Possible Worlds

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THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Day 4
TOPICS

- *Lewis' Counterfactual Theory of Causation*
  - ❖ *Counterfactual Conditionals*
  - ❖ *Causal Dependence*
  - ❖ *Testing the Counterexamples to Hume*
- *Identity*
  - ❖ *Quantitative vs Qualitative*
  - ❖ *Leibniz' Law*
- *Modal Realism*
  - ❖ *Objections to Modal Realism*

Counterfactual Conditionals

- A **counterfactual conditional** ('counterfactual') describes a situation which happens not to be true, but which is *possible* (in some sense of possible). E.g:

i. If kangaroos had no tails then they would fall over.
ii. If the US had not dropped the nuclear bomb on Japan, then World War Two would have lasted longer than 6 years.
iii. If my mother had married Lionel, then I would never have been born…*(and so on)*

- It is pretty clear that **we have lots of knowledge about counterfactuals**.
- Although we could have an interesting discussion about *how* we get that knowledge…

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Logic Link: Counterfactual conditionals cannot be analysed in the simple, truth-functional way that **if-then** is analysed in introductory logic – namely: ⊃ (a.k.a. the ***material conditional***)

Why not?
What are the differences in *truth-conditions*?

According to the truth-conditions for the material conditional, ***all counterfactual conditionals come out true***. (Because X ⊃ Y is only false when X is true and Y is false. Otherwise it is true.)

But that is not the result we want. We want to be able to say, for instance:

If I had entered the 2003 New York marathon then I would have been tired: TRUE
If I had entered the 2003 New York marathon then I would have won: FALSE
If Brad had not kissed Jennifer or Angelina then he would not have measles: TRUE
If Brad had kissed Angelina but not Jennifer then he would not have measles: FALSE.

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David Lewis' theory of the logic of counterfactuals:

Lewis represents counterfactual conditionals by an entirely different symbol: □→

Here are its truth-conditions:

X □→ Y is true iff:

i) there are no possible worlds where X is true OR:

ii) at all the closest possible worlds where X is true, Y is also true

Questions: Why clause i)? Why clause ii)?

(**Note**: This is not the only theory of the logic of counterfactuals. Many others exist, more recent than Lewis (~1975), with no real consensus amongst philosophers at the present time. But Lewis' is particularly lucid and influential.)

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- **Back to metaphysics: What does "closest" mean here??** Here Lewis relies on a "primitive", objective relation of "similarity" amongst possible worlds.
- Some things *just are more similar* to each other, in an overall sense. E.g. Surely a **rabbit** is more similar to a **hare** than it is to a **cockroach**, objectively.
- Similarly, then, possible worlds where I run the **New York Marathon** with my current body are *more similar* to the actual world than worlds where I run the New York marathon with the body of **Hamish Carter**.
- And in worlds where I run the **New York Marathon** with my current body, I don't win. *That* is why the sentences below have the truth-values they do:

```
If I had entered the 2003 New York marathon then I would
have been tired: TRUE
If I had entered the 2003 New York marathon then I would
have won: FALSE
```

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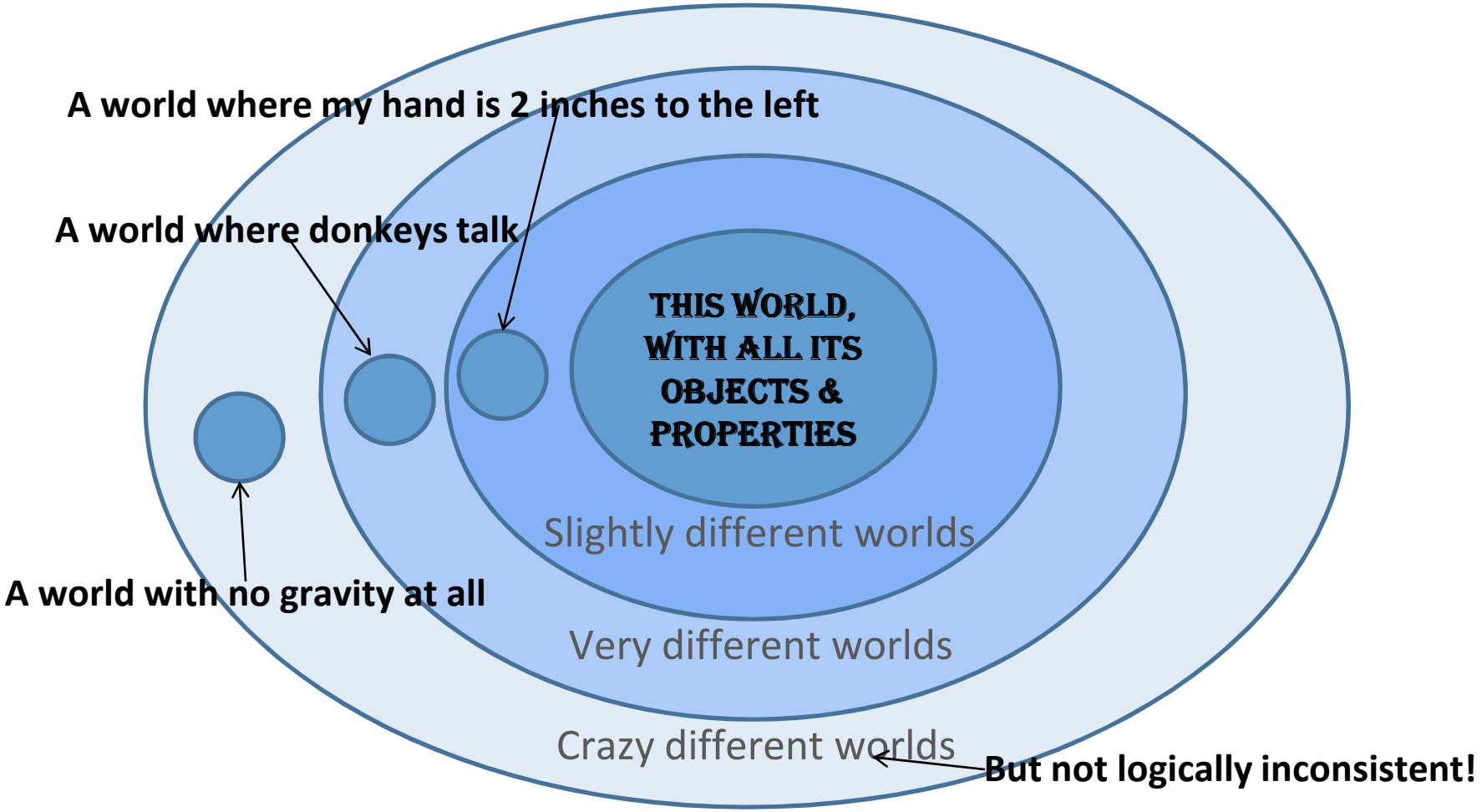
Measure of closeness: how much do you have to change to get there from here?



How does all this help us get a Theory of Causation?

Lewis proceeds in two stages:

1) First define causal dependence:

- **y causally depends on x iff O(x) □→ O(y), and ~O(x) □→ ~O(y)**

  LEXICON:
  Ox: x occurs.

In other words: in the closest possible worlds where x occurs, y also occurs **and** in the closest possible worlds where x doesn't occur, y doesn't either.

Question: *Why does Lewis need both halves?*

2) Then define causation itself in terms of causal dependence:

x causes y iff there is a chain of events leading from x to y, each stage of which causally depends on the previous stage.

Another question: *Why the second stage? Why the chain?*

Test case:

The steak I left on the bench getting chewed was caused by my leaving the cat inside this morning.

Let's say that this true. Now let's see if Lewis' theory makes it true….

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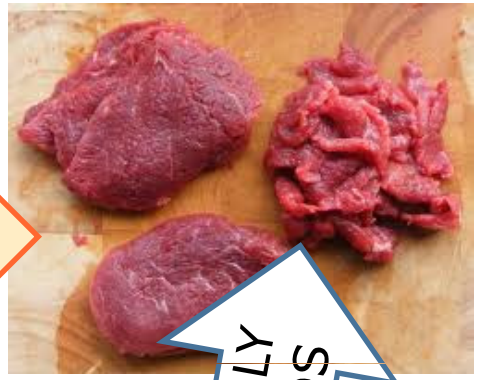
1. Leave[illegible] inside

CAUSES



5. Steak[illegible]d shape

CAUSALLY DEPENDS

CAUSALLY DEPENDS

2. Cat sees steak

CAUSALLY DEPENDS

3. Cat decides to get steak

CAUSALLY DEPENDS

4. Cat chews steak

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Does this Theory Solve Lewis' Original Objections to Hume?

***Exercise** (groups of 3-4)*

*For each of the sentences below: **i)** work out its truth conditions according to Lewis' counterfactual theory of causation, **ii)** think about the relevant possible worlds, **iii)** discuss whether the truth-value given by Lewis' theory to this sentence is correct.*

i) Pre-empted Potential Causes:
`Brad's kissing Angelina caused him to get measles.`
ii) Epiphenomena:
`Having measles spots caused me to have a high fever.`
iii) Effects:
`Having measles caused me to have contact with the measles virus.`

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Introduction to Identity

We will begin by looking at the concept of ***identity*** itself. And, as always, we will ask: ***What does this fundamental concept mean?***

- A distinction is often made in philosophy between two 'kinds' of identity:
  - **qualitative identity**
  - **quantitative** (sometimes also called 'numerical') **identity**
- Two things are **qualitatively identical** if they share all their properties. If one is green, the other is green, if one is 2 feet long, the other is 2 feet long…..and so on.
- Two things are **quantitatively identical** if they are actually the same thing. I.e. there is only 'one thing there' (hence 'quantitative' identity).

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It is often thought possible to have qualitative identity without quantitative identity *(How? What would be an example?)*

Hard metaphysical questions:

i) *If two things are qualitatively identical but not quantitatively identical,* ***in virtue of what*** *are they not quantitatively identical?*

ii) *Can you have* ***quantitative identity*** *without* ***qualitative identity****? If so, what would be an example?*

Hint:

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Leibniz's Law

This famous 'law' (not really a law like a law of physics, but a claim in metaphysics) relates **qualitative** and **quantitative** identity.

It has two halves:

1) The Indiscernibility of Identicals:

If two things are identical (quantitatively) then they share all their properties.

2) The Identity of Indiscernibles:

If two things share all their properties then they are identical (quantitatively).

Logic Link:
Express both laws in formal logic. What '*kind of logic*' is required in order to do this?

Qualitative and Quantitative Identity Summed Up:

You can have **qualitative identity without quantitative identity** insofar as two things might share *all* their properties (even their spatiotemporal location in a symmetrical universe) and yet still be 'different' in the sense that…

This is **THIS thing** and that is **THAT thing** (!)

Metaphysicians sometimes express this idea by saying that the two things have different ***thisnesses***.
The traditional medieval Latin term for this is: ***haecceities*** - if that helps ☺

Qualitative and Quantitative Identity Summed Up:

- You can have **quantitative identity without qualitative identity** insofar as the passage of time allows a thing to ***change***, and thus have different – even contradictory – properties at different times
- Some metaphysicians deny this by holding a view in which only ***time-slices*** of things (infinitely thin temporal parts) are strictly identical to one another, and a thing which is ***extended in time***, such as a person, is only a collection of time-slices which are actually different things.
- These philosophers are called ***perdurantists***.
- Philosophers who deny this, and hold that there is ***quantitative identity across time***, are called ***endurantists***.

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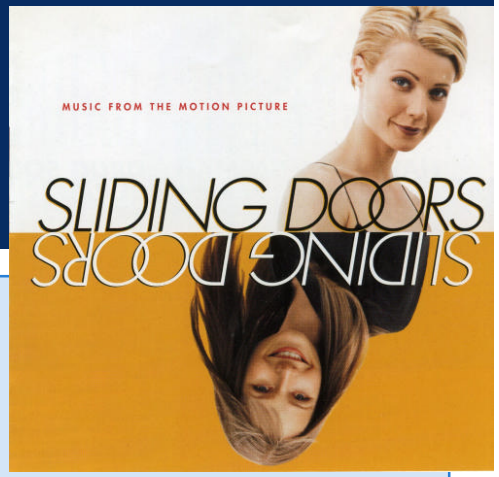

Warm-up exercise:

- Watch this clip from the movie Sliding Doors.
- In this movie **two possible scenarios** are explored – one where Helen catches the train and consequences follow, and another where she misses the train and consequences follow.
- We can all think of **counterfactual cases** like this in our own lives. (*Dates you didn't go on, car accidents you avoided*...and so on). What – if anything – determines that ***this is the situation that actually happened***?
- We have already bravely confronted the brain-bending question: "What makes now now?"
- Along the same lines, we now ask: "What makes the actual actual?"

Introduction to Modal Realism:

- **David Lewis** is somewhat notorious for defining a particular form of ***realism about possible worlds***, which he calls ***modal realism***, and claiming to believe it.
- We have now had a brief look at Lewis' logic of counterfactual conditionals. This is a reasonably well-worked out framework for determining truth-values for these conditionals.
- Is there anything we can say about *reality* that might *explain why* counterfactual conditionals seem to work this way?
- Lewis: yes there is: **possible worlds are part of reality too**!
- We thought that there was only one Universe, the so-called ***actual world***. But this actual world is just one among many many (infinitely many) possible worlds, which differ from the actual world in all possible (!) ways.

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Lewis claims that for every proposition we wish to say is *possible*, there exists a possible world where that proposition is *true*. E.g. there are worlds just like this one, except that…

…my mother married Lionel
…John Lennon was never assassina
…donkeys talk
…human beings have wings
…everyone has a piece of toast on their head
…….*and so on, for every possible distribution of properties that is* ***conceivable***

Lewis makes the following claims about these other possible worlds:

- they exist just as 'concretely' as the actual world (!) (***Parity***)*
- they are 'spatiotemporally disconnected from the actual world' (***Isolation***)*
- There are as many possible worlds as there are possible ways things might be (***Plenitude***)*

(***Brock and Mares***, see FURTHER READING)

How might one argue for Modal Realism?

i) **There is such an elegant symmetry with *indexical* accounts of space and time.**

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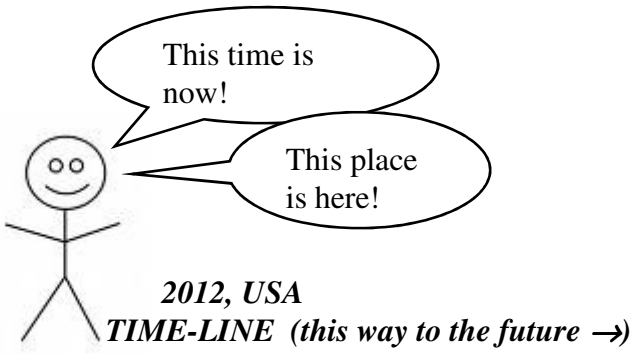

Nobody tries to argue that 'here' is not indexical – for instance by saying things like, ***"The point in space where <u>I</u> am standing is really here! You can't say that where <u>you</u> are standing is 'here' because here is right here!"***
Arguably, such "disputes" would only show that you don't understand the meaning of 'here'.
(We've seen that 'now' is more contested, but arguably analogous.)

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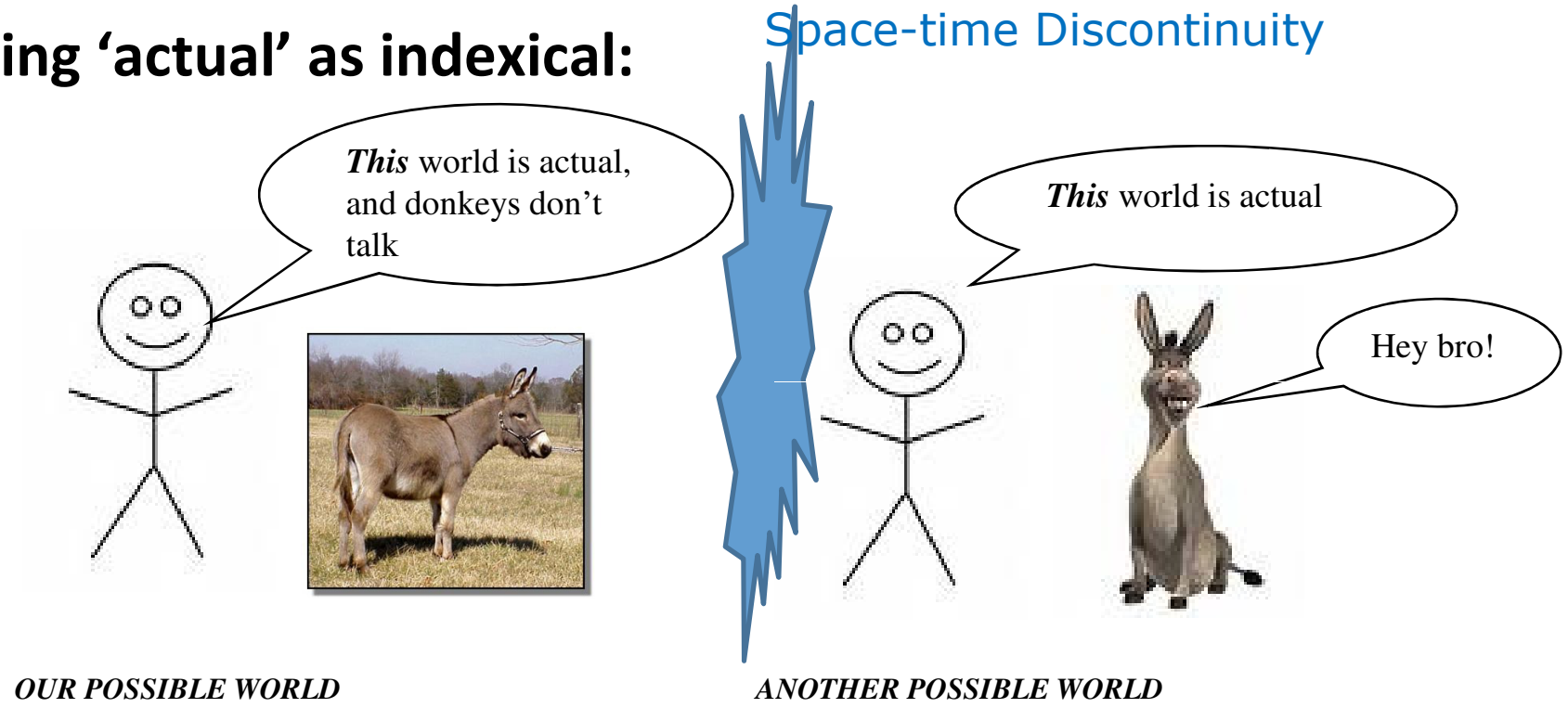
Treating 'actual' as indexical:



It is sometimes said that *the most simple, elegant theory is the most likely to be true* (***Ockham's Razor***)…*Or is it?*

How might one argue for Modal Realism?

LOGIC LINK: ii) Existential quantification

Most of the other things we existentially quantify over ***exist***. That is why it is called ***existential*** quantification. E.g:

- There are some sausages in the freezer.
- Some people are very annoying.
- There were times in my life I was happier than now.
- All events have a cause.

The propositions above quantify over sausages, people, times and causes. We believe that these things all ***exist***.

Now, we also say things like:

- There are many ways things could have been – other than the way they are.

This too is an existential quantification. So surely these ways things could have been also exist…?

Is this a good argument? Why or why not?

(*Your thoughts?*)

How might one argue against Modal Realism?

- **The incredulous stare**. Lewis says that this is the most common reaction he receives to his theory.
- *Reply*: It is hard to say much in reply to this, and maybe one doesn't need to ☺
- **Epistemological concerns**. How can you say you know that these other worlds *exist* when they are spatiotemporally disconnected from the actual world and you really don't know what's in them?
- *Lewis' Reply*: That I don't know what is in the worlds is just what you would expect, actually. That is what it *is* to be a realist about something – if you think that x is *real*, then you think that it is independent of you, i.e. you didn't make it up so you don't know everything there is to know about it!

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Final exercise: *(small groups)*

i) Do you think you might be ***willing to believe*** Lewis' theory? Why or why not?

ii) Lewis developed the theory as he wanted to be ***realist about possibilities***. He thought there are objective truths about what is possible and what is not possible (in our 3 different senses of course). Is he right about this? And if so, is there any other way he might be able to have realism about possibility, without having to hold that ***other possible worlds exist***?

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FURTHER READING:

Philosophy:

David Lewis, "Causation", in *Causation and Conditionals*, ed. Sosa (Oxford: Oxford University Press, 1975), pp. 180-191. http://fitelson.org/269/Lewis_Causation.pdf

David Lewis, "Counterfactual Dependence and Time's Arrow", *Noûs* 13:4 (1979), pp. 455-76.

Peter Menzies, "Counterfactual Theories of Causation", *Stanford Encyclopedia of Philosophy*, http://plato.stanford.edu/entries/causation-counterfactual/

David Lewis, "Possible Worlds", in Loux, ed., *The Possible and the Actual* (Ithaca: Cornell University Press, 1979), pp. 182-189. **[Lewis also has a book devoted to his modal realism: *On the Plurality of Worlds* (Oxford, 1986). However this article conveniently summarises the key points.]**

S. Brock and E. Mares, *Realism and Anti-Realism* (McGill-Queens, 2007) **[chapter 11 discusses modal realism in detail]**

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FURTHER READING, cont:

Philosophy:

William G. Lycan, "Review of *On the Plurality of Worlds* by David Lewis", *The Journal of Philosophy*, 85:1 (1988), pp. 42-47 **[addresses the radical and apparently crazy nature of Lewis' theory]**

Harold Noonan, "Identity", *Stanford Encyclopedia of Philosophy*, http://plato.stanford.edu/entries/identity/

Neil McKinnon, "The Endurance/Perdurance Distinction", *The Australasian Journal of Philosophy* 80:3 (2002), pp. 288-306.

Fiction:

Jorge-Luis Borges, "The Library of Babel": http://jubal.westnet.com/hyperdiscordia/library_of_babel.html **[another baffling, absurd, wondrous fable from Borges. To me it offers an interesting *reductio ad absurdam* of the 'plenitude' which constitutes Lewis' modal realism. Also says a lot about our 'information'-laden society. Have a look and see what you think.]**