whether any of the Rule H competitors to the second conjunct of (13) also contain this proposition. In fact, none does. The sole Rule H competitor to the second conjunct of (13) is (14):

(14) NO STUDENT said that THE TEACHER [λ₂ [t₂ did [love his₂ essay]].

There is no choice of alternatives to NO STUDENT and THE TEACHER that derives the proposition ‘every student said that he loved his essay’. Thus, this proposition remains a member of the FSV of the second conjunct of (13), and VP ellipsis is licensed.