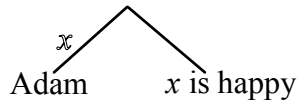
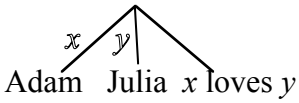
Representing Propositional Structures with Trees

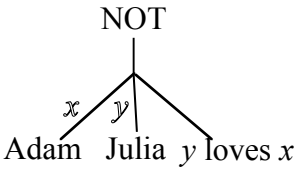
Adam is happy.



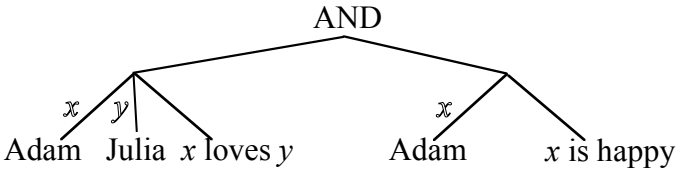
Adam loves Julia.



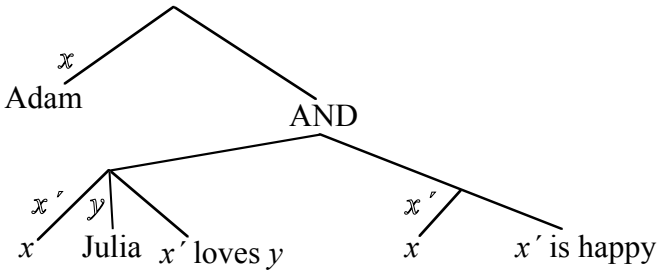
Julia does not love Adam.



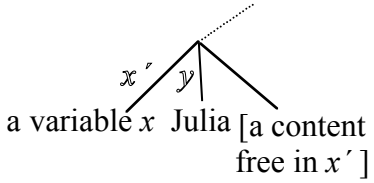
Adam loves Julia and Adam is happy.



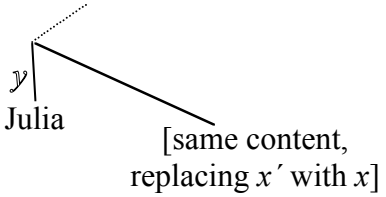
Adam loves Julia and is happy.
[λx(x loves Julia and x is happy) (Adam)]



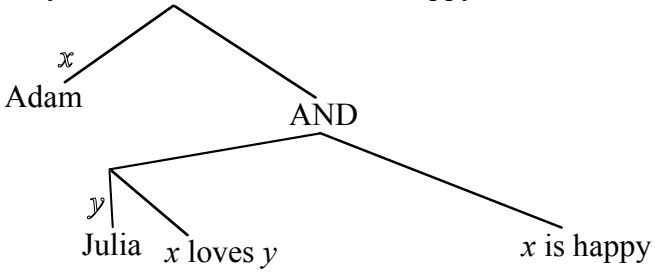
In general, whenever we have a structure of the form:



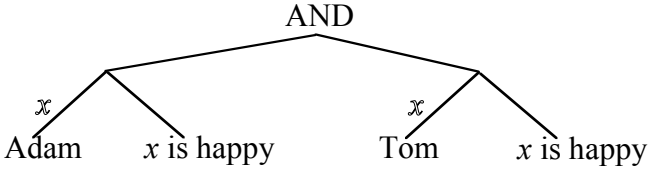
that will be equivalent to:



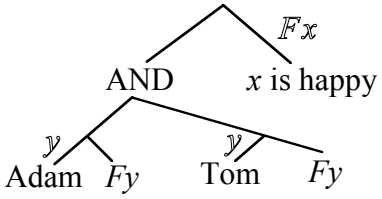
I will usually employ the second, simpler representation. Written that way, the proposition expressed by “Adam loves Julia and is happy” is:



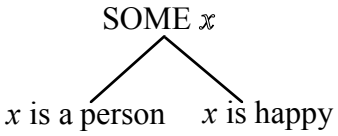
Adam is happy and Tom is happy.



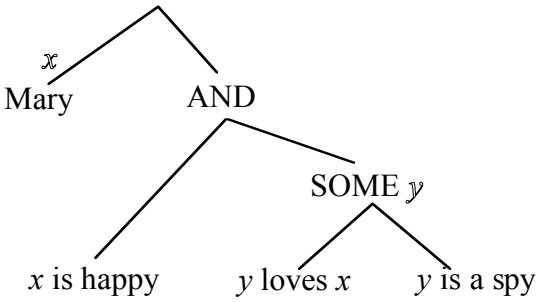
Adam and Tom are each happy.
[□F(Adam is F and Tom is F) (x is happy)]



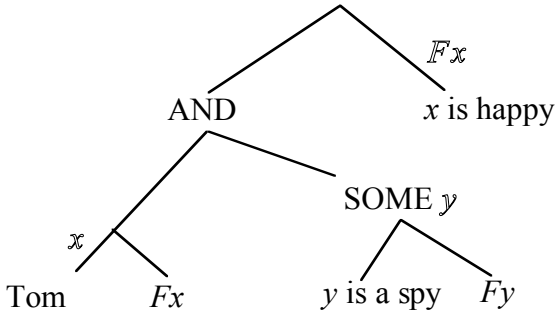
Some person is happy.
[(Some x: x is a person) (x is happy)]



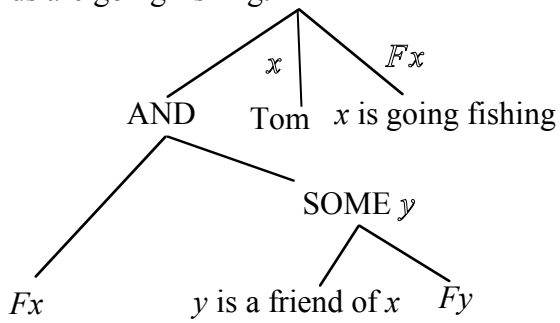
Mary is happy and some lover of hers is a spy.
[□x(x is happy and (some y: y loves x) (y is a spy)) (Mary)]



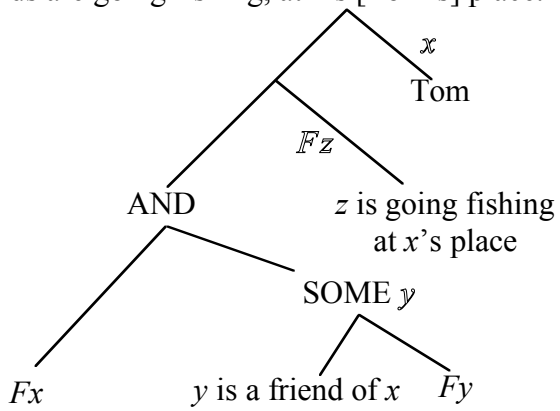
Tom and some spy are each happy.
[□F(Tom is F and (some y: y is a spy) (y is F)) (x is happy)]



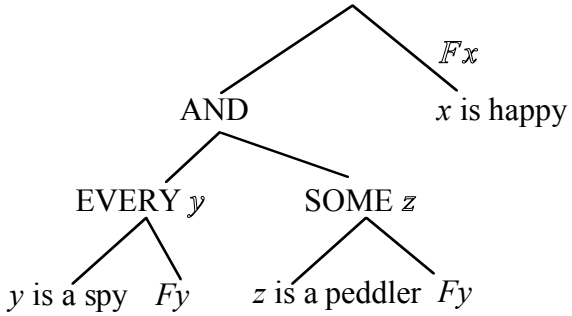
Tom and some of his friends are going fishing.



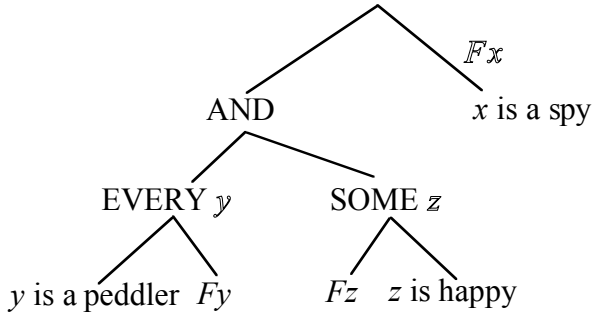
Tom and some of his friends are going fishing, at his [Tom's] place.



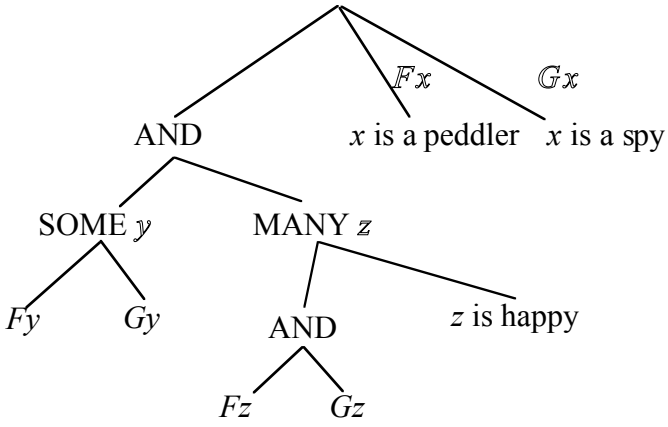
Every spy is happy, and some peddlers are too.
[□F((every y: y is a spy) (y is F) and (every z: z is a peddler) (z is F)) (x is happy)]



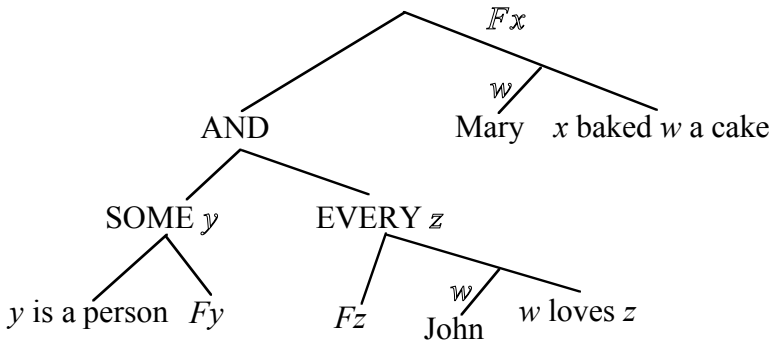
Spies are such that every peddler is one, and some of them [i.e. some spies] are happy.
[□F((every y: y is a peddler) (y is F) and (some z: z is F) (z is happy)) (x is a spy)]



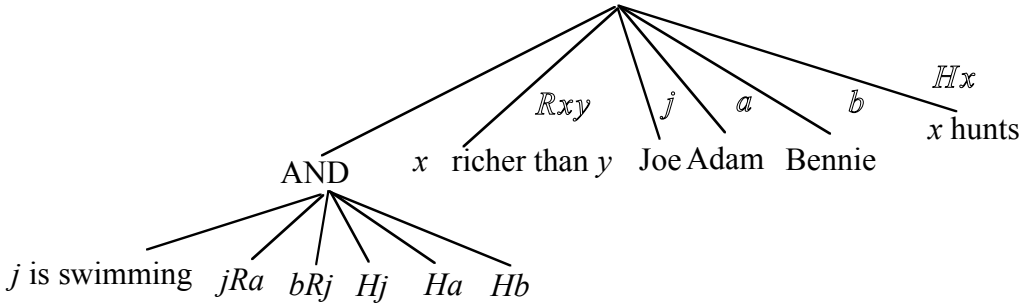
Some peddlers are spies, and many of them [the peddlers who are spies] are happy.
[□FG((some y: y is an F) (y is G) and (many z: z is F and z is G) (z is happy)) (*x* is peddler, x is a spy)]



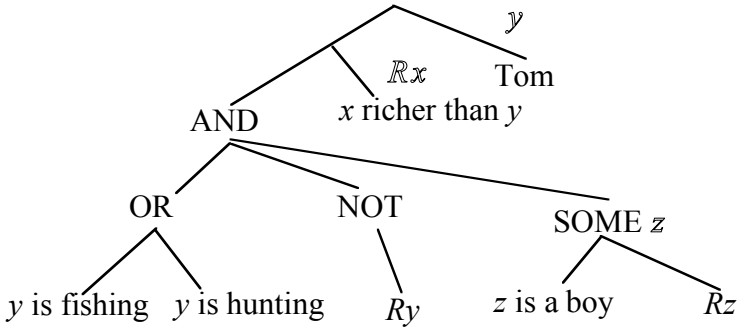
At least one person baked Mary a cake, and John loves everyone who did so.
[□F((some y: y is a person) (y is F) and (every z: z is F) (John loves z)) (x baked Mary a cake)]



Joe is swimming, and he's more rich than Adam, but Bennie more [rich] than him, and all three hunt.



Tom is either fishing or hunting, and he's not richer than himself, but some boys are [richer than Tom].



Joe is swimming, and Tom is doing that and hunting Joe.