

Lecture 12  
VARIETIES OF POSSIBILITY, AND OTHER USES FOR S5

1. True or false?
  - a. There might be an elephant in this room.
  - b. There might have been an elephant in this room.
  - c. JFK might have shot himself.
  - d. Anson might have three children.
  
2. There seem to be at least two kinds of possibility: *metaphysical* possibility, and *epistemic* possibility:
  - a. It is metaphysically possible that JFK shot himself.
  - b. It is not epistemically possible that JFK shot himself.
  
3. There seem to be other kinds as well:
  - a. Logical possibility
  - b. Theoretical possibility
  - c. Physical possibility
  - d. Economic possibility
  - e. Human possibility
  - f. Doxastic possibility
  - g. Deontic possibility
  
4. Does this mean that we have to modify our account of ‘It is possible that’ and ‘It is necessary that’ in terms of quantification over possible worlds? Maybe not much:

‘It is {metaphysically, epistemically, logically, deontically, ...} {possible, necessary} that S’ means that S is true in {some, every} {metaphysically, epistemically, logically, deontically, ...} possible world.
  
5. What is it to be an epistemically possible world? Perhaps this: it is to be a world that is epistemically the same as ours. That is, in which we know there what we know here.

We can say the same about all the others:

A {metaphysically, logically, deontically, physically, ...} possible world is a world that is {metaphysically, logically, deontically, physically, ...} the same as ours.
  
6. This has an interesting consequence: since *being the same as* (in any respect) is an equivalence relation (i.e. reflexive, symmetric, and transitive), S5 is the system that best captures the logic of each kind of possibility (rather than K, T, B, or S4).
  
7. And drawing a distinction between kinds of possibility might give us the resources to explain away what seem to be counterexamples to S5. Here are a few:
  - a. It is not possible for me to fly, but it might have been possible. ( $\diamond\diamond A \not\models \diamond A$ )
  - b. It is possible for me to swim, but it might not have been possible. ( $\diamond A \not\models \square\diamond A$ )
  - c. It is not possible that JFK shot himself, but it might have been possible.
  - d. It is possible that Anson has three children, but it might not have been possible.

Having drawn a distinction between various kinds of possibility, we can make these more explicit as follows:

- a. It is not physically possible for me to fly, but it is metaphysically possible that it is physically possible.
- b. It is physically possible for me to swim, but it is metaphysically possible that it is not physically possible.
- c. It is not epistemically possible that JFK shot himself, but it is metaphysically possible that it is epistemically possible.
- d. It is epistemically possible that Anson has three children, but it is metaphysically possible that it is not epistemically possible.

Maybe if we stick to the one kind of possibility we do not get any counterexamples to S5? Is it epistemically possible that it is epistemically possible that JFK shot himself?

#### Other uses for S5?

8. What about 'Always' and its dual, 'Sometimes' – do we use these to quantify over possible worlds? If so, which system, K, T, B, S4, or S5 (or some other), best captures their logic? (Temporal logic)
9. What about 'It is obligatory that' and its dual, 'It is permitted that' – do we use these to quantify over possible worlds? (Deontic logic)
10. What about 'It is known that' and its dual, 'It is not known that not' – do we use these to quantify over possible worlds? (Epistemic logic)