Atoms for our toy language: Max, Claire, the 52 cards, *H* (for having), *Bel* (for believing), *Tr* (for truth). Atoms for any language: *Prop* (for proposition), 1 (for claiming, 0 (for denying).

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The propositions [...] are sets that are different for different propositions and contain their constituents in their transitive closure.

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PrePROP contains arbitrarily long liar-cycles.

An unwanted sort of circularity

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$$p = [a H 3] \lor p], q = \overline{[a H 3]} \land q], p = p \lor p, q = q \land q$$

 A set X ⊆ PrePROP is nonsubstantive iff it contains no atomic propositions and every member of X has an immediate constituent that is a member of X, too.

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- A set X ⊆ PrePROP is nonsubstantive iff it contains no atomic propositions and every member of X has an immediate constituent that is a member of X, too.
- *p* is *nonsubstantive* iff it is a member of a nonsubstantive set; *substantive* in the other case.
- PROP the class of *Russellian propositions* is the largest subset of *PrePROP* such that every $p \in PROP$ is substantive and every immediate constituent of p is in *PROP*, too.