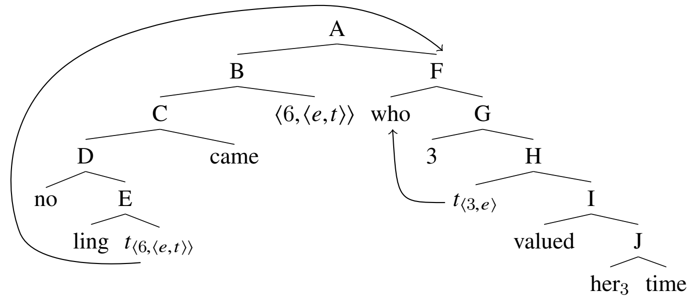
Homework 5: Solutions

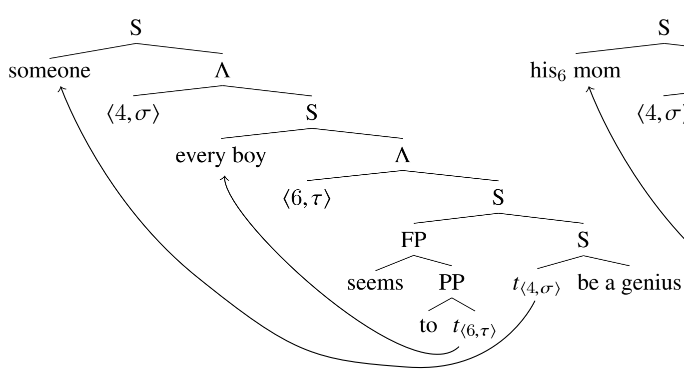
1. Sure! The indicated reading of *his mother saw John* could just involve a bit of serendipitous "accidental" coreference. Say the pronoun receives the index 2, and $g(2) = \text{j}$. Home free.

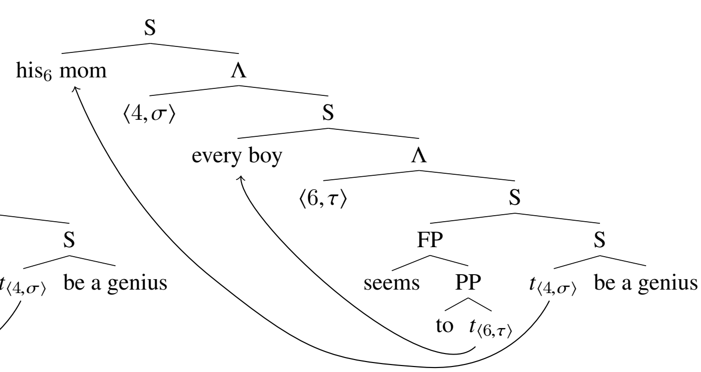
2. LF and calculation for bound-into extraposed relative clause:



$$
\begin{aligned}
[\![\text{A}]\!]^g &= [\![\text{B}]\!]^g([\![\text{F}]\!]^g) && \textbf{FA}\\
&= (\lambda v.[\![\text{C}]\!]^{g[v/\langle 6,\langle e,t\rangle\rangle]})([\![\text{F}]\!]^g) && \textbf{PA}\\
&= (\lambda v.[\![\text{D}]\!]^{g[v/\langle 6,\langle e,t\rangle\rangle]}([\![\text{came}]\!]^{g[v/\langle 6,\langle e,t\rangle\rangle]}))([\![\text{F}]\!]^g) && \textbf{FA}\\
&= (\lambda v.[\![\text{D}]\!]^{g[v/\langle 6,\langle e,t\rangle\rangle]}(\mathit{came}'))([\![\text{F}]\!]^g) && \text{Lex}\\
&= (\lambda v.[\![\text{no}]\!]^{g[v/\langle 6,\langle e,t\rangle\rangle]}([\![\text{E}]\!]^{g[v/\langle 6,\langle e,t\rangle\rangle]})(\mathit{came}'))([\![\text{F}]\!]^g) && \textbf{FA}\\
&= (\lambda v.\,\mathit{no}'([\![\text{E}]\!]^{g[v/\langle 6,\langle e,t\rangle\rangle]})(\mathit{came}'))([\![\text{F}]\!]^g) && \text{Lex}\\
&= (\lambda v.\,\mathit{no}'(\lambda x.[\![\text{ling}]\!]^{g[v/\langle 6,\langle e,t\rangle\rangle]}(x) = [\![t_{\langle 6,\langle e,t\rangle\rangle}]\!]^{g[v/\langle 6,\langle e,t\rangle\rangle]}(x) = 1)(\mathit{came}'))([\![\text{F}]\!]^g) && \textbf{PM}\\
&= (\lambda v.\,\mathit{no}'(\lambda x.\,\mathit{ling}'(x) = v(x) = 1)(\mathit{came}'))([\![\text{F}]\!]^g) && \text{Lex, trace rule}\\
&= \mathit{no}'(\lambda x.\,\mathit{ling}'(x) = [\![\text{F}]\!]^g(x) = 1)(\mathit{came}') && \beta\\
&= \mathit{no}'(\lambda x.\,\mathit{ling}'(x) = [\![\text{who}]\!]^g([\![\text{G}]\!]^g)(x) = 1)(\mathit{came}') && \textbf{FA}\\
&= \mathit{no}'(\lambda x.\,\mathit{ling}'(x) = (\lambda y.[\![\text{H}]\!]^{g[y/\langle 3,e\rangle]})(x) = 1)(\mathit{came}') && \text{vacuous } \textit{who}\text{, } \textbf{PA}\\
&= \mathit{no}'(\lambda x.\,\mathit{ling}'(x) = [\![\text{H}]\!]^{g[x/\langle 3,e\rangle]} = 1)(\mathit{came}') && \beta\\
&= \mathit{no}'(\lambda x.\,\mathit{ling}'(x) = [\![\text{I}]\!]^{g[x/\langle 3,e\rangle]}([\![t_{\langle 3,e\rangle}]\!]^{g[x/\langle 3,e\rangle]}) = 1)(\mathit{came}') && \textbf{FA}\\
&= \mathit{no}'(\lambda x.\,\mathit{ling}'(x) = [\![\text{valued}]\!]^{g[x/\langle 3,e\rangle]}([\![\text{J}]\!]^{g[x/\langle 3,e\rangle]})(x) = 1)(\mathit{came}') && \textbf{FA}\text{, trace rule}\\
&= \mathit{no}'(\lambda x.\,\mathit{ling}'(x) = \mathit{valued}'([\![\text{time}]\!]^{g[x/\langle 3,e\rangle]}([\![\text{her}_3]\!]^{g[x/\langle 3,e\rangle]}))(x) = 1)(\mathit{came}') && \text{Lex, } \textbf{FA}\\
&= \mathit{no}'(\lambda x.\,\mathit{ling}'(x) = \mathit{valued}'(\mathit{time}'(x))(x) = 1)(\mathit{came}') && \text{Lex, pronoun rule}\\
&= \{x : \mathit{ling}'(x) = \mathit{valued}'(\mathit{time}'(x))(x) = 1\} \cap \{x : \mathit{came}'(x)\} = \emptyset && \mathit{no}',\ \beta \times 3
\end{aligned}
$$

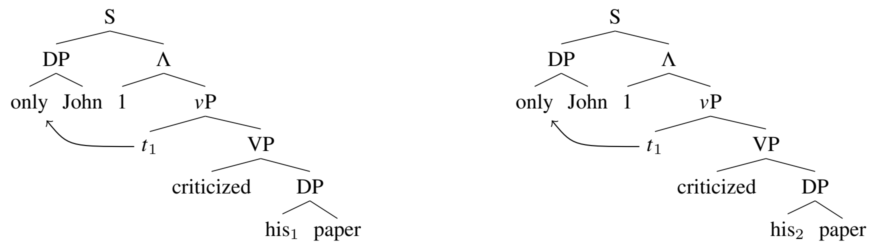
Our account of scope reconstruction **doesn't** extent to binding reconstruction. In the tree on the left, if we set σ to $\langle\langle e,t\rangle,t\rangle$ and τ to e, we end up with *every boy* scoping over *someone* (exercise: verify this!). Things are different for the attempted binding-reconstruction tree on the right. No matter what type we choose for σ, **FA** mandates that *his*$_6$ *mom* gets interpreted at the "matrix" assignment g.





3. Lexical entry for adnominal *only* (note the type), followed by two trees and two abridged semantic derivations (you should be comfortable deriving either $[\![\Lambda]\!]^g$):

$$[\![\text{only}_{\langle e,\langle\langle e,t\rangle,t\rangle\rangle}]\!]^g = \lambda x.\lambda P.\{y : P(y)\} = \{x\}$$

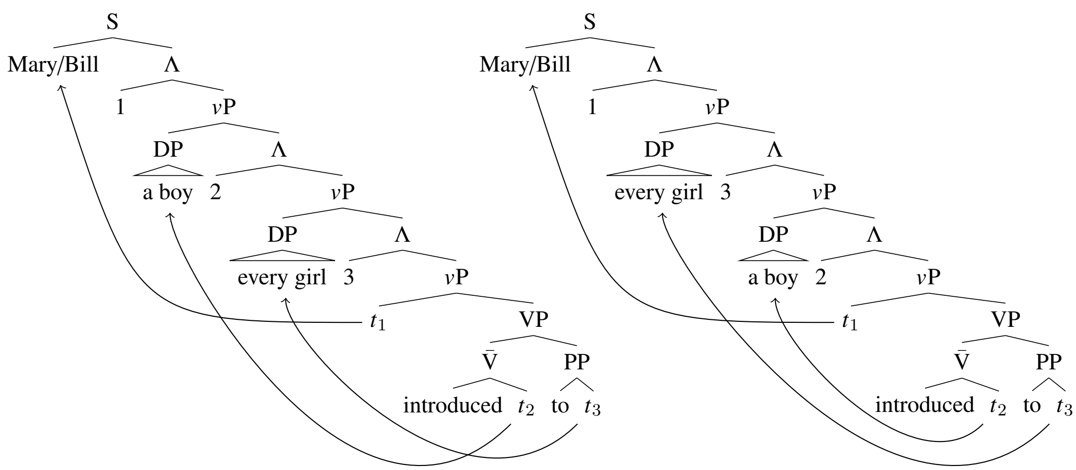


$$[\![\text{S}]\!]^g = \textit{only}'(\text{j})(\lambda x.\textit{crit}'(\textit{paper}'(x))(x)) = \{y : \textit{crit}'(\textit{paper}'(y))(y)\} = \{\text{j}\}$$

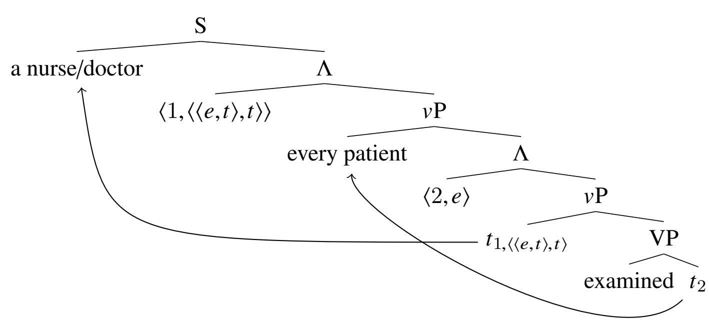
$$[\![\text{S}]\!]^g = \textit{only}'(\text{j})(\lambda x.\textit{crit}'(\textit{paper}'(g(2)))(x)) = \{y : \textit{crit}'(\textit{paper}'(g(2)))(y)\} = \{\text{j}\}$$

In the tree on the left, the trace and pronoun are both bound by *only John*, and the truth-condition is accordingly that only John was a self-criticizer. In the tree on the right, the pronoun remains free, and the truth-condition derived is accordingly that only John was a John-criticizer (assuming $g(2) = \text{j}$).

4. Below are LFs for *Mary introduced a boy to every girl, and then Bill did.* The left one underlies the both-surface-scope reading, and the right the both-inverse-scope reading. Mixing and matching surface/inverse scope LFs wouldn't allow the antecedent and elided phrases (i.e. the highest Λs) to share an interpretation.



Now, LFs for *a nurse examined every patient, and a doctor did too*:



Given that subject movement leaves a higher-order trace in both the *nurse*- and *doctor*- sentence, the elided phrases (i.e. the highest Λs) share the below meaning, which scopally reconstructs the subject below the object. Thus, ellipsis is licensed, even as the subject scopes below the *v*P-internal object.

$$\lambda Q.\textit{every}'(\textit{patient}')(\lambda x.Q(\textit{examined}'(x))) = \lambda Q.\{x : \textit{patient}'(x)\} \subseteq \{x : Q(\textit{examined}'(x))\}$$