24.119 Minds and Machines

Handout 5: Possibility and Necessity

Some things didn't happen, but they could have happened or might have happened. Gore did not win the election, but he might have. You came to class today, but you could have stayed in bed instead. There could have been some things that don't in fact exist. There are no talking donkeys or blue swans, but there might have been. Not everything goes, however. Gore is not an alligator, and (arguably) he could not have been one. Uncontroversially, there could not have been any square circles or even primes, and it could not have turned out that Gore both won and did not win the election.

These are all claims about possibility and necessity; to understand some of the readings and the issues, it is important to get comfortable with these notions.

nomological, epistemic, and metaphysical possibility

Sometimes when we make claims about what is or isn't possible, we have in mind *nomological* possibility -- what could be the case, holding the laws of nature fixed. For example, it is not nomologically possible for a body to accelerate beyond c; it is not nomologically possible for two bodies not to exert a gravitional attraction on each other; it is nomologically possible for there to be a gold sphere a mile in diameter, and for there to be rivers of Coca Cola.

Sometimes when we make claims about what is or isn't possible, we have in mind *epistemic* possibility -- what could be the case, holding what we know fixed. For example, it is not epistemically possible for a body to accelerate beyond c (we know that no body does this); it is not epistemically possible it to be sunny today (we know that it's raining); it is epistemically possible for Smith to be in the library (we don't know where she is).

Sometimes when we make claims about what is or isn't possible, we have in mind *metaphysical* possibility -- what could be the case in the broadest sense. For example, it is metaphysically possible for a body to accelerate beyond c (surely the world could have turned out such that Newton was right); it is not metaphysically possible that 2+2=5, or that something is both square and circular.

In this course, when we speak of possibility and necessity ("Zombies are possible", "It's necessary that 2=2=4", etc.) we will typically mean the metaphysical kind. The reason why this sort of possibility is important will emerge shortly.

It is clearest to think of possibility and necessity as applying to *propositions*: the proposition that 2+2=5 is not possible, the proposition that it's sunny today is possible, etc. Some useful terminology is illustrated by the figure below.