

Complex Belief involving Variables

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Consider:

Tom believes there is something that Bill believes about Mary.

$(\exists r)\text{belief_r}(\text{Tom, now, 'belief_r', 'Bill', 's', 'Mary'}) \& \text{symbol_1}(\text{Tom, now, 'belief_r', belief_r}) \& \text{symbol_0r}(\text{Tom. Now, 'Bill', Bill}) \& \text{symbol_0r}(\text{Tom, now, 'Mary', Mary}) \& \text{variable_1r}(\text{Bill, now, 's', r}) \& (\exists w) (\text{belief_r}(\text{Tom, now, Bill, now, symbol_1r, w, r}) \& \text{belief_r}(\text{Tom, now, symbol_0r, Bill, now, 'Mary', Mary}))$

Simplifying, the correct analysis is really:

$(\exists br)(\exists bll)(\exists my)(\exists my2)(\exists s) (\exists r)\text{belief_r}(\text{Tom, now, br, bll, s, my2}) \& \text{symbol_1}(\text{Tom, now, br, belief_r}) \& \text{symbol_0r}(\text{Tom, now, bll, Bill}) \& \text{symbol_0r}(\text{Tom, now, my2, Mary}) \& \text{variable_1r}(\text{Bill, now, s, r}) \& (\exists w)\text{belief_r}(\text{Tom, now, bll, now, symbol_1r, w, r}) \& \text{belief_r}(\text{Tom, now, symbol_0r, bll, now, my, Mary})$

I'm not quite sure this is right.