

Logic and Conversation

Assignment 5

Please return the assignment in pdf by email to: floris.roelofsen@gmail.com
Due date: Wednesday 12/12

In order to allow existentials to take narrow scope under universals, i.e., to avoid that existentials always have to take widest scope, **lnqW** makes use of *functional witnesses*. It seems that the same effect could in principle be achieved by allowing for *dependent witnesses*, as in C-FOL. Develop a system **lnqDW** which is like **lnqW**, but allows for dependent witnesses in the sense of C-FOL rather than functional witnesses.¹

1. Start by defining states as sets of pairs $\langle w, g \rangle$ where w is a world and g an assignment. Call such pairs *indices*. Then states are sets of indices. Define a suitable *extension* order on such states.
2. Define recursively when a state supports a formula. For now, restrict your attention to atoms, conjunction, existentials, and universals. Whenever you encounter a problem, or a choice in designing the system, describe it and motivate your decisions.
3. Apply your semantics to a couple of simple sentences. Do you get desirable results? Explain why (or why not).
4. Bonus: add disjunction, implication, and negation to the system.
5. Again, test the system on a couple of simple sentences and discuss the results.

¹This assignment is more open-ended than the previous ones. In fact, we are asking you to address an issue that has not been addressed before. Your attempt does not necessarily have to be successful. But be sure to motivate the choices that you make and to properly evaluate the system that you end up with. Pointing out remaining problems is just as important as pointing out what the system does well.