Philosophy 125 — Day 18: Overview

- 1st Papers/SQ's to be returned early next week (longer than expected)

- Jim Prior Colloquium Thursday (4pm Howison, 3rd Floor Moses)

  - "What is *de re* belief?"

- Agenda: Events (Unit 2 wrap-up), then on to Modality (Unit 3)

  - Events

    * Chisholm's 70's views
    * Kim's (Russellian, fine-grained) Account of Events
    * Davidson's (non-Russellian, coarse-grained) Account of Events

  - Modality

    * Some worries about and unclear features of modal talk
    * Possible worlds semantics *&* modal logic to the rescue?
    * Possible worlds?
    * *De Dicto vs De Re* Modal Claims

Chisholm on States of Affairs, Propositions, and Events

- Chisholm (1970's) didn't see a way to distinguish true propositions from facts or propositions from states of affairs. He concluded they're only 1 thing, not 3. He called them *states of affairs*, and said they have two essential features:

  - States of affairs are things that can be apprehended, conceived, or "entertained" — things that can be the objects of mental acts.

  - States of affairs are things that can obtain or fail to do so; or, as Chisholm puts it, they are things that can occur or fail to occur.

- For (early 70's) Chisholm, states of affairs come in two varieties:

  - **Propositions**. These are states of affairs that *always* occur (or *always* fail to occur) — SOAs which cannot occur at t but fail to occur at $t' \neq t$.

  - **Events**. These are states of affairs that can *recur* or be *repeated* — SOAs which can occur at t, then fail at $t' > t$ (and then occur again at $t'' > t'$).

- Chisholm (1990's) changed his views on SOAs (maybe propositions can change their truth-values, and events are *non-repeatable particulars*).

Kim on Events

- Kim: events are *property exemplifications at times*. More precisely, $\langle a, P, t \rangle$ is an event if a (particular) exemplifies P (property) at t (time). Kim generalizes this to $\langle \langle a_1 \ldots a_n \rangle, R, t \rangle$, where $a_1, \ldots, a_n$ are particulars, and R is a relation.

- This is a *fine-grained* account of events – similar to Russell's account of *facts* (except Russell's facts don't have times built-in to them). Identity conditions for Kim's events require (a la Russell) same constituents and same order.

- *E.g.*, on Kim's account, Brutus's *stabbing* of Caesar (at t) is a different event than the event of his *killing* Caesar (at t), which is different than his *assassinating* Caesar (at t). Events are individuated by *intrinsic* properties.

- Note: this is consistent with there being *semantically distinct descriptions* of an event. *E.g.*, "Clark Kent's being in California (at t)" and "Superman's being in California (at t)" — imagine what Lois Lane would *mean* by these.

- Adverbial Challenge (Davidson): "the bolt gave way suddenly at t" seems to *entail* (by *logic*) "the bolt gave way at t". How can Kim account for this?

- On Kim's view, it appears that there are *two distinct events here*. There is ⟨bolt, gave way, *t*⟩ and ⟨bolt, gave way suddenly, *t*⟩. But, the occurrence of the latter event seems to guarantee (by logic) the occurrence of the former.

- To respond to this challenge of Davidson, Kim introduces a relation between events called "inclusion", according to which the bolt's giving way suddenly *includes* the bolt's giving way. Note: this is *not* a logical relation (*atomism*!).

- Kim suggests some "axioms" for his "inclusion" relation, such as: if all events of type *A* include events of type *B*, then any sentence that entails the existence of an event of type *A* entails the existence of an event of type *B*.

- Davidson's reply is two-fold: (1) the occurrence of the latter event should *by logic* guarantee the occurrence of the former, but Kim's "inclusion" relation is *non*-logical. And, (2) what will be the *justification* for any chosen "axioms" of the "inclusion" relation? If it's not a *logical* rationale, then what is it?

- Davidson thinks a different kind of account of events is needed. He proposes a *logical* analysis of event-statements, which leads him to a *coarse-grained* account of events on which the "two events" above are really a *single event*.

Davidson on Events

- Davidson proposes a logical analysis of event-statements. On this account, "the bolt gave way suddenly" and "the bolt gave way" both have the logical form of existence claims, and their logical form exposes their logical relations.

  – "The bolt gave way" $\mapsto$

    "There exists an x such that x = the giving way by the bolt"

  – "The bolt gave way suddenly" $\mapsto$

    "There exists an x such that x = the giving way by the bolt & x is sudden"

- The x's in Davidson's logical renditions are *events*. Note: on Davidson's analysis, "the bolt gave way suddenly" *logically entails* "the bolt gave way". This is a very intuitive result, and one which it seems Kim cannot achieve.

- However, Davidson (a *slingshot-er*!) assumes a *referential* account of $\ulcorner(\hat{x})\phi\urcorner$.

- So, on Davidson's account, we have (assuming the bolt gives way suddenly):

  $(\hat{x})(x$ = the giving way by the bolt$) = (\hat{x})(x$ = the giving way by the bolt & x is sudden$)$

- Kim (and others) think that *causal claims* can provide reasons to believe that this identity is *false*. And, since Davidson himself stresses that events **are** the relata of causal relations, he must take any such examples seriously. *E.g.*:

  (*) The collapse was caused, not by the bolt giving way, but by the bolt giving way suddenly.

- If being a cause is a property of an event, then (*) would seem to imply the following (assuming the *indiscernability of identicals — the converse of II*): $(\hat{x})(x = \text{the giving way by the bolt}) \neq (\hat{x})(x = \text{the giving way by the bolt } \& \ x \text{ is sudden})$

- Davidson's theory implies the opposite. But, Davidson — along with almost all others in this context — *accepts* the indiscernability of identicals, *and* that being a cause of an event is a property of an event. So, something must give.

- Davidson sticks to his logical analysis of events (and his *referential* reading of the definite descriptions), and he concludes that (*) is not true, *sensu strictu*.

- Davidson says (*) is false, but a *similar* claim about causal *explanation* is true. And, *that* is consistent with his theory of events (presumably, explanation is *pragmatic*, but causation is not, and this is how Davidson avoids trouble here).

Map of Realist Ontological Space

Proposition *p* expressed
by sentence *s* in *C*

**that Socrates is
Courageous**

Modal Level
is **Crucial**

Sentence *s* (uttered in context *C*)

"Socrates is courageous."

(or the equivalent in ancient greek!)

[uttered in context *C* – the *actual
world* w^*, at time $t \sim$ 400 B.C.E.]

Possible Worlds: w_1 … w_n … w^*

p is false   …   …   …   *p* is true

(Lewis)

Socrates   **exemplifies**   **Courage**

States of Affairs (*Facts* in w^*): a_1 … a_p … a_n

Particular   **Relation (tie)**   **Property**   Events (somewhere down here)

Socrates' being courageous (in w^* at t)

The Possible & The Actual I: Worries About Modality 1

- Notions of possibility, necessity, and the like are called *modal* notions. We have been using modal notions freely in the course, and we've even been talking (loosely) about "possible worlds" (that is non-actual worlds).

- These notions are far from crystal clear, and there is much disagreement about them in the philosophical literature. There has been a long history of skepticism about the legitimacy of modal concepts (mainly from empiricists).

- Empiricists worry that even if there are necessities in the world, it's mysterious how we could know about them. Naively, it seems like this may require (*per impossible*?) some sort of contact with non-actual situations.

- Intuitively, we observe things as they actually are, not as they necessarily (or possibly) are (since we can't peek into other possible worlds to see what's up).

- One typical move for empiricists is to "go linguistic" and to say that whatever necessity there is in the world is merely *verbal*, having only to do with how we *choose to use modal language* – no reason to think there are "real necessities".

The Possible & The Actual I: Worries About Modality 2

- Contemporary challenges to modality are grounded in concerns about the inherent unclarity (even incoherence) of modal discourse. In particular, there are deep worries about the *opacity and intensionality* of modal discourse.

- Terminology: the *extension* of a referring expression (like a name or a description) is whatever it (actually) refers to, the extension of a predicate is the set of things that (actually) satisfy the predicate, and the extension of a declarative sentence (in a context of utterance) is its (actual) truth-value.

- We say that a sentence is *opaque if its truth-value can be changed merely by coextensional substitution*. To illustrate, consider the following sentences:

  1. Bill Clinton is on vacation in Wyoming.
  2. Every human being is mortal.
  3. 2 + 2 = 4 and Tony Blair is Prime Minister of the United Kingdom.

- Substituting "the 42nd President of the United States" for (the coextensional) "Bill Clinton" in (1) doesn't change its T.V. — in this sense, (1) is *not* opaque.

- Similarly, if we substitute "featherless biped" for (the coextensional) "human being" in (2), no change in truth-value results. So, (2) seems non-opaque too.

- Finally, substituting "snow is white" for (the coextensional) "2 + 2 = 4" in (3) doesn't alter its truth-value, which indicates that (3) is not opaque either.

- We have already seen some examples of sentential operators which can turn non-opaque sentences into opaque ones. For instance, "the belief that…" or "the proposition that…" and (on Russell's theory) "the fact that …".

- Consider what happens if we add the operator "John believes that" to (1)–(3):

  (1*) John believes that Bill Clinton is on vacation in Wyoming.

  (2*) John believes that Every human being is mortal.

  (3*) John believes that 2 + 2 = 4 and Tony Blair is Prime Minister of the U.K.

- Each of these is *opaque*. For instance, substituting "the 42nd President of the United States" for (the coextensional) "Bill Clinton" in (1) *can* change its truth-value (*e.g.*, if John doesn't know how many Presidents there have been).

- To wit: we call operators like "John believes that" *intensional* operators.

The Possible & The Actual I: Worries About Modality 3

- 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: Worries About Modality 4

- 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.

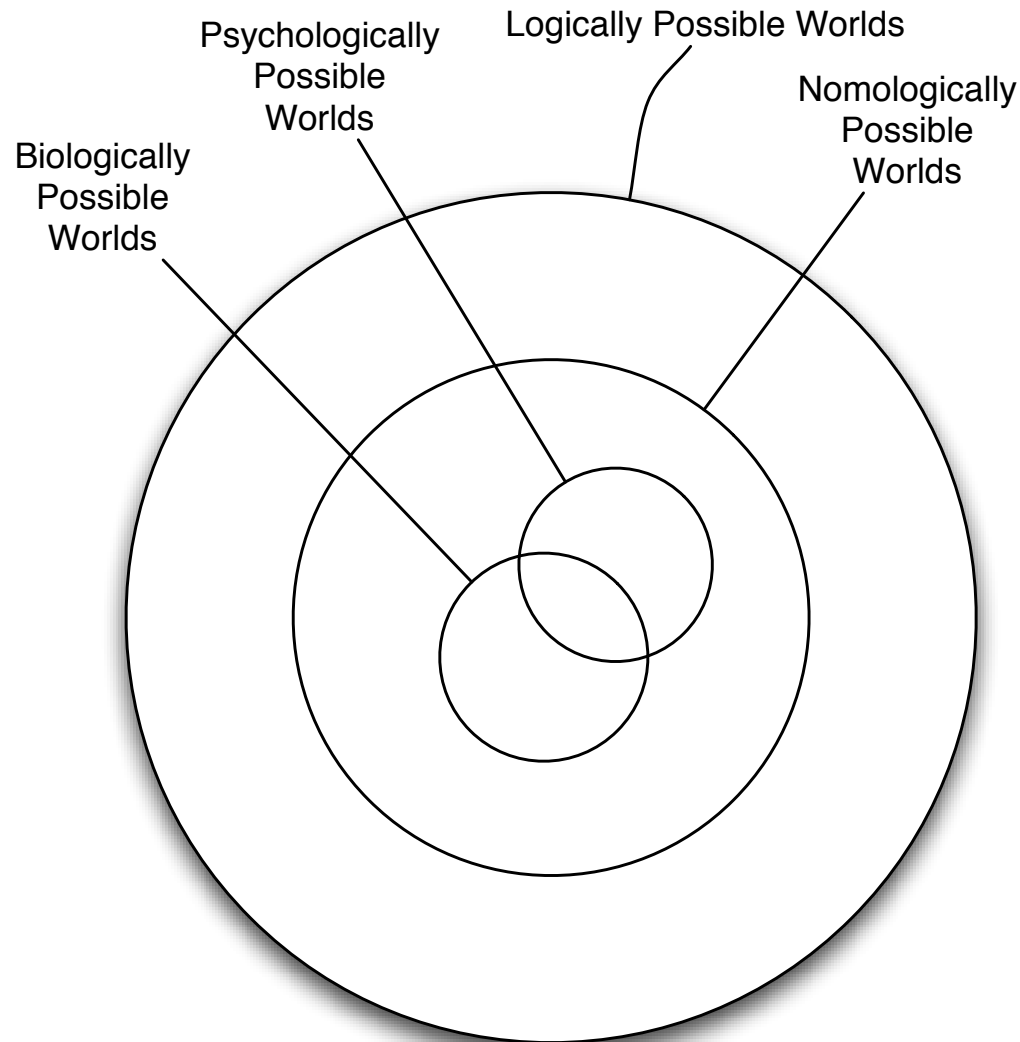- It is perhaps best to call this revolutionary picture *possible worlds semantics*.

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

Psychologically
Possible
Worlds

Logically Possible Worlds

Nomologically
Possible
Worlds

Biologically
Possible
Worlds

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 (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 $p \rightarrow q$, then: p is necessary $\rightarrow q$ is necessary.

- 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 ⌜possibly p⌝ is necessarily true.

  – If p is necessary, then ⌜necessarily p⌝ is necessary.

  – If p is possible, then ⌜possibly p⌝ 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 realm 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 such worlds?

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 (although, we'll question 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" $\mapsto$ "x is P in all possible worlds in which x exists"

  – "x is contingently P" $\mapsto$ "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. Lewis thinks of possible worlds as *merelogical wholes* of physical stuff in space-time (just like our world, but with different parts).

- 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 entities *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 of possible worlds*.

- Property $P \mapsto$ sets of P-extensions in w's; proposition $p \mapsto$ sets of p-worlds.