Philosophy 125 — Day 24: Overview

- 2nd Papers/Study Questions Assigned Last Thursday (see website)
- Handout on "*De Re* Modality" Posted Last Week (covered last week)
- My Office Hours This Week: 4–6 T, 1–3 W, and 2–3 F
- Agenda: Introduction to Causation (Schaffer + some additional stuff from me)
  - Six questions about the causal relation (everyone agrees it is a *relation*!)
    - What are its *relata* (category)?
    - How finely grained are the *relata* (individuation)?
    - How many *relata* are there (adicity)?
    - What distinguishes causal from non-causal sequences (connection)?
    - What distinguishes causes from effects in causal sequences (direction)?
    - What distinguishes causes from conditions in causal sequences (selection)?
  - Next, we'll look at some particular theories of causation (Lewis, Davidson, *etc.*)
- Before we get into these six central questions, we begin with a distinction

Introduction to Causation I: General *vs* Singular Causation

- Schaffer's piece (and most readings in this unit) is concerned with *singular* (or *token*) causation. This is perhaps the most familiar sort of causation, which is a relation between *particulars*. But, there is also *general* (or *type*) causation.
- To see the contrast between general and singular causation, consider:
  1. Radiation exposure causes cancer.

     versus
  2. John's radiation exposure caused him to get cancer.
- (1) is a *general* causal claim, and (2) is a *singular* causal claim. (1) is usually taken to mean something like "The chance of contracting cancer in population P is greater in sub-populations Q of P that are exposed to radiation".
- (2), on the other hand, is a claim about a particular radiation exposure "event" causing a particular person (in both populations P and Q) to contract cancer.
- Prima facie, general causation seems to be a relation among *properties* or *types* (*universals*), and singular causation seems to be among *particulars*.

- Of course, general causation as a relation between universals (*e.g.*, properties) is not something that the Nominalist will feel comfortable with. Nominalists usually argue that "general causation" is parasitic on singular causation.
- A Nominalist might gloss "general causal claims" as summary statements about *individuals*. *E.g.*, "Radiation exposure causes cancer" $\mapsto$ "Individuals who are exposed to radiation have a greater chance of contracting cancer".
- Here, the "chances" attach to *particulars*, not to *populations* (or types, or properties). But, then, the Nominalist owes us a nominalistically kosher account of "single case probabilities". These don't seem to be *frequencies*.
- What is the probability that a particular person (John) has cancer? John is a 30 year-old caucasian male. In *that* population, the *frequency* of such occurrences is relatively low. But, he smokes 2 packs a day, which raises the frequency.
- And, John runs 5 miles a day, which lowers the frequency again. And, so on. If we make the population too small (*e.g.*, the "populuation" of John himself), then the frequency is either zero or one (if John lacks or has cancer, resp.).
- We won't discuss general causation, but it's good to know it's out there.

Introduction to Causation II: What *are* the *relata* of the causal relation? 1

- Everyone agrees that singular causation is a *relation*. That's where the agreement ends. The standard view of singular causation is that it is a relation between *two events*, which are *immanent* (*i.e.*, spatio-temporal) particulars.

  When the cue ball knocks the nine ball into the corner pocket, there is said to be an (actual) event e_1 of the cue ball striking the nine ball, and an (actual, distinct) event e_2 of the nine ball sinking into the corner pocket, such that e_1 is cause and e_2 effect. The standard view holds that e_1 causes e_2.

- There has been widespread disagreement with the standard view, on various counts, *e.g.*, on both the *number* (two), and the *category* (event) of the *relata*.

- **Category**: many say *events* (Davidson, Kim, Lewis), some say *facts* (Bennett, Mellor), and a few say *something else*: *features* (Dretske), *tropes* (Campbell), *states of affairs* (Armstrong), *situations* (Menzies), and *aspects* (Paul).

- **Number**: most say there *two* relata (Davidson, Mackie, Lewis), some say *three* (Hitchcock, Woodward) or even *four* (Maslen), with the additional term(s) playing the roles of *causal alternative* and/or *effectual difference*.

Introduction to Causation II: What *are* the *relata* of the causal relation? 2

- When it comes to the Category of the relata, there are two main dimensions:
  - **Immanent *vs* Transcendent**: Are the relata *immanent* (*i.e.*, in space-time, concrete) or *transcendent* (*i.e.*, not in space-time, abstract)?
    - The event of Brutus' stabbing Caesar is immanent, whereas the fact (or true proposition) that Brutus stabbed Caesar is transcendent.
  - **Fine-Grained *vs* Coarse-Grained**: How are the relata *individuated*?
    - Is John's saying "hello" the same as John's saying "hello" loudly? Is the bolt's giving way suddenly the same as the bolt's giving way?
- **Uniqueness of Category**: Why assume a *unique* Category for causal relata?
  - **Ambiguity**: if there were 4 Category choices for 2 relata, there would be $2^4 = 16$ causal relations (and more for more Category choices or relata).
  - **Harmony**: A plurality of Categories would require some metaphysical harmony amongst them. The event of the cue ball's striking the nine ball, and the fact that the cue ball struck the nine ball, have comparable effects.

Introduction to Causation II: What *are* the *relata* of the causal relation? 3

- Three arguments concerning **Immanence *vs* Transcendence**:
  - **Pushing Argument for Immanence**. Only immanent things can *interact*:

    "Some people have objected that facts are not the sort of item that can cause anything. A fact is a true proposition (they say); it is not something in the world but is rather something about the world, which makes it categorically wrong for the role of a puller and shover and twister and bender." The upshot of "pushing": only concrete spatiotemporal entities can be causes and effects.
  - Two Replies to the Pushing Argument for Immanence:
    - *Facta*: recruit immanent *facta* that underlie the facts in the causal relation. The fact that the cue ball struck the nine ball involves objects – the cue ball and nine ball serve as *concrete facta* that "do the pushing".
    - *Humean*: It rests on a naive (pre-Humean) conception of causation as requiring a metaphysical "push" or "oomph". If the causal relation is a mere matter of *regularity*, why can't the regularities hold between *facts*?

- **Absences & Transcendence**: Absences cause, but they are transcendent.

  "For the '*C*' and '*E*' in a true causal '*E* because *C*' need not assert the existence of particulars. They may deny it . . . They are negative existential statements, made true by the non-existence of such particulars. . . " *E.g.*, If Don does not die because he does not fall, his non-falling and non-dying are causally related, without there being any immanent entities to relate.

- Two Replies to the Absences Argument for Transcendence:
  - *Absences cannot cause*: Armstrong: "Omissions and so forth are not part of the real driving force in nature. Every causal situation develops as it does as a result of the presence of positive factors alone." Perhaps supplemented with a "cause-like" relation that absences can enter into.
  - *Absences are not transcendent*: (*i*) accept the existence of negative properties (*e.g.*, nonfalling), and think of absences as events in which an object instantiates a negative property, or (*ii*) take absence claims as merely a way to describe occurrences "negative statements like 'he did not pull the signal' are ways of describing the world, just as affirmative statements are, but they describe it by contrast not by comparison . . . "

- **Slingshot & Immanence**: There's only one fact, so causes must be events.

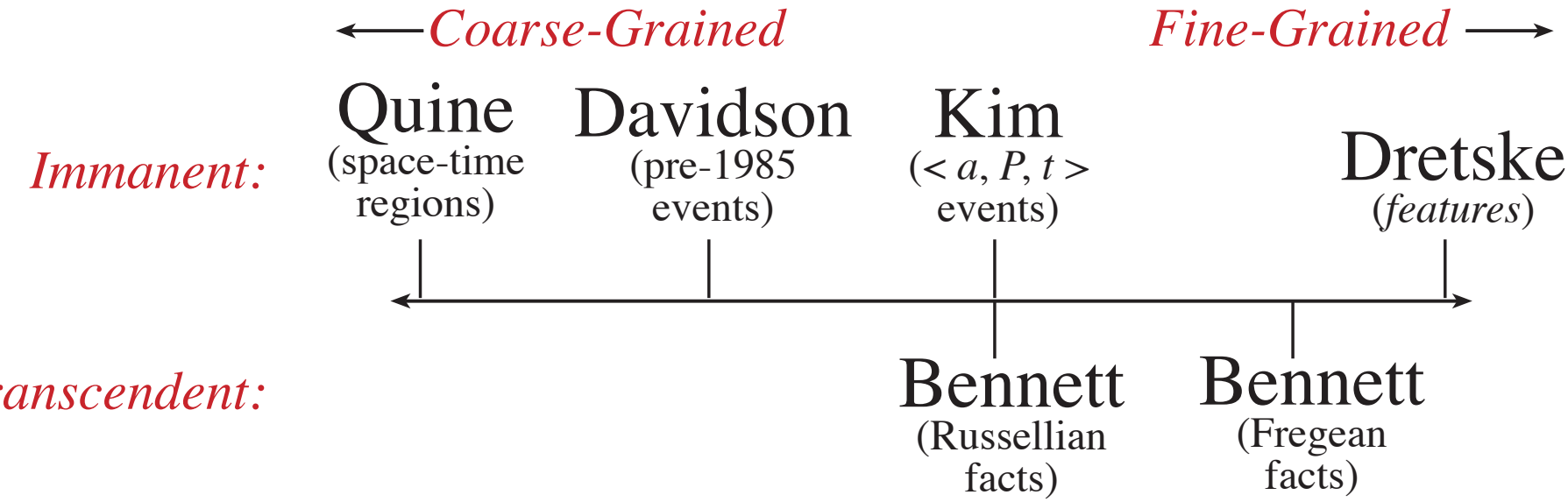
  Let f_1 and f_2 be any facts, and a be some concrete particular. Then f_1 is logically equivalent to the fact that $(\hat{x})(x = a \,\&\, f_1) = (\hat{x})(x = a)$. Moreover, $(\hat{x})(x = a \,\&\, f_1) = (\hat{x})(x = a \,\&\, f_2)$, and so by substitution f_1 is logically equivalent to the fact that $(\hat{x})(x = a \,\&\, f_2) = (\hat{x})(x = a)$. But that is logically equivalent to f_2, and so f_1 and f_2 are logically equivalent. So, there is only one fact. But, there are many causes/effects. So, facts can't be causal relata.

- Two replies to Davidson's slingshot argument against facts as causal relata:
  - *Block Some Substitutions*: (*i*) reject the logical equivalence of f_1 with the fact that $(\hat{x})(x = a \,\&\, f_1) = (\hat{x})(x = a)$, or (*ii*) deny that substituting the "extensional equivalents" $(\hat{x})(x = a \,\&\, f_1)$ and $(\hat{x})(x = a \,\&\, f_2)$ inside the context '. . . the fact that . . . ' preserves logical equivalence. Note: Rusell's theory of facts and descriptions denies both of these (as we discussed).
  - *Two Kinds of Facts*: Maintain there is some conception of facts shielded from the slingshot. Distinguish between facts_1, defined so the substitutions of the slingshot are valid, and facts_2, defined so that these substitutions are invalid. Then use facts_2 as the causal relata. Russellian facts to the rescue?

Introduction to Causation II: What *are* the *relata* of the causal relation? 4

- How are the causal relata *individuated*? Specifically, how *fine-grained* are they? These questions are directly related to the Category question.

	Coarse-Grained	Fine-Grained
Immanent	Quine, Davidson	Kim, Lewis, Dretske, Armstrong
Transcendent	[unoccupied]	Bennett, Mellor



- Quine: causal relata are *space-time regions* (*objects* or *concrete particulars*).
- Davidson (pre-1985): causal relata are located in space-time; they are more fine-grained than objects (a), and less fine-grained than Kimian events (triples $\langle a, P, t \rangle$). In 1985, Davidson abandoned his view, which became Quine's.
- Kim: causal relata are triples $\langle a, P, t \rangle$, which are immanent (in space-time). How fine-grained these are depends on how fine-grained properties are. They can be predicates (more fine-grained) or "joints of nature" (less fine-grained).
- Bennett (Russellian): causal relata are abstract, Russellian facts. These have roughly the same granularity as Kimian events (but they're *transcendent*).
- Bennett (Fregean): causal relata are abstract, Fregean facts. These are more fine-grained that Russellian facts, since the fact than Superman punched Lex Luthor can be distinct from the fact that Clark Kent punched Lex Luthor (even though these will be the same Russellian fact, since Clark Kent = Superman).
- Dretske: causal relata are immanent *features* — more fine-grained even than Fregean facts. *E.g.*, *Superman*'s punching Lex ≠ Superman's punching *Lex*.
- There are three arguments pertaining to the *granularity* of causal relata:

- **Causal Differences**: Intuitively, some causal differences seem fine-grained.

  Kim/Davidson example: "The collapse was caused, not by the fact that the bolt gave way, but by the fact that it gave way so suddenly and unexpectedly".
  Lewis example: John's saying "hello" must differ from John's saying "hello" loudly, since only the former causes Fred to greet John in return, and only the latter is caused by John's state of tension. These examples suggest that the relata must be fine-grained on pain of conflating conflicting causal relations.

  – *Cause vs Explanans*: It may be *explanatorily relevant* (to *why* Fred greeted John in return) that John said "hello" *loudly*, but the *cause* was John's saying "hello" — *one and the same event as* John's saying "hello" loudly.

  – *Intensionality of " . . . causes . . . "*: "John's saying 'hello'" may refer to *the same event as* "John's saying 'hello' loudly", but substituting one for the other may change the truth-value of the causal claim (intensionality!). So, different descriptions of the same relata can induce causal differences.

  – *Where does it end?*: Then, isn't "Socrates' *drinking hemlock* at dusk caused his death" *true*, while "Socrates' drinking hemlock *at dusk* caused his death" *false*? This seems to push us to *extreme* fine-grain (Dretskian).

- **Transitivity**: Transitivity of causation seems to require fine-grain.

Tom puts potassium salt in the fireplace (*c*); Dick then tosses a match in the fireplace, which results in a purple fire blazing in the fireplace (*d*), which then spreads and immolates Harry (*e*). The coarse-grained theorist seems committed to a violation of transitivity: *c* causes *d*; *d* causes *e*; but *c* does not cause *e*. The fine-grained theorist may distinguish d_1: the fire becoming purple at region *r*, from d_2: the fire blazing at *r*. Now *c* causes d_1 (not d_2), d_2 (not d_1) causes *e*, which (in a principled way) blocks the transitive inference to *c*'s causing *e*.

- *Bite the Bullet*: Accept that Tom's putting potassium salts in the fireplace *does cause* Harry's immolation. Our intuitions to the contrary might be written off, as above, as confusing cause and explanans, or by ignoring the possibility that *e* is an *unintended consequence* of *c*. [These seem wrong-headed to me.]
- *Deny that Causation is Transitive*: the boulder begins to roll down the hill towards the hiker's head (*c*), which causes the hiker to duck (*d*), which in turn causes the hiker to survive (*e*). It seems that *c* causes *d* and that *d* causes *e*, yet it does not seem that *c* causes *e* or that slicing up *d* into different features or aspects or whatnot will help. If so, then transitivity is lost anyway!

- **Methogology**: There are *methodological* advantages to going *coarse-grained*.

  Quine (1985) charges fine-grained conceptions of the relata (*e.g.*, Davidson's events) with invoking poorly individuated and unfamiliar entities, and recommends coarse (spatiotemporal) individuation as principled and familiar. One of Quine's main charges is that Davidson's individuation of events in terms of the sharing of causes and effects is *circular*. Davidson (1985) embraces Quine's view as both "neater" and "better" than even Davidson's own previous view.

- *Not Unprincipled at All!*: Kim's fine-grained conception of events offers a precise criterion for individuation: $\langle a, P, t\rangle = \langle a', P', t'\rangle$ iff $a = a'$, $P = P'$, and $t = t'$. And the entities (objects, properties, and times) should be Kosher for all but the most austere nominalist. Quine himself admits that Kim's fine-grained conception is perfectly principled, and ontologically Kosher.

- *Who Cares?*: We accept physical objects without clear individuation principles, so why hold events to a stricter standard? If one has a reductive fine-grained view (*e.g.*, Lewis' transworld classes of regions), then there is no multiplication in one's basic ontology, since the components already exist.

Introduction to Causation II: What *are* the *relata* of the causal relation? 5

- **Addicity**: How many relata are there in the (singular) causal relation?
- I will discuss arguments for 2 and 4. Some have proposed 3 as the right adicity. But, as Schaffer explains, there seems to be good reason to reject 3.

  > Three relata views preclude *causal chains*. In a causal chain the effect at the first link serves as the cause at the second. For this to be possible, cause and effect must be formally exchangeable: the same structure must flank both sides of the relation. Suppose the first domino knocks over the second, which then knocks over the third. The binary theorist can say that *c*: the toppling of the first domino, causes *d*: the toppling of the second; and that *d* in turn causes *e*: the toppling of the third domino. The quaternary theorist can say that *c* rather than $c*$: the first domino's remaining upright, causes *d* rather than $d*$: the second domino's remaining upright; and that *d* rather than $d*$ causes *e* rather than $e*$: the third domino's remaining upright. But if there were contrasts on only one side of the relation, then no such chains could be constructed.

- I'll discuss one argument for 2-adicity, then three arguments for 4-adicity.

- **Surface Form**: The surface form of causal claims is *binary* (2-ary).

Causal claims like "the short circuit caused the fire" make no explicit reference to any contrasts. Such claims can be felicitously uttered out of the blue (in discourse initial position), and so do not require any antecedent contrast setting or presupposition fixing. Davidson sought the logical form of such surface-binary utterances. He rejected the notion of causal relevance, because "There is no room for a concept of 'cause as' which would make causality a relation among three or four entities rather than between two."

- *Contrastive Surface Forms*: "Pam's throwing the rock rather than the pebble caused the window to shatter," "Pam's throwing the rock caused the window to shatter rather than crack," *etc.* Surface form doesn't seem decisive.
- *Hidden Contrasts*: "Ann prefers chocolate" may be used as a reduced expression of the proposition that Ann prefers chocolate *over vanilla*. Here the contrast does not need to be explicitly articulated, or even noted earlier in the conversation. Preference claims *do* have a contrastive form beneath their binary surface, and causal claims might also have such hidden structure.
- *Revisionism*: The *logical form* of causal *statements* should not have the last word in *metaphysics* — we may have theoretical reasons to reject 2-arity.

- **Determinacy**: Binary causal claims are *indeterminate* (relation *ill-defined*).

Suppose Jane smokes moderately, and develops lung cancer. Does Jane's moderate smoking cause her lung cancer? Perhaps there is no determinate answer unless one fixes the *causal alternative*: "Relative to heavy smoking, moderate smoking . . . prevents lung cancer; relative to abstaining, moderate smoking . . . causes lung cancer". And, suppose Pablo is choosing between blue, red, and green paint for his canvas. Does Pablo's choosing blue paint rather than red cause the canvas to be blue? Perhaps there is no determinate answer. Pablo's choosing blue paint rather than red causes the canvas to be blue rather than red, but does not cause the canvas to be blue rather than green. Perhaps, then, *contrasts* are required for *both cause and effect*, in order for causal claims to have determinate truth-values.

- *Biting the Binary Bullet*: The main reply is that binary causal relations *are* well defined. This reply applies a binary account of causation to problem cases such as the smoking and painting cases, and simply reads off a truth-value, whatever it may be. *E.g.*, one might think that a counterfactual account of causation, on which we check whether *e* would still have occurred had *c* not occurred, simply rules that Jane's smoking causes her lung cancer, and that Pablo's choosing blue paint causes the canvas to be blue, full stop.

- **Immanence Revisited**: 2-ary can't reconcile immanence/absence causation.

Additional argument places reconcile immanence with absence causation (which a binary account cannot do). The reconciliation is attempted through treating absence-claims as setting the contrast to the associated occurrence. For instance, "the gardener's failing to water the flowers caused the flowers' wilting" is to be interpreted as: what the gardener actually did (*viz.*, the actual event of his watching television) rather than watering the flowers (the non-actual event that is the associated occurrence) caused the flowers to wilt rather than blossom. And this claim may well be true. In this way, all four of the relata may be treated as immanent entities, and absence causal claims may still come out true. Indeed, in this way absence causation requires no special provisions at all (and, as Phil Dowe has explained, this is not the case on virtually any binary theory of causation).

- *No Reconciliation is Needed*: Immanence needs no revisiting. No reconciliation of absences and immanence is needed, and so no additional argument places are needed. This reply may take the form of denying immanence (that is, embracing facts), denying that absences are causal, or maintaining that there are immanent absences. We discussed these above.

- **Individuation Revisited**: 2-ary can't sticky the slope to Dretskian causation.

The third main argument for 4-arity revisits individuation, and maintains that additional argument places tame the causal differences argument. Recall our concern that the causal differences argument *overextends*, in requiring that Socrates' *drinking hemlock* at dusk, and Socrates' drinking hemlock *at dusk*, differ as causal relata. A 4-arity theorist can treat focal differences as *contrastive differences*. Thus "Socrates' *drinking hemlock* at dusk" is to be interpreted as c: Socrates' drinking Hemlock at dusk, rather than $c*$: Socrates' drinking wine at dusk (or some other contextually salient alternative to drinking hemlock); while "Socrates' drinking hemlock *at dusk*" is to be interpreted as c: Socrates' drinking Hemlock at dusk, rather than $c*$: Socrates' drinking hemlock at dawn (or some other contextually salient alternative to occurring at dusk). And these different contrasts may induce different effects. So, focal differences may be allowed to yield causal differences, without having any implications for individuation, much less the extreme fineness of the Dretskean view.

- *No Slippery Slope Needs Stickying*: No taming of the causal differences argument is required. This reply may (*i*) maintain the Davidsonian distinction between causation and explanation, (*ii*) allow that causation is an intensional relation, or (*iii*) accept the extremely fine-grained Dretskean view of the relata.