LECTURE 1:
CONCEPTUAL TOOLS IN METAPHYSICS

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1. Tools in metaphysics

By "tools in metaphysics" I mean the core concepts used to articulate metaphysical problems. They're a lens through which we view metaphysics.

The metaphysical tools of choice change over time, and as they do, the problems of metaphysics are transformed. We view the very same problems (in some sense) through different lenses.

Take personal identity. In the 1950s and 60s the preferred tools were concepts of meaning and analysis. So the question became, what are we *saying* when we re-identify persons over time? (E.g. Strawson's *Individuals*.) In the 1970s through the 1990s, the tools became modal, and the questions of personal identity became: what conditions governing personal identity hold of metaphysical necessity? Would it be possible to survive the loss of all of one's memories?

Or think of the mind-body problem. 1950s: analyze of mental concepts; later, modal: is it possible for a world physically like ours to lack consciousness?

Recently there has been a shift to new tools, which I will call "postmodal":

 Essence (Fine): Fine argued that a thing's essential properties should not be defined modally, as those properties it has necessarily. Socrates and {Socrates}.

 Ground (Fine, Schaffer…): One fact grounds another if the second holds in

virtue of the first, if the first metaphysically explains the second. Not defined as necessitation.

Fundamental concepts (me): aka structure, carving at the joints. (Ballpark of Lewis's natural properties.) The fundamental concepts are the basic building blocks from which the world is built; they give the world's fundamental structure.

Friends of the postmodal revolution think that modal conceptual tools need to be supplemented, or perhaps even replaced, by one or more of these postmodal concepts. A vague theme has been that modal concepts are too crude, in that even once modal questions are settled, there remain important metaphysical questions that can be articulated using the postmodal tools (think of Socrates and {Socrates}, or the Euthyphro question). And perhaps even that modal questions are epiphenomenal, a mere reflection of deeper postmodal phenomena.

This postmodal revolution has been very "meta", about what we are asking, when we ask metaphysical questions. But the choice of tools can also affect how the questions should be answered.

2. Structuralism

If my lectures have a single thesis, it is that the choice of metaphysical tools matters to first-order metaphysics, especially when it comes to "structuralist" positions in the metaphysics of science and mathematics. Both the move from modal to postmodal tools, and the choice of particular postmodal tools, matter.

'Structuralism' is pretty vague, but the idea is that patterns or structure are primary, and the entities or nodes in the pattern are secondary.

The argument for structuralism is often epistemic: our evidence is only for patterns. One could respond with a merely epistemic doctrine: all we know is the pattern; what occupies the pattern is real but unknown. But others respond metaphysically: the patterns are metaphysically, not just epistemically,

primary.

Other arguments are nonepistemic. One might argue directly that mere differences in nodes are distinctions without a difference. Or one might argue that dispensing with the nodes while keeping the structure yields a simpler picture of the world.

Structuralist positions have been defended in a number of different areas in the metaphysics of science and mathematics (and elsewhere).

Nomic essentialism Networks of nomic, or lawlike, relations between properties are primary and the properties themselves are secondary

When a law of nature governs a property, this isn't something that just happens to the property. The nature of the property itself is somehow bound up with the laws governing it and other properties.

Why believe such a claim? One putative reason is epistemic. We learn about the property of charge (for example) through its nomic profile: entities with this property are correlated, by law, with the electromagnetic field, which is in turn correlated with the motions of other particles, depending, in part, on their charges. What do we know of the property of charge *in itself*? Nothing—we know of it only as: "that which is correlated, by law, with such-and-such". So, why assume that there *is* anything more to the property other than this lawful correlation?

Comparativism about quantities Quantitative comparisons are prior to absolute values of quantities

Quantities are properties that come in degrees, and can be measured by numbers. Charge or mass, for instance. For any distribution of values for a given quantity across all individuals—an assignment of 2g mass to this thing, of 1g mass to that thing, and so on—there is a network of corresponding relations amongst those individuals: one individual is twice as massive as another; a certain pair of individuals are together exactly as massive as a certain other pair; and so on. Comparativism about quantity says that this network of relations is prior to the individual values. As before, it can be supported on epistemic grounds: what we observe is relations of quantity rather than particular val-

ues of quantity, as when we use a pan balance to establish that two things are exactly as massive as each other.

Structuralism about individuals The network of qualities—properties and/or relations—had by individuals is primary and the individuals themselves are secondary.

Epistemic argument: we cannot distinguish the following two arrangements:
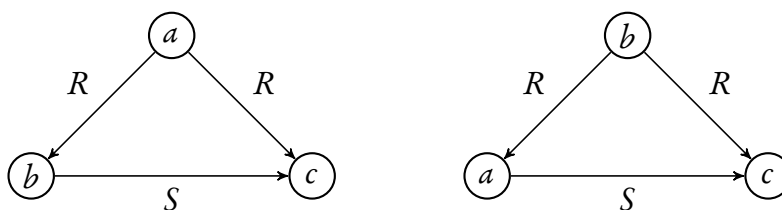
Observation tells us only the qualities of individuals, and not which individuals they are; individuals don't have metaphysical nametags. So why suppose there's anything beyond the qualities, an extra fact of which things have which properties, which can vary independently of the pattern of properties and relations (e.g. by a permutation of Obama and me)? Maybe the pattern is all there is:
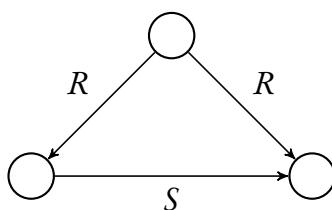
Various sorts of structuralisms about individuals have been defended:

- Bundle theory (in pure metaphysics)

- Structural realism (phil science)

- Mathematical structuralism

3. Modal and postmodal structuralism

All this talk of patterns being "primary", of patterns being "all there is", is extremely vague, and how it is precisified depends on the metaphysical tools one adopts.

For instance, using modal concepts one can articulate theses to the effect that nodes and patterns cannot vary independently. Many structuralist positions have in fact been formulated in this way. Two forms this might take:

"the pattern cannot vary while the nodes remain constant". Example: nomic essentialism is often formulated as the claim that the very same properties and relations could not have existed while obeying different laws.

"nodes cannot vary while the pattern remains constant". Example: structuralism about individuals is often formulated modally, as anti-haecceitism, the claim that it's impossible for individuals to vary independently of qualitative facts—that is, that there are no two possible worlds that have the same distribution of qualities over individuals, but in which different individuals occupy different qualitative roles; there is no duplicate possible world in which I swap places with Barack Obama.

Now, no one formulates structuralism about *mathematical* individuals modally. For in that case, the modal theses would already be true, simply because (as it's normally assumed) facts about mathematical entities are noncontingent. Facts about particular mathematical objects cannot vary independently of structural mathematical facts, simply because mathematical facts can't vary at all, regardless of whether any sort of structuralism is true.

From a postmodal point of view, the failure of modal tools to articulate a meaningful thesis of mathematical structuralism is a sign of a deeper problem. A modal structuralist thesis says that independent variation of patterns and nodes is impossible, but says nothing about *why* this is impossible; the impossibility

might be due to something that, intuitively, has nothing to do with structuralism. It might be due to a quirk of modality instead. If you held the bizarre "Spinozistic" view that all truths are necessary (to use an example of Shamik Dasgupta's) that wouldn't turn you into a structuralist about everything.

A proper statement of a structuralist position might well *imply* a modal thesis. For example, one might hold that individuals just are bundles of universals. (Not a plausible way to articulate structuralism about individuals, as we'll see, but it illustrates the point.) That presumably implies that individuals can't vary independently of the qualitative pattern, but that modal thesis is just a symptom; what it is due to is the identification of individuals with bundles, which is the real structuralist claim.

This is a very common postmodal attitude: modal theses are philosophical epiphenomena of deeper postmodal theses. I'll be assuming that this attitude is correct in the case of structuralism, and thus that postmodal articulations of structuralist positions are needed. Though I won't say much in support of this assumption, it's worth distinguishing some different ways one could support it.

Modality is *nonfundamental*, so we should articulate the fundamental facts giving rise to modal structuralist positions directly. (But mightn't the modal thesis be the only way to concisely state those facts? Rejoinder: should be an intrinsic law.)

Modality is *superficial*. On my own view the necessary truths are just certain truths that we "hold constant" when talking about alternatives to actuality, and the distinction between truths we hold constant in this way and truths that we don't hold constant is more-or-less conventional. So if a structuralist thesis aspires to articulate something metaphysically important about reality, it should not do so via the metaphysically superficial language of modality—at best this would be a misleading way to get at an important nonmodal fact, and at worst it would not reflect anything important at all.

The necessary truths are *minimal*. E.g. someone might think that no, or few, truths are necessary unless underwritten by some postmodal claim (such as that individuals just are bundles of universals).

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Modal claims are *unsuitable* as statements of forms of structuralism, even if true, metaphysically deep, and even fundamental, because they are not supported by structuralist arguments. E.g. suppose your reason for being a structuralist about individuals is that you think that a permutation of individuals amongst qualitative roles is a distinction without a difference. The modal formulation of structuralism about individuals—antihaecceitism—doesn't imply that permutationally different scenarios aren't different; it just implies that they aren't both possible.

4. The challenge for postmodal structuralism

The demand for postmodal formulations of metaphysical theses can make a difference: there is no guarantee that a given modal thesis *can* be backed by a suitably attractive postmodal thesis. Three potential obstacles:

1. There may simply be no coherent postmodal thesis in the vicinity. Consider structuralism about individuals. The structuralist slogan of "patterns without nodes", taken at face value, seems incoherent. What a pattern *is* is a set of facts about nodes; on the face of it, a pattern without the nodes makes no more sense than the Cheshire Cat's smile. The modal understanding of structuralism about individuals—antihaecceitism—backs away from the slogan, and thus is perfectly coherent. But suppose we seek an account of the fundamental facts that underlies antihaecceitism; and suppose we think that such an account must consist in a specification of what things fundamentally exist and what their fundamental properties and relations are. Then we seem left with nothing other than the flat-footed reading of the slogan.

2. Another obstacle is that there might be a conflict with "postmodal logic". A natural strategy for formulating structuralism appeals to ground: facts about the pattern somehow ground facts about the nodes. And it's natural to take "facts about the pattern" to be existentially quantified facts whose instances are facts about nodes. Thus existential facts would ground their instances. But the usual logic of ground demands the reverse: instances ground existentials. The problem, again, simply doesn't arise if one articulates structuralism in merely modal terms. Ground is a hierarchical notion: facts are arranged

in a hierarchy of more or less basic facts according to certain rules; and this additional imposed structure can conflict with a structuralist thesis.

3. Even if a modal position can be "translated" into a coherent and consistent postmodal thesis, that thesis might be theoretically unattractive from a distinctively postmodal point of view. For instance, if a postmodal structuralist thesis is a claim that certain concepts are fundamental, it may be that the required concepts to state the structuralist thesis are complex in certain objectionable ways, or cannot be used to state simple laws of nature.

In subsequent lectures these kinds of concerns about postmodal structuralism will be discussed in more detail when we examine particular structuralist views.

5. Essence

For the remainder of the talk, let's look more closely at the postmodal concepts of essence, ground and fundamentality.

In Fine's regimentation, we speak of something's being true in virtue of the natures or essences of certain specified entities:

$$\Box_{x_1, x_2 \ldots} A \qquad\qquad \text{("In virtue of the essences of } x_1, x_2 \ldots, A\text{")}$$

As we've seen, Fine denies that essence should be defined in terms of necessity. Indeed, Fine accepts the reverse definition: a necessary truth is a truth that holds in virtue of the essences of all things.

6. Ground

We may again begin with Fine's regimentation: one or more facts $F_1, F_2 \ldots$ are said to ground another fact, G

$$F_1, F_2 \cdots \Rightarrow G$$

There are many subtle details which I'll mostly ignore or elide. I'll move back and forth between speaking of grounding of facts, propositions, and speaking of grounding using a sentence operator; I'll mostly ignore distinctions between full, partial, strict, weak ground, etc.

Philosophers often speak of facts "holding in virtue of", "being grounded in", "depending on", "consisting in", "being explained by", or "being made true by" other facts. Often such phrases have been regarded as less clear than, say, modal language. But now Rosen, Fine, Schaffer, and others have argued that such talk is legitimate after all. It concerns this relation of grounding, which is an irreplaceable conceptual tool in philosophy, they say.

Claims of grounding are said to *imply* modal claims: if P grounds Q then P necessitates Q. But the converse implication doesn't hold: even if it happens to be necessary that Q is true whenever P is true, there may not be the right sort of connection between P and Q so that P grounds Q.

Many of the traditional questions of philosophy, we are told, are really about grounding. The question of moral naturalism, for instance, should really be understood as the question of whether moral facts are grounded in natural facts. It is a distortion to understand the question in modal terms, for instance, as the question of whether moral facts are necessitated by natural facts, since many moral nonnaturalists would say that even though moral facts are "above and beyond" the natural facts—i.e. not grounded in them—they nevertheless cannot vary independently of the natural facts.

I'd like to briefly discuss one challenge to the grounding picture that has recently emerged. Jessica Wilson has argued that ground is in fact useless in philosophy. Her reason is that bare claims of grounding leave open *how* the grounding occurs. The bare claim that the mental, say, is grounded in the physical is neutral over a range of more specific positions involving more specific metaphysical relations such as type identity, token identity, functional realization, part-whole, and so forth. She says:

> Hence it is that naturalists almost never rest with the schematically expressed locutions of metaphysical dependence, but rather go on to stake out different positions concerning how, exactly, the normative or other goings-on metaphysically depend on the naturalistic ones. (Wilson, 2014,

I think that Wilson is right about something important here. In metaphysical investigations of individual phenomena (such as the mind), when we attempt to say what is going on, metaphysically speaking, I think she's right that we don't stop with saying that the mind is grounded. In fact, this will be important later on, when we consider attempts to articulate forms of structuralism using ground. But I don't think she's right to conclude that ground is useless. Sometimes a claim that is neutral over more specific claims is exactly what we want to make. Naturalism itself, for example, is just such a neutral claim.

Neutral claims of this sort have an important epistemic role to play, even if they're in a sense metaphysically superficial—because unspecific. Take the case of consciousness. Naturalists work very hard to try to show that consciousness is somehow a natural (material, physical) phenomenon. They begin by exploring one sort of way to ground consciousness in the physical, but if that doesn't work, they try another way. Why do they stick to this path? It's because they take themselves to have very good evidence that everything is grounded—in one way or another—in the natural. They look at many cases in the history of science, in which various phenomenon that initially seemed not to be naturalistic were all shown to be grounded in the natural—grounded in different ways in different cases—and conclude that these cases provide evidence for a sweeping doctrine of naturalism, to the effect that *all* phenomena are grounded in the natural. A more specific doctrine couldn't play the same epistemic role.

One might regard facts about ground as fundamental facts, so that ground becomes a kind of super-added metaphysical force. In that case grounding claims would be specific after all, heading off Wilson's objection right at the very beginning. Now, I don't think this is a very plausible view. It's needlessly metaphysically extravagant. Also, it faces an argument I gave in a recent book: grounding facts nearly all involve nonfundamental concepts—concepts involved in the fact that is getting grounded—which makes them unsuitable as fundamental facts.

If you looked only quickly at the grounding literature, you might be forgiven for assuming that the friends of ground all accept the super-added force view. They insist, after all, on the appropriateness of taking grounding as "primitive". Also, it's hard to see how grounding would be itself grounded.

There have been a few proposed simple formulas (e.g. Bennett, deRosset: $A \Rightarrow (A \Rightarrow B)$) but I don't think they work.

But it's part and parcel of the grounding approach to be happy with the following sort of stance: I have no idea what the grounds of X are; but nevertheless I'm confident that it has grounds of some sort of other. Grounding is meant to be a metaphysical, not epistemic, relationship: there is no assumption that we have a priori access to the nature of grounds. The ultimate ground of my being a human being is presumably some complex physical fact, whose details we grasp dimly if at all. So a friend of ground should be happy saying that facts about ground are grounded, without knowing exactly how they're grounded, and without defending one of the simple formulas. One ought to have an idea of the *sorts* of facts that might play a role, just as one has a rough idea of what sorts of facts might be relevant to my being a human being. But in the case of grounding there do seem to be facts we can point to: various regularities, modal facts, and various facts about the contents of the grounding and grounded facts.

Friends of grounding ought, then, to reject the superadded force view. Ground is "primitive" in the sense that we have no definition to hand; but nor do we have definitions to hand of anything of interest.

7. Fundamentality

Next postmodal concept: fundamentality. Let's distinguish *fundamental facts* from *fundamental concepts*. The fundamental facts are (intuitively) those ground-level facts on which everything else rests. Fundamental concepts stand for the most basic elements of fundamental facts, the ultimate "building blocks" of the world.

Lewis's natural properties are akin to fundamental concepts. Lewis says (Lewis, 1986, p. 60):

> Sharing of them makes for qualitative similarity, they carve at the joints, they are intrinsic, they are highly specific, the sets of their instances are

> ipso facto not entirely miscellaneous, there are only just enough of them
> to characterise things completely and without redundancy.

But fundamental concepts are not restricted to predicates; one can ask whether logical concepts are fundamental, for instance. Just as Lewis would articulate the view that there is fundamental mass structure by saying that mass properties (or relations) are natural, I would articulate the view that the world has fundamental ontological, or modal, or disjunctive structure by saying that quantifiers, modal operators, or the concept of disjunction are fundamental concepts. The idea is that a concept—whether logical or no—is fundamental if and only if it plays a role in articulating the world's fundamental structure, if and only if it is one of reality's ultimate building blocks.

There are certain structural differences between these various notions. For instance, ground and fundamental facthood are "factual" (or propositional) whereas fundamental concepthood is "sub-factual" (or sub-propositional): it is entire facts that ground and are grounded, or are fundamental facts, whereas it is components of facts—or rather, their corresponding concepts—that are fundamental concepts. Essential claims $\Box_{x_1,x_2...}A$ are partially factual (A) and partially subfactual ($x_1, x_2...$). Second, ground is comparative, in that each grounding claim involves a pair of facts, whereas both fundamental concepthood and fundamental facthood (on my usage anyway) are absolute: fundamentality is fundamentality simpliciter—absolute fundamentality. Essential claims $\Box_{x_1,x_2...}A$ can be regarded as comparative: the natures of $x_1, x_2...$ are said to give rise to A. However, the relevant facts about the natures of $x_1, x_2...$ aren't specified in the essential claim; indeed, there is no commitment to any such facts being specifiable. (We will return to this.)

Let's discuss the epistemology of concept fundamentality. Realist epistemology of science generally stresses the super-empirical virtues, notably simplicity of various sorts. The believer in fundamental concepts is ideally placed to make sense of those kinds of simplicity in realist terms. For many kinds of simplicity, a theory's simplicity can be altered when it is "rewritten" using alternate concepts (as when we convert a theory about blue and green to one about grue and bleen). A skeptic about fundamental concepts will likely regard the rewritten theory as a notational variant of the original, and so will be correspondingly skeptical of the epistemic value of these kinds of simplic-

ity: they are sensitive to notational, nonworldly differences between theories. But a realist about fundamental concepts can regard the simplicity judgment about one of the theories—the one whose primitive concepts are putatively fundamental—as privileged. Thus it is open to the realist to regard these sorts of simplicity as being epistemically significant.

One such sort, call it ideological parsimony, concerns the number and nature of undefined concepts: fewer and "simpler" concepts are better. Another sort concerns laws: a theory is better when it contains powerful yet simple laws, where the simplicity of a law corresponds to something about its syntax when stated using the theory's undefined concepts. To be sure, there are difficult questions about how to measure either sort of simplicity: simplicity of fundamental concepts is not just a matter of counting the theory's fundamental concepts, nor is simplicity of laws just a matter of measuring the length of their statements. But however these questions are answered, realism about fundamental concepts (or something a lot like it) is needed to regard these sorts of simplicity as corresponding to something worldly.

Conversely, if one is a realist about fundamental concepts, it's very natural, for a scientific realist anyway, to think that parsimony and simple-yet-powerful laws are epistemically important. For the realist about fundamental concepts believes in worldly distinctions corresponding to differences in these kinds of simplicity; and they seem like an exact match for the intuitive basis of realist thinking about theory choice, which is that the world is a priori likely to be simple.

Frank Arntzenius's (2012) book *Space, Time, and Stuff* is example of a recent inquiry into the metaphysics of science that gives pride of place to the simplicity and strength of laws. Arntzenius writes that:

> …our knowledge of the structure of the world derives from one basic idea: the idea that the laws of the world are simple in terms of the fundamental objects and predicates. In particular, what we can know and do know about the way things could have been—what we can know and do know about the metaphysical, and physical, possibilities—derives from our knowledge of what the fundamental objects and predicates are, and what the fundamental laws are in which they figure. I argue that it is bad epistemology to infer what the fundamental objects, predicates, and laws

are on the basis of intuitions as to what is, and what is not, possible. (p. 1)

Notice how distinctively postmodal this epistemology is. Modal beliefs—about fundamental reality anyway—are epistemically downstream from non-modal beliefs about the way reality is, and these nonmodal beliefs should in large part be determined by considerations involving laws (and ideological parsimony, in my view).

8. Conclusion

In the coming weeks, then, we'll investigate attempts to formulate various forms of structuralism postmodally. In many cases, there won't be an attractive postmodal formulation. In those cases, my conclusion is that structuralism was an idea that looked good when viewed through the metaphysically superficial lens of modality, but which is seen to be ultimately unattractive when we turn up the metaphysical resolution and view the position through a deeper lens.

References

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