Philosophy 125 — Day 20: Overview

- 1st Papers/SQ's to be returned next week (a bit later than expected)
- Jim Prior Colloquium Today (4pm Howison, 3rd Floor Moses)
  - "What is *de re thought*?"
- Links added on Kim *vs* Davidson on events and Quine on Davidson
- Vanessa's handout on Realism about propositions also added
- Agenda: Modality (Unit 3)
  - (Retro) A few closing remarks on events (Kim, Davidson, Quine)
  - Intensionality of Modal Operators
  - Possible worlds semantics *&* modal logic to the rescue?
  - Possible worlds: mere semantic devices or real entities?
  - *De dicto vs de re* modal claims
  - Possible worlds as a tool for nominalizing properties, *etc.*
  - Lewis' Realism about possible worlds: some issues and problems

Retrospective Remarks on Events (Kim, Davidson, Quine)

- Two questions from last time about Kim's account of events:
  - Some events seem to be non-instantaneous (*e.g.*, the football game).
    * Kim can say that his ⟨*a, P, t*⟩'s are *basic* events, and that events like the football game are non-basic events, which are *composed of* basic events.
  - How can "the bolt's giving way *suddenly*" be an event on Kim's account, if events are *instantaneous* (how can something happen "suddenly at an instant")?
    * Using compound events doesn't seem to work. We need giving way suddenly to imply giving way, while (nonetheless) these events are distinct. How? S.Q.
    * Another way: use *basic* events, and allow properties involving instantaneous "speed of giving way" (no more problematic than *instantaneous velocity*).
- Davidson eventually abandoned his proposal for identifying events by their causes and effects, because of Quine's charge that this account is circular. As Putnam explains:
  . . . to tell whether 'token event *A*' has the same effects (or causes) as 'token event *B*,' one has to know whether they are identical . . . 'viciously circular.'
- Quine takes events to be *space-time regions*, which makes events rather like *objects*.
- I have added links to some online discussions of events that cover these issues.

The Possible *&* The Actual I: Intensionality of Modality 1

- Interestingly, modal operators are *intensional* operators. Consider the operator "necessarily". Its intensionality is nicely illustrated by the following example:
  - "Necessarily, $2 + 2 = 4$ and bachelors are unmarried" is true.
  - "Necessarily, snow is white and bachelors are unmarried" is false.
- Here, substituting the coextensional "snow is white" for "$2 + 2 = 4$" changes the truth-value of the sentence (because "snow is white" is contingent, while "$2 + 2 = 4$" is necessary). We have already seen several other examples of this:
  - "Necessarily, the number of planets is 9". (sub. "9" for "the # of planets")
  - "Necessarily, the number of courageous people is *n*".
  - "Necessarily, the set of courage tropes contains *Socrates' Courage*".
- Because descriptions like these ("the *x* such that ϕ") are *non-rigid*, they can denote different things in different possible worlds, which explains the *opacity* of the above statements. Contingency and non-rigidity are intimately related.

The Possible *&* The Actual I: Intensionality of Modality 2

- Traditionally, the main problem with intensional operators is that their logic has not been very well understood. In traditional logic, everything can be understood *extensionally*. The traditional logical connectives "and", "or", "not" can be given a completely extensional (exceedingly clear) semantics.
- Extensionality was even considered by some traditional logicians to be the *hallmark* of logicality. So, intensional operators were looked upon as unclear from a logical point of view. This was not good news for modal operators.
- "Modal logics" had been around (since Aristotle), but they were thought to be unprincipled and in the end not really logics at all. Modal operators lacked a systematic, extensional semantics, and hence an acceptable, unified logic.
- This was the situation until the 1950's and 1960's with the work of Prior, Kanger, Kripke, Barcan, and others in the foundations of modal logic. The advent of what is now called "Kripke semantics" radically changed things.
- It is perhaps best to call this revolutionary picture *possible worlds semantics*.
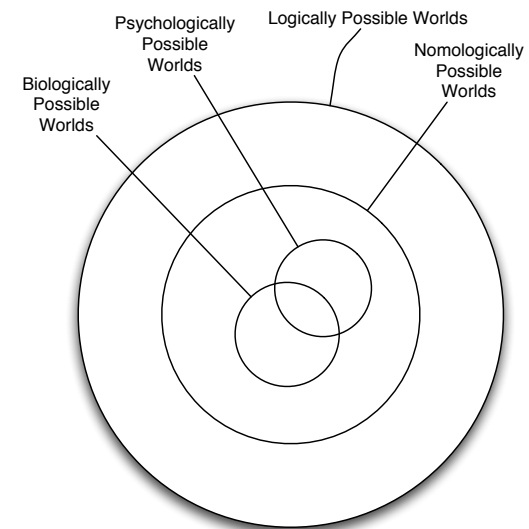
The Possible & The Actual II: Possible Worlds Semantics & Modal Logic 1

- Possible worlds semantics provides a way to understand modal claims in an "quasi-extensional" way, by expressing the truth-conditions for modal claims in standard (extensional), first-order logic. Here are some (rough) examples:
  - "Necessarily, p" $\mapsto$ "For every possible world w, p is true in w."
  - "Possibly, p" $\mapsto$ "There exists a possible world w such that p is true in w."

- Slight complication #1: (intuitively) there are different *kinds* of modality. This can be accommodated in possible worlds semantics (roughly) as follows:
  - "p is *logically* necessary" $\mapsto$ "p is true in every *logically* possible world."
  - "p is *nomologically* (physically) necessary" $\mapsto$ "p is true in every *nomologically* (physically) possible world"

- Logical necessity is the strongest kind, since being logically impossible requires being *contradictory*. Nomological impossibility only requires contradicting the laws of nature, which is a weaker requirement. Similarly, we could introduce psychological necessity, biological necessity, *etc*. A map:

The Possible & The Actual II: Possible Worlds Semantics & Modal Logic 2

The Possible & The Actual II: Possible Worlds Semantics & Modal Logic 3

- Slight complication #2: a great many modal logics have been in existence since Aristotle. These logics disagree on basic "axioms" for necessity and possibility. Here are a few *nearly universally accepted* principles:
  - If p is necessary, then not-p is not possible.
  - If p is possible, then not-p is not necessary.
  - If p is a logical truth (*e.g.*, "A or not-A"), then p is a necessary truth.
  - If p implies q, then: $\ulcorner p$ is necessary$\urcorner$ implies $\ulcorner q$ is necessary$\urcorner$.
- The agreement ends there! This leaves many *controversial* principles, such as:
  - If p is necessary, then p is possible.
  - If p is necessary, then p is (actually) true.
  - If p is (actually) true, then $\ulcorner$possibly $p\urcorner$ is necessarily true.
  - If p is necessary, then $\ulcorner$necessarily $p\urcorner$ is necessary.
  - If p is possible, then $\ulcorner$possibly $p\urcorner$ is necessary.

The Possible & The Actual II: Possible Worlds Semantics & Modal Logic 4

- Possible worlds semantics provides a way to unify and explain the significance of each of the historical "rival" modal logics.

- I won't go into the details of this, but the basic idea is to introduce an "accessibility relation" R between possible worlds. If $R(w_1, w_2)$, then w_2 is said to be *accessible from w_1*. Then, we amend our translation as follows:
  - "Necessarily, p" $\mapsto$ "p is true in every world w such that $R(w*, w)$."

- In other words, p is necessarily true if p is true in every world that is accessible from the actual world $w*$ (every world we can "see from here").

- As it turns out, almost all of the historically controversial axioms for modal logic then correspond to basic properties of the accessibility relation R.

- *E.g.*, consider the principle: (T) If p is necessarily true, then p is actually true. (T) corresponds to the relation R's being *reflexive*. That is, (T) will be guaranteed to hold, provided that every possible world "can see itself". This approach unifies and relates all modal logics, in an extensional framework.

The Possible & The Actual III: Possible Worlds? 1

- So, "possible worlds" are useful theoretical tools in semantics and logic for modal claims (and inferences involving modal claims). But, *possible worlds*?

- The nominalist who balked at the postulation of universals could at least console themselves with mundane examples of *exemplified* universals, and (at least) avoid commitment to *un*exemplified universals in Platonic Heaven.

- But, when it comes to *possible worlds*, there is no analogous "easy way out" for the nominalist. There are no analogues of tropes or property exemplifications to cling to in the Realist's multiverse of possible worlds.

- Of course, there is *the actual world*, but if modal semantics is to be non-trivial, then there cannot be *only* the actual world. Nearly all the distinctions between necessity, possibility, and actuality that have been made historically *evaporate* if the actual world is the only possible world.

- But, the postulation of *just one* non-actual, possible world should be abhorrent to nominalists with empiricist leanings. How can we know about *any* such?

The Possible & The Actual III: Possible Worlds? 2

- Indeed, the idea that there are non-actual, possible worlds seems about as far from commonsense as one can get. So, what says the realist to these worries?

- The Realist says (sound familiar?) that possible worlds semantics is simply a regimentation of our common, pre-theoretical conception of modality.

- According to the Realist, we all routinely talk about (and believe in) ways – complete or total ways – things might have been, and possible worlds are just a theoretical explication or clarification of this vague pre-theoretical concept.

- Moreover, we commonly paraphrase modal claims like "*p* is necessarily true" as "*p* is true *no matter what*", and this corresponds naturally to the formal, theoretical "*p* is true *in all possible worlds*". *Mutatis mutandis* for possibility.

- That is, when the modal philosopher says that *p* is possible just in case there is a possible world, *w*, such that *p* is true in *w* – this is just a rigorous expression of the belief that *p* could have been the case provided there is a way things could have been such that had they been that way, *p* would have been the case.

The Possible & The Actual IV: *De Dicto vs De Re* Modality 1

- So far, we've been talking about the semantics and logic of *de dicto* modal claims – claims in which modal operators are applied to *entire statements p.* There is another kind of modal claim, called *de re* (*even more* controversial!).

- Consider the following *de re* claim involving the necessity operator:

  (*i*) The thing Branden is thinking about is necessarily an even number.

- Assuming I am thinking about the number 2, (*i*) is true, because the number 2 is *necessarily* an even number (even-ness is *not* a *contingent* property of 2). But, if we move the operator *outside*, we get the following *de dicto* claim:

  (*ii*) Necessarily, the thing Branden is thinking about is an even number.

- But, (*ii*) is *false*, since it *is* a contingent property of *me* that I happen to be thinking about the number 2 (and, not, say, the number 3). In the *de dicto* claim, the operator has *wide scope*; in the *de re* claim it has *narrow scope*.

- Possible worlds semantics can also be used to understand *de re* modal claims.

The Possible & The Actual IV: *De Dicto vs De Re* Modality 2

- Naively (this will be questioned this later), as propositions can be true or false in various possible worlds, objects can exist or fail to exist in various possible worlds. This allows us to translate *de re* modal claims as follows:
  – "*x* is necessarily *P*" ↦ "*x* is *P* in all possible worlds in which *x* exists"
  – "*x* is contingently *P*" ↦ "*x* is *P* in some possible worlds in which *x* exists, and *x* is non-*P* in some possible worlds in which *x* exists"

- This provides a possible worlds semantics for claims about essential or necessary properties of objects (*e.g.*, the *kinds* in Aristotelian metaphysics).

- Moreover (and more generally), we can think of each possible world *w* as having a "population of inhabitants". And, different possible worlds can have different populations of inhabitants (with overlaps possible, of course).

- Note: there is a key difference between *de re* and *de dicto* translations. In the *de re* case, we must restrict quantification to those worlds in which the object *x* in question exists. This is unnecessary in the *de dicto* case. Why?

The Possible & The Actual V: Possible Worlds as a Tool for Nominalization 1

- In recent years, realists about possible worlds (especially, David Lewis) have found clever ways to use possible worlds for the purpose of *nominalizing other* sorts of discourse, concerning universals, propositions, *etc*.

- Lewis assumes that a possible world is just like the actual world, only with different parts. He thinks of possible worlds as *merelogical wholes* of physical stuff in space-time (concrete wholes with concrete parts different from ours).

- And, according to Lewis, any possible (in what sense?) permutation of parts of the world corresponds to a possible world. Of course, these possible worlds are not "out there" like distant galaxies. You cannot "see" them. But, they are real – they exist in the very same sense our world (as an organic whole) exists.

- Armed with these concrete mereological wholes *plus set theory*, Lewis is able to "nominalize" universals, propositions, and other sorts of abstract entities. The trick is to define universals, propositions, *etc.* as *sets*. These sets will contain particulars, possible worlds, and/or sets thereof, but nothing else.

- For Lewis, a property P is just a very large set *of sets of concrete particulars*. In each possible world w, there will be a set $\mathbf{P}_w$ of concrete particulars that are P in w (*i.e.*, P's *extension in w*). The property P is just the big set, which contains all of the smaller sets $\mathbf{P}_w$ as members: $P = \{\mathbf{P}_1, \mathbf{P}_2, \ldots, \mathbf{P}_n, \ldots\}$.

- As for propositions, they are also just sets, but they are sets *of possible worlds* (not sets *of sets of* concrete particulars, like properties are). Specifically, a proposition p is just a set of *p-ish* possible worlds. Intuitively, the *p*-ish worlds are just the worlds in which p is true. But, this is not the official line.

- Lewis wouldn't want to say that p is the set of worlds in which p is true, since this would be dangerously circular. Instead, Lewis takes a world's being *p*-ish as a *primitive* or *ontologically basic* fact about a world, and uses this primitive aspect of worlds to segregate them into the *p*-ish and the non-*p*-ish worlds.

- On this account, the actual world $w*$ is ⟦snow is white⟧-ish, and ⟦George W. Bush is President of the U.S.⟧-ish, and these are primitive features of $w*$.

- "Necessarily p" is true iff the set of p-ish worlds has every possible world as a member. And, "Possibly p" is true iff the set of p-ish worlds is nonempty.

The Possible & The Actual V: Possible Worlds as a Tool for Nominalization 2

- There are some virtues of Lewis' approach to properties. Since it is not confined to *actual* extensions, it gives the intuitively right answer that having a heart (H) and having a kidney (K) come out as *distinct properties*.

- To see this, note that, despite the fact that $\mathbf{H}_{w*} = \mathbf{K}_{w*}$, there will (intuitively) be worlds w in which $\mathbf{H}_w \neq \mathbf{K}_w$. So, H and K will be different sets ∴ $H \neq K$.

- But, how does Lewis' account of properties handle abstract reference, generally? We want claims like "White is a color" ("W is a C") to come out (necessarily) true. How can Lewis' theory of properties accommodate this?

- If C is a *kind of property*, then, for Lewis, it will be a *set of properties*. This, for Lewis, makes C a set of sets of sets of individuals. Picture this as follows: Color = {White, Blue, ...} = {{**White**$_{w*}$, **White**$_w$, ...}, {**Blue**$_{w*}$, **Blue**$_w$, ...}, ...}

- So, "White is a color" will come out true, since W is a subset of C. And, presumably, *this* will be true in all possible worlds (set theory is *necessary*!).

- There is another, more direct way to account for the necessary truth of "White is a color". Recall that p is necessarily true iff the set of p-ish worlds contains all possible worlds as members. And, a world's being p-ish is a primitive.

- So, Lewis could just say that it is a primitive feature of all possible worlds that they are ⟦white is a color⟧-ish worlds. This is, perhaps, a preferable approach.

- Recall Loux's example "Courage is a virtue". He claimed that austere accounts of the truth of this claim are inadequate, because it is false that all courageous people are virtuous. Since Lewis is not restricted to talking only about concrete particulars, he can avoid this problem by talking about sets.

- How might Lewis handle Quine's "species S_1 and S_2 are cross-fertile"? This may appear to be a relation between properties (or kinds), but I think Lewis has a more intuitive way to understand this claim. He could translate it as "it is possible for members of S_1 to mate with members of S_2". More precisely,

    There exist members s_1 of S_1 and s_2 of S_2 such that it is (biologically) possible that s_1 mates with s_2 (and produces progeny).

- This is something close to what a biologist might tell you if you asked them.

The Possible & The Actual VI: Lewisian Nominalism and *De Re* Modality 1

- We said earlier that (naively) we could understand x's being necessarily F as x's being F in all possible worlds in which x exists. For Lewis, this would reduce to x's being a member of $\mathbf{F}_w$, for all w in which x exists.

- Interestingly, Lewis *rejects* this naive approach to *de re* modality. He does so because he doesn't believe that objects can be identified across possible worlds. In other words, while I exist in the actual world, Lewis would say that I don't exist in any non-actual worlds. This renders the naive approach *trivial*.

- Why does Lewis say this? He is persuaded by the following argument (Loux): Suppose that some individual (call it x) exists in each of a pair of worlds, w_1, and w_2. We can dub x as it is found in w_1, x-in-w_1, and x as it is found in w_2 x-in-w_2. Now, if w_1 and w_2 are genuinely different worlds, things will go differently for x-in-w_1, and x-in-w_2. But, if this is so, there are bound to be properties that x-in-w_1 has but x-in-w_2 lacks. Accordingly, if x exists in each of w_1 and w_2, then we have a violation of the *indiscernibility of identicals*. But, this is a true principle, so our assumption that one object could occupy two different possible worlds must be false.

- Kripke and others who reject the conclusion of this argument (for reasons we will discuss below) offer the following way out. They say, we can think of properties as *world-indexed*. On this view, x can have the property being F-in-w, and fail to have the property F-in-w': *two different properties*.

- *E.g.*, Socrates might be courageous-in-$w*$ but fail to be courageous-in-w'. This does not imply that one object has and fails to have one and the same property, so it poses no violation of the indiscernibility of identicals.

- This avoids violating the indiscernability of identicals. But, on this view, what does it mean to say that my height could have been different? That for some w', my height$_{w'}$ is different than my height$_{w*}$? Is this a difference in *height*?

- Moreover, on this view, we can no longer *extensionally* distinguish having-a-heart$_{w*}$ and having-a-kidney$_{w*}$. If these properties are *world-bound*, then they have the same extension in *all* worlds (*no* extension outside $w*$).

- And, how can objects have properties *contingently* on this account? Intuitively, having a property P contingently is to have P in some worlds but to lack $\boldsymbol{P}$ in other worlds, which is impossible on this proposal.

The Possible & The Actual VI: Lewisian Nominalism and *De Re* Modality 2

- But, as Kripke *et al* point out, there are some odd consequences of Lewis' approach. On Lewis' approach, there is nobody identical to me in other worlds. So, when I talk about properties I have *necessarily*, I am really talking about properties P that I have in $w*$, and that *different people* in w' have.

- But, how are the properties of *other people* relevant to properties of *me*? When I deliberate, I want to know what I should do, not what other people should (or would) do.