

Intermediate Logic Spring

Lecture Three

Genuine Modal Realism

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Genuine Modal Realism

Possible Worlds

What is Genuine Modal Realism?

Counterpart Theory

Cost/Benefit Analysis

Alien Properties and Recombination

The Metaphysics of Possible Worlds

- Last week we learnt how to use possible worlds to construct a semantics for ML
- This week we will look at the philosophical question: *What are possible worlds?*
- As I emphasised last week, this question does not matter too much when we are just thinking of ML as a purely formal system
 - For the purposes of the logic, all that matters is that we supply a non-empty collection of things, labelled POSSIBLE WORLDS
- However, the question becomes important when we start *applying* ML to real world arguments

Why is 'Possible World' Talk so Useful?

- Somehow, we can use a semantics based on possible worlds to tell the difference between **good** modal arguments, and **bad** ones
- *Why is that!?*
- **A natural explanation**
 - Possible worlds *really do* exist; for every way the world could be, there is a possible world out there which is that way
 - When we select a collection of things to act as our possible worlds in a given interpretation, we are using those things to *represent* the real possible worlds

Modal Realism

- To be clear, this is not the *only* kind of explanation we might give
- We might instead try to explain why ‘possible world’ talk is so useful without admitting that there really are any such things
 - On this sort of view, possible worlds would be *useful fictions*
- However, we are going to focus on **modal realism**, according to which possible worlds really do exist
 - This week we will look at David Lewis’ **genuine modal realism**
 - Next week we will look at a version of **ersatz modal realism**

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What are Possible Worlds?

- Realists about possible worlds have to answer the following question: *What, exactly, are possible worlds?*
- David Lewis is famous for giving the following simple, but totally shocking, answer to this question:
 - Possible worlds are just like the actual world: they are real, concrete worlds made up of real, concrete things
 - There is a possible world in which donkeys talk, and the talking donkeys in that world are real flesh and blood animals, just like the mute donkeys in the actual world
- We will call Lewis' position **genuine modal realism**
 - Lewis develops this position in his classic book, *On the Plurality of Worlds*

What is the Actual World?

- The actual world is a massive, complex object which is made up of everything in the whole universe
- You are a part of this world, and so is everything that is spatiotemporally related to you



What is the Actual World?

- *It doesn't matter how far away something is*
 - A galaxy 10 billion light years away from you is just as much a part of the world as you are
- *It doesn't matter how far in the past something is*
 - All of the dinosaurs are part of the world, even though they all died out millions of years ago
- *It doesn't matter how far in the future something is*
 - If you have a great great grand-daughter, then she is part of the world too

The Actual World is a Maximal Spatiotemporal Sum

- A **mereological sum** is just any complex object which has other objects as parts
 - A table is a **sum** of its parts, i.e. the four legs and the tabletop
- A **maximal spatiotemporal sum**, w , is a sum which meets two conditions:
 - (i) All of the parts of w are **spatiotemporally** related to each other
 - (ii) No part of w is **spatiotemporally** related to anything which isn't also a part of w
- So for Lewis, the actual world is the sum of you and everything which is spatiotemporally related to you

Other Possible Worlds are Maximal Spatiotemporal Sums

- According to Lewis' genuine modal realism, other possible worlds are maximal spatiotemporal sums too
- Consider a possible world in which there is a talking donkey
- That world is a sum of that talking donkey, along with everything that is spatiotemporally related to that donkey



Other Possible Worlds are Maximal Spatiotemporal Sums

- Of course, we are not spatiotemporally related to any talking donkeys
 - There has never been, and there will never be, a talking donkey anywhere in our Universe
- That is why a possible world in which donkeys talk is a **different** world from the actual world
 - They are two different maximal spatiotemporal sums

There is *Nothing* Special about the Actual World!

- According to Lewis, there is nothing special about the actual world; it is just the world that we happen to be a part of
- 'The actual world' is just an indexical term, equivalent to 'the world that I am a part of'
 - When you use 'the actual world', you refer to the world you are in
 - When someone in another possible uses 'the actual world', they refer to the world that they are in
- Thinking that the actual world is somehow more real than the other possible worlds is a bit like thinking that England is somehow more real than France, just because you happen to be in England

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Applying Genuine Modal Realism

- \diamond (There is a golden mountain)
- There is a possible world at which there is a golden mountain
- A golden mountain is part of some maximal spatiotemporal sum

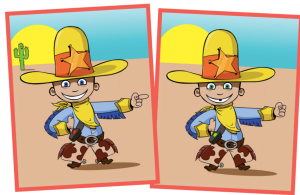


A Trickier Case

- $\diamond(\text{Rob is wearing a red jumper})$ iff there is some maximal spatiotemporal sum which contains Rob in a red jumper as a part
- **PROBLEM:** I do not exist at more than one world; I'm a part of this world and this world only!
- Lewis gets around this by introducing *counterparts*
 - Roughly, my counterpart at another world is something which plays the role of me at that world
- $\diamond(\text{Rob is wearing a red jumper})$ iff there is some maximal spatiotemporal sum which contains **a counterpart of** Rob in a red jumper as a part

What Does It Take To Be A Counterpart?

- Lewis tends to think about counterparts in terms of *similarity*
- a is a counterpart of b iff a is sufficiently similar to b
- Importantly, however, Lewis thinks that there is no answer to the question of exactly how similar counterparts have to be
- In different contexts, different kinds of similarity will matter for the counterpart relation



Counterparts to the Rescue

- **A puzzle due to Quine**
 - Jane is a mathematician and a cyclist
 - As a mathematician, Jane must be good with numbers, but she does not have to be fit
 - As a cyclist, Jane must be fit, but she does not have to be good with numbers
- **A counterpart-theoretic solution**
 - When we think of Jane as a mathematician, we restrict the counterpart relation so that all of her counterparts are good with numbers
 - When we think of Jane as a cyclist, we restrict the counterpart relation so that all of her counterparts are fit

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The Incredulous Stare

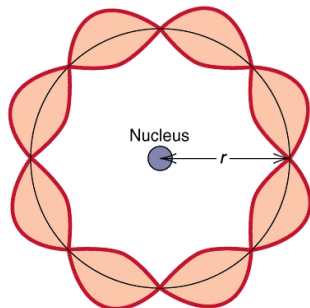
- Genuine modal realism sounds **ridiculous**
- Genuine modal realism tells you that talking donkeys really exist, as do unicorns, the Greek gods and the Easter Bunny
- Granted, none of them *actually* exist, but that just means that they are not parts of the world we happen to live in
- They all exist in other possible worlds, and those worlds are just as real, and just as concrete, as the actual world
- So why would **anyone** ever believe genuine modal realism???

A Cost/Benefit Analysis

- Although it is definitely weird to believe in *real but merely possible* things, it does not seem to be outright **incoherent**
- Rather, the fact that genuine modal realism posits real possible worlds should just be seen as a *downside* of the theory
 - In popular terminology, genuine modal realism's ontological commitment to real possible worlds is an **ontological cost** of the theory
- However, if the theory has enough *upsides*, or **benefits**, then it may still be the best overall theory
 - If it turns out that genuine modal realism is the simplest, most explanatorily powerful, comprehensive... theory of worlds, then it might be worth its ontological cost

A Comparison Case: Electrons

- Electrons are *really* weird
- They are physical objects, but they are so tiny that you couldn't ever see them
- In fact, electrons might actually be **point-sized** particles
- But they are also **waves**, which spread throughout all of space
- And they also have a magical power to repel each other, and to turn into pure energy when they bump into positrons



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A Comparison Case: Electrons

- Given how weird they are, the fact that modern physics is ontologically committed to electrons should be seen as an ontological cost
- But of course, it is a cost well worth paying!
- Positing electrons allows us to explain lots of apparently different phenomena, like electricity, β -radiation, ionisation...

The Benefits of Genuine Modal Realism

- If genuine modal realism has enough benefits, then it might well be worth its huge ontological cost
- Lewis goes through a long list of the benefits of genuine modal realism in Chapter 1 of *On the Plurality of Worlds*
- We will look at just three
 - The analysis of modality
 - An account of propositions
 - An account of properties

The Analysis of Modality

- Philosophers have long found the modal concepts of *necessity* and *possibility* mysterious
- It would be really great if we could define these concepts using only **non-modal** terms
 - In other words, we don't want our definitions to use concepts like: *necessary*, *possible*, *impossible*, *can*, *could*, *would*...
- Now, you already know that we can define possibility (\diamond) and necessity (\square) in terms of possible worlds
 - $\diamond P$ iff there is a possible world at which P
 - $\square P$ iff there is no possible world at which $\neg P$
- That's a good start, but we have not yet defined the modalities in non-modal terms: we have defined them in terms of **possible** worlds!

The Analysis of Modality

- Lewis offers a non-modal definition of possible worlds
 - A possible world is a maximal spatiotemporal sum
- You do not need to mention any modal concepts to explain what a maximal spatiotemporal sum is
 - A maximal spatiotemporal sum is just a complex object made out of parts, and all of its parts are spatiotemporally related to all of its parts, and none of its parts are spatiotemporally related to anything else
- So Lewis can give a non-modal definition of possibility and necessity!
 - $\diamond P$ iff there is a maximal spatiotemporal sum at which P
 - $\square P$ iff there is no maximal spatiotemporal sum at which $\neg P$

What is a Proposition?

- Philosophers talk a lot about **propositions**
 - Propositions are the contents of (some) mental states: if Sharon believes that grass is green, the content of Sharon's belief is the proposition that grass is green
 - Propositions are the contents of (some) sentences: the content of 'Grass is green' is the proposition that grass is green
 - Propositions are the fundamental bearers of truth and falsehood: the sentence 'Grass is green' is true **because** it expresses a true proposition
 - Propositions are not mind-dependent; they are abstract objects
- *But what are propositions, really!?*

Lewis' Account of Propositions

- Lewis' rough answer is that propositions are **sets of possible worlds**
 - Lewis develops his answer in §1.4 of *On the Plurality of Worlds*
- **Example:** The proposition that grass is green is the set of worlds at which grass is green
- It is now easy to explain what it takes for a proposition to be true at a world:
 - A proposition is true at world w iff w is a member of that proposition
- **Example:** The proposition that grass is green is true at the actual world, because the actual world is a member of the set of worlds at which grass is green

Lewis' Account of Propositions

- The content of 'Grass is green' is the proposition that grass is green, in the following sense:
 - 'Grass is green' represents the actual world as belonging to the set of worlds at which grass is green
 - 'Grass is green' is true iff the actual world belongs to that set
- The content of Sharon's belief is the proposition that grass is green, in the following sense:
 - Sharon's belief represents the actual world as belonging to the set of worlds at which grass is green
 - Sharon's belief is true iff the actual world belongs to that set

Properties as Sets of Individuals

- Philosophers talk a lot about **properties**
 - All **red things** have something in common; that thing is the property of being red
- *But what are properties, really!?*
- Lots of philosophers have tried suggesting that properties are **sets of individuals**
- **Example:** The property of being red is the set of red things

A Problem for this Account of Properties

- Set x is identical to set y iff x and y have the same members
- So if we think of properties as sets, this implies that the property of having a kidney is identical to the property of having a heart
 - x has a kidney iff x has a heart
 - So, x is a member of the set of creatures with kidneys iff x is a member of the set of creatures with hearts
 - So, the set of creatures with kidneys is identical to the set of creatures with hearts
 - So, the property of having a kidney is identical to the property of having a heart
- But this result is absurd!
 - There *could have been* creatures with hearts that didn't have kidneys!

Lewis' Account of Properties

- Lewis solves this problem by thinking of the property of having a kidney as the set of every *possible* creature with a kidney
 - This set doesn't *just* contain every creature with a kidney in the actual world, but every creature with a kidney in any possible world there is
- **More generally:** The property of being F is the set of possible F s
 - (Lewis calls possible things *possibilia*; so he says that properties are sets of *possibilia*)
- Since there are possible creatures with hearts that don't have kidneys, the property of having a kidney is not identical to the property of having a heart
 - For more details, see §1.5 of *On the Plurality of Worlds*

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How to Reply to Lewis

- If you don't like Lewis' genuine modal realism, and you want to argue against it, then there are three strategies open to you
 - (1) Argue that the whole idea of real possible worlds *is* incoherent, after all
 - We will be looking at some arguments of this type in the seminar
 - (2) Argue that we can get all of the benefits that genuine modal realism offers *without* positing real possible worlds
 - We will be looking at one attempt to pursue this strategy next week
 - (3) Argue that genuine modal realism doesn't deliver all of the benefits it promises
 - We will quickly look at an argument along these lines now

The Analysis of Modality

- Lewis claims to have given an analysis of possibility in non-modal terms:
 - $\Diamond P$ iff there is a maximal spatiotemporal sum at which P
- But in his book *Modality* (pp. 114–21), Melia argues that Lewis hasn't really managed to do it
- The trouble starts because so far, Lewis hasn't said anything about **how many worlds** there are

How Many Worlds Are There?

- For all Lewis has said, it may be that our world is the only possible world (i.e. the only maximal spatiotemporal sum)
- If so, then Lewis' account would imply that if there are no actual F s, then it is impossible for F s to exist:
 - \Diamond (There is a talking donkey) iff there is a maximal spatiotemporal sum at which there is a talking donkey
 - There is no talking donkey at our maximal spatiotemporal sum
 - So if this is the only maximal spatiotemporal sum, then it is impossible for there to be a talking donkey!
- That result is wrong, and so Lewis must add something to his theory to guarantee that there are enough possible worlds

The Easy Way Out

- Lewis could deal with this problem by just stipulating that if P is possible, then there is a maximal spatiotemporal sum at which P
- But the trouble with taking this way out is that Lewis would end up using modal concepts in his account of what worlds there are
 - $\diamond P$ iff there is a maximal spatiotemporal sum at which P
- You should no longer read this as a definition of $\diamond P$ in non-modal terms
- Instead, you should read it as a principle which uses **modal** terms to tell you which maximal spatiotemporal sums exist!

Recombination

- To avoid this problem, Lewis introduces a **Principle of Recombination** (*Plurality*, §1.8)



- Roughly, this principle says that you can take copies of any collection of possible individuals and properties, re-arrange them in any way you like, and you'll end up with a possible world
 - So take the property of being a donkey and the property of talking, which are both present in the actual world, and combine them in some other world to make a talking donkey

How Far Can Recombination Get You?

- This Principle of Recombination lets us build new worlds out of old worlds, but it needs a world to start working on
- Starting with the actual world, Recombination will give us a way of building new properties out of the actual properties
- But couldn't there be **alien** properties, which cannot be built out of actually instantiated properties?

Alien Properties

- Imagine a world, w , in which there is no electromagnetic force
- From the point of view of w , *negative charge* is alien
- According to genuine modal realism, the actual world is not metaphysically special
- So if our world has properties that are alien to w , why shouldn't another world have properties which are alien to us?



Accommodating Alien Properties

- To be clear, the problem here is **not** that Lewis cannot accommodate alien properties in his extreme modal realism
- The problem is merely that Recombination alone cannot generate them
- If Lewis wants to leave space for alien properties, then it *seems* he needs to use the following biconditional as a modal specification of what worlds there are:
 - $\Diamond P$ iff there is a maximal spatiotemporal sum at which P
- But if he does that, then he will not have given us an analysis of modality in non-modal terms

But Don't Forget the Other Benefits

- Maybe Lewis cannot offer a non-modal analysis of modality (at least if he wants to accommodate alien properties)
- But he still thinks that genuine modal realism offers lots of other benefits
 - Propositions
 - Properties
 - The intrinsic/extrinsic distinction
 - Counterfactual conditionals
 - Causation
 - Decision theory
 - ...

Seminar 3

- The reading for seminar 3 is:
 - David Lewis, *On the Plurality of Worlds*, ch.2 §§2.1–2.6
- Access to this chapter is available via the Reading List on the VLE
- A number of study questions have been posted on the VLE; why not discuss them in groups before the seminar?

Lecture and Seminar 4

- For next week's lecture and seminar, read:
 - David Lewis, *On the Plurality of Worlds*, ch.3
- Access to this chapter is available via the Reading List on the VLE