

Issues in Contemporary Metaphysics

Lecture 4: Possible Worlds and Genuine Modal Realism

1. Modality

Modal statements are about what *could have been*:

- Hitler could have won World War II;
- I could have been a fisherman;
- The speed of light could have been twice as fast as it actually is;
- Swans could have been black;
- It's impossible for there to be round squares;
- Necessarily, $2+2=4$.

Modal statements also include *counterfactual statements*:

- Scientific*: If the speed of light were faster, atomic explosions would be more deadly;
- Ethical*: If you hadn't have made the deceased play on the motorway, he would've lived;
- Everyday*: If I hadn't have gone out last I wouldn't have a hangover.

Modal statements can cover a variety of different *types* of modality:

- Logical Possibility*: It's logically possible for me to grow wings and fly to New York;
- Physical Possibility*: It's physically impossible to grow wings and fly to New York;
- Economic Possibility*: It's impossible for me to fly to New York.

2. Modal Logic

First order predicate logic can't deal with modality very well. Take the following arguments:

- Nikk is a philosopher. Therefore Nikk could have been a philosopher
- Nikk is essentially a material object. Therefore Nikk is a material object

Try formalising them in predicate logic. The predicates ' is a fisherman' and ' could have been a fisherman' are different. Call the former F and the latter G. The form of the first argument would then be:

- Fa
- Ga

So it's an *invalid* inference in first order logic. But the argument is valid! I leave it to you to try the second – the same problems emerge.

So we *supplement* first order logic (in the same way that we *supplemented* propositional logic to get predicate logic). We introduce a 'possibility' operator: \diamond . So 'Possibly, there could be dragons' is $\diamond P$. We then add in axioms. If something is actually the case it is possible:

$$\Phi \rightarrow \diamond \Phi$$

Now formalise the argument. Nikk is a philosopher: Fa. Nikk could've been a philosopher: $\diamond Fa$ So we get:

- Fa [Premise]
- Fa \rightarrow $\diamond Fa$ [axiom]
- Therefore $\diamond Fa$ [conclusion]

And now it's valid!

We can also introduce a necessity operator: \square . It also has an intuitive axiom: $\square \Phi \rightarrow \Phi$. With that in place, we formalise the other argument: Nikk is essentially a material object. Therefore Nikk is a material object

- Something a bit like this:
- $\square Fa$ [Premise]
- $\square Fa \rightarrow Fa$ [Axiom]
- Fa [Conclusion]

3. Possible Worlds

Possible worlds help formalise modal talk. Using just the box and diamond you just won't be able to satisfactorily formalise sentences like this:

- (1) There are three ways to win this chess match;
- (2) There could have been one more thing than actually exists;
- (3) If Hitler had been a pacifistic clergyman, he would have been more similar to Desmond Tutu than he otherwise was.

I'll let you either see the problems in those sentences by trying to formalise them yourself, or you can go and read about how they fail. That's where the possible worlds come in. Logicians introduced possible worlds so they could formalise those kinds of sentences. So at this stage they're just a *heuristic*, something introduced to make doing logic easier.

How does it work? There are all these possible worlds. One is special – our world. The *actual* world. Things are true at those worlds. So a proposition can be true at one world and false at another. So 'Hitler won WWII' is false at our world, but true at another one. Something is *possible* if it's true at some world.

' $\diamond P$ ' becomes ' $\exists \omega$ (ω is a PW and P is true at ω)'

Something is *necessary* if it's true at *all* worlds.

' $\Box P$ ' becomes ' $\forall \omega$ (ω is a possible world $\rightarrow P$ is true at ω)'

Something is *impossible* if it's true at *no* world.

So Hitler could have won World War II because there is some world at which he does win WWII. $2+2=4$ because at every PW, it is true at that world that $2+2=4$. Something is *actually* true iff it is true at the actual world. So I'm actually giving a lecture because at this world, the one we're in, it is true that I'm giving a lecture. How does this help?

- (4) There could have been one more thing than actually exists.

$\exists \omega [\omega \text{ is a PW} \ \& \ \forall x (x \text{ exists at the actual world} \rightarrow x \text{ exists at } \omega) \ \& \ \exists y (\sim y \text{ exists at the actual world} \ \& \ y \text{ exists at } \omega)]$

Note that we don't just need worlds! We need objects that don't exist! So we need not just worlds, but 'non-actual objects'. Call them *possibilia*. So Gandalf and Santa Claus are *possibilia*. Equipped with possible worlds and *possibilia* we can translate (4). Try this as well:

- (5) If Hitler had been a pacifistic clergyman, he would have been more similar to Desmond Tutu than he otherwise was.

This is true because there exists a possible world at which Hitler exists and is, in fact, a nice clergyman. That *possibilia* resembles Desmond Tutu (to a greater degree than the *actual* Hitler did). So, *that's* why people often talk about possible worlds (and *possibilia*), because it makes formalising modal sentences, and arguments containing modal sentences, easier and straightforward. If you accept the idea that the only way to formalise modal sentences in logic is by using possible worlds talk, and you think that the way that logic says the world is tells us *how* the world is (like the Quinean says!) then you believe in possible worlds. So that's the first motivation: that logic reflects reality (i.e. Quinean ontological commitment) and there are no decent paraphrases available for modal sentences.

4. Other Motivations for Possible Worlds

The other motivation is that a theory *including* possible worlds yields greater benefits than one which does not.

(i) *Solving the problem of which modal logic is right.*

There are many different modal logics. Some axioms of modal logic are obvious, and we've already seen.

$$\Box \Phi \rightarrow \Phi$$

$$\Phi \rightarrow \diamond \Phi$$

But others are more contentious

$$\Box \Phi \rightarrow \Box \Box \Phi$$

$$\diamond \Phi \rightarrow \Box \diamond \Phi$$

These 'stacked' modal operators make life more difficult. How are we to determine what the theorems are? But if we know what PW there are, we're away! You look at the PW that exist, then look at what's true in them, and this tells us what the theorems are.

(ii) *Ontological Parsimony: Properties*

Recall class nominalism. It had a problem: that the set of all cordate things was identical to the set of all renate things. So *being renate* and *being cordate* wrongly turned out to be the same property. Or the counterfactual scenario where terrorists won and, whilst all honest, had left the rest of us dead. But now with an ontology of possible worlds and possibilia, we can avoid this. Now *being honest* is the set of *all* honest people. Not just the *actual* honest people – but all the honest people from every possible world. Those *possibilia* are members of the set of honest people. So *being honest* and *being a terrorist* don't have the same members and are different properties. So introducing possible worlds (allegedly) let's us do without universals and/or tropes, and revive class nominalism

(iii) *Ontological Parsimony: Propositions*

We can take propositions to be *sets of worlds*. For any proposition P, P is just the set of all P-worlds. So at some worlds Hitler wins WWII, at others he doesn't (at most he doesn't even exist!). The proposition 'Hitler won WWII' is the set of those worlds. The proposition is true *at a world* iff that world is a member of that set. So it's actually true iff the actual world is a member of that set (which it isn't).

(iv) *Theoretical Simplicity*

Recall, a theory with less *primitives* is meant to be better. Some think possible worlds will allow us to analyse away modal notions. We've seen this in action already! So rather than having a primitive notion of 'possibility' we analyse it in terms of PW. The analysis for 'Possibly P' is just 'P is true at some world' That allows us to analyse away modal statements in terms of the non-modal. We do away with any 'primitive' notion of modality. It also helps us analyse other modal notions such as counterfactuals. If P were the case, Q would be the case Given an ontology of PW we can (allegedly) analyse that, rather than just trying to play around with our brute intuitions.

5. Genuine Modal Realism

GMR identifies possible worlds with objects like you and I. But which objects? Not just *any* old material object. I'm not a possible world.

ω is a possible world iff (i) that every part of it is spatiotemporally related to every other; (ii) nothing exists that isn't a part of it but is spatiotemporally related to it.

Basically, then, this universe – this *spacetime* – is a possible world. We're parts of that possible world. Everything in this universe is part of that possible world. So there's a possible world – *a universe* – wherein Hitler wins WWII. There's a possible world – *a universe* – wherein the speed of light is faster. There's a possible world – *a universe* – wherein Gandalf battles a Balrog. These universes are different spacetimes. But they're as real as you and I! They aren't abstract, they're *physical* things.

So for Lewis, talking donkeys, flying superheroes, the characters of *Eastenders* etc. all exist. Just in a different spacetime. But whilst these things exist, most of them don't *actually* exist. Lewis prises apart the two notions. What actually exists is what is actual i.e. what is part of the actual world. The actual world, for Lewis, is the spacetime you happen to be in. So dragons exist, but they don't *actually* exist. Some people think this makes it *weirder*. *Actualists* think that *only* actual things can exist. Some people think it makes it *less* weird. After all, you might say that intuitively dragons don't *actually* exist (GMR agrees) and then say you have little or no intuition over whether they exist.

This theory clearly has possible worlds. It also has possibilia. They exist too. I'm a possibilium (just not a *mere* possibilium as I'm actual). But dragons, Robert Langdon etc. they all exist too (as parts of their own respective worlds). Which is good, because recall that we needed possibilia to exist in order to accept possible world talk as being reflective of reality.

But I can exist at *lots* of worlds. It's true I could've been a fisherman iff there's a possible world at which I am a fisherman. But I'm, surely, only part of one world? Lewis gets around this by saying that the 'Nikk Effinghams' at other worlds are my *counterparts*. So what grounds *de re* modal claims are counterparts – things a lot like me, but not me – existing at those other worlds. And something is my counterpart if it's similar to me. This is very important because, as we shall see next lecture, not all modal realist theories include possibilia

Why believe this madness? Lewis reckons:

- (i) GMR can capture all of the motivations given before for possible worlds.
- (ii) No other theory can do this (more on this next lecture)
- (iii) These benefits outweigh any costs (say, breaching intuitions) for including an infinite number of spacetimes in your ontology.

6. Problems for Genuine Modal Realism

Incredulous Stare

Not much to say about the incredulous stare. Must surely be able to do better.

Example: Refusing to believe in quantum physics because it's so whacky.

Demonstrate some other theory can get the benefits without the costs.

Compare to theories discussed next lecture.

Hidden Costs I: General list

These are the problems usually raised:

GMR says certain intuitively possible things are impossible

GMR generates problems in ethics

GMR says there are more things than there actually are

GMR says that there can be no 'alien properties'

GMR leads to scepticism

GMR has problems with counterpart theory

GMR still misidentifies properties, just like class nominalism originally does

Let's look at just the first two.

Hidden Costs II: Missing Possibilities

Can't account for 'island universes'. An island universe is one where the spacetime is cut into two. For instance, we could imagine a chain of universes, where a connection between two regions gets smaller and smaller until it 'snaps' and there's no way between them. These all seem possible. Two regions, traversable only by passing through a very small region of space. Indeed, this might be how our universe *actually* is.

But if those universes are possible, why not a disconnected spacetime? If it's possible then there is a possible world at which there are island universes. But given GMR, there *can't* be any island universes. Island universes are two *disconnected* spacetimes. So that's two possible worlds! Not one! You'll never have a possible world where there are island universes! It'll always turn out to be two! Thus, given GMR it's impossible that there're island universes.

Hidden Costs III: Ethical Dilemmas

Maybe we can rack up the cost by claiming GMR runs roughshod over our ethical intuitions. Utilitarianism runs into problems straight away. If we are to maximise happiness (or utility), how can we when the amount of happiness is fixed by necessity? There's an infinite number of people. Whatever you do, there's an infinite amount of pleasure and pain. Cannot just restrict ourselves to this world (increase utility in this region of spacetime) Then it would be similar to other prejudiced principles (increase utility in the Western World, and screw the Third World – 'Heh, let's all drive to the shops and back even though the walk only takes two minutes, screw the dying children in the Third World, I can't see them...')

More complex problems arise though. Imagine you see a child drowning. Imagine that there's a machine set up to drown *a different* child if you do. Imagine that if you don't save her, the machine is programmed to rescue the other child. Should you save her? My intuitions say it doesn't matter either way.

Given GMR, all possibilities must play out. If you save her, then in another world her counterpart drowns. If you *don't* save her then given GMR in that world her counterpart must be saved. It's just like the machine.