Possibility and Necessity

1. Modality: Modality is the study of possibility and necessity. These concepts are intuitive enough.

   **Possibility:** Some things could have been different. For instance, I could have been a truck driver. Britain could have won the Revolutionary War. The Earth could have never formed at all. We say that these things are POSSIBLY the case.

   **Necessity:** On the other hand, some things could NOT have been different. There could not have been square circles. 2+2 could not have equaled something other than 4. We say that these things are NECESSARILY the case.

**Possibility and Necessity Interchangeable:** Possibility and necessity are really just two sides of the same thing. For instance, if I say ‘Necessarily, <2+2=4>’, this is the same thing as saying that ‘That <2+2=4> is false is impossible’. We can translate a statement about possibility into one about necessity, and vice versa:

   (1) Possibly P ⇔ Not necessarily not-P
   (2) Necessarily P ⇔ Not possibly not-P

For instance: (note that ‘possible’ is usually interchangeable with ‘could’)

(1) I could have been a truck driver. ⇔ It is not necessarily the case that I am not a truck driver.

(2) Necessarily, I am human. ⇔ It is impossible for me to be a non-human.

**Logical vs. Nomological Necessity:** I mentioned that <2+2=4> is necessary. It might also seem that, e.g., <Nothing travels faster than the speed of light> is necessarily true. But, this is not the kind of necessity that philosophers are generally concerned with. It is the sort that scientists are concerned with. Scientists ask, what is possible ACCORDING TO THE LAWS? And, what is necessary ACCORDING TO THE LAWS?

But, in some sense it is ‘possible’ that the laws that govern our universe could have been different. Surely, I can at least IMAGINE myself jumping to the moon, or flying faster than light. That is, I can imagine that the world is such that the laws of gravity and light-speed are different. So, if it is “necessarily” the case that I could never do these things, it is only in a weaker sense. For, I cannot even IMAGINE myself drawing a square circle, or meeting a married bachelor, or putting 2 things next to 2 things to get 5 things.

In philosophy, we say that these latter things are **logically impossible** (i.e., they would violate the laws of logic) while the former things are only **nomologically impossible** (i.e., they would violate the laws of science; from the Greek word ‘nomos’ for ‘law’).
2. Possible Worlds Semantics: Philosophers have devised a way of modelling truths about possibility and necessity, using a device of a framework of “possible worlds”.

To understand how this modelling device works, first, let’s define some terms:

**The World:** Everything that exists.

Now, “The World” IS a certain way. But, surely The World could have been different. For instance, you might never have been born, stars and planets might not have formed, and so on. In short, there are many possible ways that “The World” could be, or could have been (perhaps infinitely many). When we contemplate one of these “ways The World could be”, we are contemplating a specification of The World.

**Possible World:** A specification of a way The World could have been.

One of the “ways The World could be” is the way things REALLY ARE. That is, one of the “possible” worlds is the way the world IS; i.e., the ACTUAL world.

**Actual World:** The possible world that specifies the way The World actually is.

Possible State Spaces: The idea of there being various specifications of “ways things could have been” is not so foreign. For instance, consider the toss of a single 6-sided die. Imagine that it actually lands on 4.

![Dice Image]

The picture above represents the way the ACTUAL world—or the way the world ACTUALLY is. But, there are 5 other ways things could be. The pictures below represent 5 other possibilities regarding how things COULD be right now:

![Dice Images]

Before I rolled the die, ALL SIX of these outcomes were “possible”. As it turns out, the way the die ACTUALLY landed was a “4”. But, I COULD HAVE rolled any of the other 5 numbers. So, propositions like <Possibly, I rolled a six> seem intuitively true; and we can
represent these six possible outcomes by picturing each of these six scenarios as six possible WORLDS—one for each of the possible outcomes:

- roll a four
- roll a one
- roll a two
- roll a three
- roll a five
- roll a six

(* the actual world)

**Possible Worlds Analysis:** Philosophers typically analyze the notions of possibility and necessity in terms of these possible worlds:

1. **Possibility:** \(<P>\) is possibly true if and only if \(<P>\) is true in AT LEAST ONE possible world.

2. **Necessity:** \(<P>\) is necessarily true if and only if \(<P>\) is true in EVERY possible world.

For instance, in the first claim, we might sub in \(<I \text{ rolled a 5}>\). If that is possible, then there is at least one possible world where I rolled a 5—i.e., some “state space” which represents the possibility of me rolling a 5.

In the second claim, we might sub in \(<2+2=4>\). If that is necessary, then \(<2+2=4>\) is true in every possible world. That is, there is no specification of a “way The World could be” where \(<2+2=4>\) is false—at least, not one that correctly describes a way The World could be. Imagine, for instance, all of the different ways the die could have been rolled. While, in each of those possibilities, the DIE comes up differently, \(<2+2=4>\) remains true in ALL of those scenarios.

**Note About The Arbitrariness of Utterances and Symbols:** Now, this is not to say that the vocalization or the utterance of the syllables “Too pluss too ekwalls fore” is necessarily true. For instance, in SOME possibility (possible world), Neanderthals might have applied the vocal utterance “TOO” to the object on the left, and designated it in writing by the symbol “2” on the right:

In that case, the utterance of the syllable “too”, as well as the written symbol “2” would refer to a banana rather than a number. So, what vocalization or written symbol we attach to various concepts is arbitrary. Still there is SOME truth that our arbitrary string
of symbols “2+2=4” picks out; namely, the true proposition that our utterance REFERS to, <2+2=4>. And THAT truth is true in all possible worlds.

**Necessary and Contingent Beings:** There seem to be two types of beings in the world:

(2a) **Contingent Being:** A being that could have failed to exist.

In possible worlds speak:

(2a) **Contingent Being:** A being that exists in some, but not all possible worlds.

Everything around you is a contingent being. You could have failed to exist (your parents might never have conceived you, for instance). That chair could have failed to exist (the chair manufacturer might never have built it). The Earth could have failed to exist (certain matter might never have clumped together to form it). But there might be:

(2b) **Necessary Being:** A being that could NOT have failed to exist.

In possible worlds speak:

(2b) **Necessary Being:** A being that exists in EVERY possible world.

Are there any necessary beings? Perhaps. But, if they exist, they are very special things indeed. For, of all the ordinary things that we interact with every day, all of them are in a sense FRAGILE—that is, they will go out of existence eventually, or they might never have existed at all. But, a necessary being is one that COULD NOT have failed to exist. That is, there is no possible “way The World could be” that does not include it. Some common candidates for necessary beings include abstract entities like numbers and propositions (could ‘two’ have failed to exist?), and God.

**Accidental Properties and Essential Properties:** Objects have two types of properties:

(3a) **Accidental Property:** A property that something has, but COULD have failed to have; i.e., one that is NOT a part of a thing’s nature.

In possible worlds speak:

(3a) **Accidental Property:** A property that a thing has in some, but not all possible worlds.
For instance, you might have the property of ‘being seated’ right now, but surely you
could have failed to have this property. After all, this is not an ingredient of WHAT IT IS
TO BE you. You might stand up in a minute or two, and continue to exist.

(3b) **Essential Property:** A property that a thing has, but COULD NOT have failed to
have; i.e., one that is a part of a thing’s nature, or WHAT IT IS TO BE that sort of thing.

In possible worlds speak:

(3b) **Essential Property:** A property that a thing has in every world where it exists.

For instance, triangles are essentially 3-sided. If something is a triangle, it could not have
failed to be 3-sided. If we take away one of an individual’s essential properties, that
individual will be destroyed. For instance, if we take away a triangle’s three-sidedness,
that triangle will cease to exist.

Or, what about YOU? Could you have been an alligator? Or, rather, is humanity one of
your essential features? Could you have been born of different parents, or is your
biological lineage essential to your identity? *(We’ll ask this question next week.)*

3. **What are Possible Worlds?** We have seen how invoking possible worlds in our
semantic analysis can help us to clarify a lot of claims about what could have been, and
would could not have been. For instance, we say that unicorns are possible just as long
as there is a ‘way things could be’ that includes unicorns. But, what do we mean when
we say that there is a way things could be? We have called these possible ‘ways’
WORLDS. But, what ARE these worlds (if anything)? Do they exist? Or, are they rather
merely a useful fiction?

Side Note: Why we need worlds to be THINGS: Most philosophers accept that possible
worlds need to EXIST. The details for why are complicated, but here is a brief
explanation. Consider the following true statements:

(1) All dogs are mammals.
(2) Some mammals are dogs.

In logic, we say that these statements “quantify” over things. To see why, consider the
way in which a logician would translate them:

(1) For EVERY thing, it is true that, if it is a dog, then it is also a mammal.
(2) Out of ALL the things, at least one of them is both a mammal and a dog.

Or, alternatively:
(1) When considering the set of all things, it is true of thing 1 that if it is a dog then it is a mammal, and thing 2 that if it is a dog then it is a mammal, and thing 3 that if it is a dog then it is a mammal, and ...

(2) When considering the set of all things, either thing 1 is a mammal and a dog, or thing 2 is a mammal and a dog, or thing 3 is a mammal and a dog, or ...

These statements take the “domain” of ALL things and “quantify” over them—or in other words, assert something of each of them (via universal or existential “quantifiers”). But, we translate modal statements in the same way. Consider this modal claim:

(3) I could have been a truck driver.

This translates as:

(3) My being a truck driver is a way the world could be.

Or, alternatively:

(3) Out of all the ways the world could be, either way 1 is one where I am a truck driver, or way 2 is one where I am a truck driver, or way 3 is one where I am a truck driver, or ...

Just as (1) and (2) quantify over things in the world, (3) quantifies over possibilities, or ‘ways the world could be’. Philosophers choose to call these ‘ways’ POSSIBLE WORLDS.

a. Concrete Worlds: David Lewis proposed something rather surprising. He said that these other possible worlds are REAL, MATERIAL worlds. That is, there really exist other universes out there where unicorns are running around, donkeys are talking, and where you (or your counterpart) are president of the United States. For every way that the world COULD be, there is a world out there that IS that way. An infinite number of universes really exist.

Lewis defined a possible world as a spatio-temporally isolated region. If something exists that is connected to us in space or time, then that thing is a part of OUR world (or universe). Other worlds are not “over there” to be discovered or observed. They are beyond the boundaries of space and time. We could never observe them.

If we can never observe other possible worlds (not even in principle!), then why did Lewis claim that there must be such things? Well, he was operating under a certain assumption—one that scientists also accept. Namely, one should accept the existence of entities if they serve to EXPLAIN things. For instance, we can’t SEE
electrons or protons. Yet, scientists postulate their existence because their existence explains certain phenomena that we observe. Similarly, mathematicians work with numbers. We can’t SEE numbers, but the existence of numbers would serve to make sense of math. For instance, surely the following groups have something in common:

There are TWO apples and TWO pandas. If there is no THING that they have in common, then they have nothing in common. So, positing the existence of numbers (such as the number two) is helpful. David Lewis thought that positing the existence of concrete possible worlds was helpful in just the same way.

b. **Abstract Worlds:** We might think that Lewis is crazy. The most common argument against his view, he said, was ‘an incredulous stare’. Now, Lewis is right that modal claims need to quantify over SOMETHING. In mathematics, it is hard to make sense of claims like <$2+2=4$> unless we are quantifying over some THINGS (in this case, NUMBERS). Similarly, we need ‘possibilities’ or ‘ways the world could be’ to be in some sense REAL. But, perhaps they need not be concrete. Maybe possible worlds could do the same amount of work if they were abstract (like numbers).

Most philosophers reject the existence of concrete worlds. They say that worlds are merely abstract things, like numbers or universals. Consider these states of affairs:

- The ground’s being covered in snow.
- A monkey’s being in this room.
- An apple’s being purple.

Surely, these descriptions refer to SOMETHING. After all, what were you just thinking of if these descriptions refer to nothing? But, at the same time, these states of affairs are not CONCRETE—as Alvin Plantinga would say, they do not ‘obtain’. So, he concludes that they are merely abstract entities. Plantinga claims that possible worlds are just maximally consistent sets of abstract states of affairs.

Others believe them to be maximally consistent sets of propositions. For instance:

<$\text{The ground is covered in snow}>$
<The monkey is in this room>
<The apple is purple>

These are propositions, and clearly they are very much like the states of affairs mentioned above.

We might think of possible worlds as “books”. Each book is a COMPLETE description of a way the world could be. In it, EVERY proposition is accounted for, and is listed in the book as either true or false. For instance, if

<Chad is 5’11” tall> is listed in the book as true, then

<Chad is 6’ tall> will be listed in the book as false.

To say that the books are maximal is just to say that each book contains EVERY proposition. To say that each book is consistent is just to say that none of the books contain contradictory statements.

Problem: But, invoking consistency within worlds gets the abstract-worlds theorists into trouble. Recall that on the possible worlds analysis, <Possibly, P> is true if and only if <P> is true in at least one possible world. On Lewis’s view, he “reduces” the notion of possibility. For instance, on his view:

<Possibly, unicorns exist> is true if and only if, at some world, it is true that unicorns DO exist.

Note that the idea of reduction is already familiar to you. For instance, earlier in this semester we questioned whether properties like redness were “reducible” to other properties (like surface texture of objects, or wavelengths of light). Later in this semester, we’ll ask whether or not consciousness is reducible to brain functions. For instance, are there really distinct things in the world called thoughts? Or are they, rather, nothing more than certain neurons firing in certain ways?

Lewis says that “possibility” is like redness or thoughts (if we think that those notions are reducible). Possibilities are nothing more than other, concrete worlds. Thus, he has “explained away” the notion of possibility by analyzing it in terms of something else (namely, concrete worlds).

However, the abstract worlds theorist does NOT want to say something similar:

<Possibly, unicorns exist> is true if and only if there exists a set of propositions where <Unicorns exist> is true.
For, not just ANY set of propositions will do. Some sets of propositions will contain <Unicorns exist> AND <Unicorns do not exist>. But, how do we rule out such sets? Well, the abstract theorist must add that only the POSSIBLE (i.e., consistent) sets of propositions are the relevant ones:

<Possibly, unicorns exist> is true if and only if there exists a POSSIBLE (i.e., consistent) set of propositions where <Unicorns exist> is true.

Thus, the abstract view must make use of the term ‘possible’ in its analysis of possibility. It must take ‘possibility’ as a "primitive" (that is, it is a notion that is irreducible, or cannot be further analyzed). For the abstract worlds theorists, then, the notion of possibility cannot be “explained away”. David Lewis takes this to be a huge advantage of his view over this abstract view. Lewis REDUCES the notion of possibility (that is, he can do away with it, analyzing it in purely non-modal terms), and this is something the abstract view cannot do.

c. Fictionalism: Some philosophers do not believe that possible worlds exist at all. Just as a mathematician might claim that all that is needed in order to do mathematics is to quantify over FICTIONS (a useful device that WE made up), philosophers might also claim that modal claims ALSO quantify over fictions.

Are numbers mere fictions? And if they are, is mathematics still coherent? Similarly, we might ask, are possibilities mere fictions? And if they are, is an investigation of modality still coherent?

4. Identity Across Worlds: Possible worlds may help to clarify several issues about modality, but they also bring problems of their own.

Transworld Identity: If we are analyzing modal claims in terms of possible worlds, then it seems as if we are committed to the claim that individuals exist in more than one world. For instance, if I say that ‘I could have been a truck driver’, what I mean is that there is a possible world where I AM a truck driver. Remember: This is not so very strange. It is no different than the claim that ‘This die could have come up as a 6 instead of a 4’. Here, there is a possibility state under consideration where THIS same die exists and came up 6. In short, the various ‘ways things could be’ often include the very same objects that exist in our actual world.

(1) Indiscernibility of Identicals. It might seem like a problem that there is a snubnosed Socrates AND a nonsnubnosed Socrates, but Plantinga insists that it is not. For, Socrates—the actual one, OUR Socrates—simply has the property of
‘being snubnosed in @’ and the property of ‘being nonsnubnosed in W’. But, these properties are not mutually exclusive.

(2) Identification. It may seem that, if Socrates could have been SO different (maybe he could have never become a philosopher at all, could have lost a limb, never grown a beard, and so on), then how can we even make sense of the claim that he exists in other worlds? But, this is confused. We do not “peer into” other worlds. We simply stipulate, ‘I’m talking about the situation in which Socrates wasn’t Plato’s teacher’, or something. There may in fact BE some empirically discoverable qualities of Socrates that he has essentially (we’ll talk about this next week), but we don’t need to KNOW them in order to make true claims about what Socrates possibly could have done.

To understand this, consider a temporal analogue: If I say, ‘When you were just a few months old, you couldn’t walk yet’ it is not as if I would need to be able to look into some nursery and be able to pick you out!

So, it seems as if there is transworld identity. Interestingly, Lewis rejects it. He thinks that every individual is ‘world-bound’. You do not exist in more than one world (the actual world). But, how can this be? Doesn’t he accept the truth of claims like, ‘You could have gone to Virginia Tech’? He does. But, he does so by adopting what is called ‘counterpart theory’.

Worldbound Individuals: Lewis adopts what he calls ‘counterpart theory’. This is a strange outcome of his commitment to concrete worlds. For, if possibilities are just reducible to other concrete worlds, then <You could have gone to Virginia Tech> gets analyzed as follows:

In some other concrete world, there is someone who is very similar to you in certain relevant ways, and THAT person is going to Virginia Tech.

Lewis calls these people in other worlds who are similar to you your “counterparts”. It is true that I could have been a truck driver because I have a counterpart in some other world who DOES drive trucks. Hubert Humphrey could have won the presidential election against Richard Nixon because Humphrey has a counterpart in some other world who DID win the election. And so on.

The Humphrey Objection: But, this gives rise to a famous objection to Lewis’s view (perhaps it has already occurred to you). The objection is two-fold:

(a) The Meanings of Modal Statements: When I say that Humphrey could have won the election, on Lewis’s view, this statement seems to be about some OTHER
person in some OTHER world who DOES win the election. But, I’m not referring to that guy at all! I’m referring to THIS guy—our Humphrey, the actual Humphrey!

(b) The Relevance of Counterparts: What has that guy in that other world got to do with anything? The fact that someone ELSE wins the election in some other world doesn’t seem to have anything to do with the question of whether or not OUR Humphrey—the actual Humphrey—could have won the election. What that OTHER guy does in fact do in his world seems totally irrelevant.

If our intuitions here are correct, then Lewis’s analysis has led us astray. On his view, apparently Humphrey’s possibly winning the election JUST IS his having of a counterpart who DOES win the election. But, that doesn’t seem right at all. Whether or not Humphrey could have won the election seems to have only to do with OUR Humphrey and his abilities (and perhaps the abilities of the voters at the time of the election). As Michael Jubien writes (2007),

[I]magine, if you will, that there’s a distant but very similar planet in our own universe where someone very much like yourself is a playwright and not a philosopher. How plausible would it be to pin the possibility of your having been a playwright on this far-off circumstance? If you find it as implausible as I do, then it should seem all the more implausible if such an individual inhabits an inaccessible physical region instead of a merely distant one. ... I believe the possibility of your having been a playwright has nothing to do with how people are on other planets, whether in our own or in some other realm. It has only to do with you and the relevant property.

A Double-Edged Sword? Unfortunately, this objection seems to cut the abstract view (e.g., Plantinga’s) just as deeply. Consider Jonathan Jacobs’ (2010) criticism:

Suppose you were told that somewhere deep in the rain forest is a book that includes a story about you and your truck-driving ways. I doubt that you would be inclined to think that that story, that book, is the reason you could have been a truck driver. You would rightfully respond to such a theory with an incredulous stare. But being informed that it’s not literally a story, and that it’s not actually written in a concrete book, and that it’s not located in the rainforest (or anywhere else, for that matter)—that is, being informed that the story is instead an abstract object—should serve only to make you more, not less, incredulous. It is, indeed, puzzling why anyone would think that abstract representations of me, even if there are such things, make it true that I could have done such-and-such or couldn’t have done thus-and-so.
Whether or not I could have been a truck driver seems to have nothing to do with whether or not there exists an abstract representation of me (e.g., as an abstract proposition, or abstract state of affairs) that represents me as driving a truck.

So, what are we to make of this? What have possible worlds got to do with modality (if anything at all)?