Philosophy 355: Contemporary Philosophy — Hamilton College
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Class 21 - MRL

I. Terminology

There are four labels we can give to the view on the table, or aspects of it:

- MRL
- The systems view
- Reductionism
- Humean supervenience

'MRL' and 'the systems view' are synonymous.
They are positions about the nature of laws.
The claim that they make is that the laws of nature belong to all the true deductive systems with a best combination of simplicity and strength.

Humean supervenience HS is a broader view, not necessarily about laws.
We could call the view metaphysical, since it tells us what exists.
Lewis puts it clearly: "It is the doctrine that all there is to the world is a vast mosaic of local matters of particular fact, just one little thing and then another" ("Introduction", ix).
In particular, the defender of HS denies that there are any things above those local matters of fact, like laws, or modal properties, or numbers.

II. Humean roots

HS derives, of course, from Hume's work.
Hume's argument for his position depends, as Maudlin notes, on his theory of ideas.
For Hume, ideas were all faint traces of sense impressions.
Hume thought that local matters of particular fact could effect ideas in us.
These local matters all come to our senses as separate, individual experiences of events.
The motion of the first billiard ball is distinct from that of the second.
"All ideas seem entirely loose and separate" (8).
A person fully able to reason, but with no experience, could not derive, a priori, the effects of any of his/her actions.
We experience only constant conjunction of events, not connections.
So, Hume could not see how anything other than local matters of particular fact could effect ideas in us.
Among the things that Hume believed could not effect ideas in us, were God, causes, and modalities.
If the only way to have an idea of a cause would be to perceive one with our senses, then we certainly could not have an idea of a cause.
From this epistemic limitation (we could not have an idea of a cause), Hume questioned the metaphysical conclusion that there are causes, and laws which govern causation.
Note that Hume doesn't deny that there are causes, or necessary connections, or laws.
He just argues that we have no evidence of them, p 3.
His conclusion is really epistemic: we are ignorant of the ultimate springs and principles of nature.

III. The R in MRL

HS is a metaphysical view derived from the picture we find in Hume of the world as consisting of separate events.
I think it is an interesting question whether Hume would actually hold HS.
The Humean picture is useful for understanding the MRL view.
But, one must be careful.
There is a strong, skeptical reading of Hume, embodied in the problem of induction, which claims that we have no knowledge of the laws.
The MRL view claims that we do have knowledge of laws,
Consider the best theory of the world, as in the D-N model of explanation.
The laws of nature will be the axioms or general theorems of that theory.
See the beginning of §3 of HSD.

There are a variety of interesting questions about what makes a theory a best theory.
The best theory is supposed to maximize strength and simplicity (and fit).
It will explain as much as possible as elegantly as possible.
The strength of theories, and how to measure it, is pretty easy to understand.
A stronger theory will explain more facts.
Of course, the strongest theory is the inconsistent theory.
According to the D-N model, explanation is a matter of deduction from axioms.
If a theory is inconsistent, then everything follows, and so everything is explained.
So, there is a further constraint on a theory: it must be consistent.

If we want to explain more facts, we can always add axioms.
In fact, we can add anything as an axiom to a theory.
Consider the case of the parallel postulate.
Euclid thought it was a contentious claim, and tried to prove it, as did others for over two thousand years.
But, it does not follow from the other four Euclidean postulates, or basic axioms.
So, he accepted it, added it as an axiom to his geometry.
It turns out that we can add the denials of the parallel postulate (there are two distinct versions of the denial) and also generate a consistent theory.

In the case of physical theories, what we add to a theory is constrained by observations, in some way.
One might think that the consequences of adding a random postulate would create observational discrepancies.
In some cases, it would.
If we add an axiom that makes our theory inconsistent, we would have the trivially complete theory.
In other cases, additions of axioms might not have any observable ramifications.
Go back to the gold and uranium spheres examples.

> U: There are no uranium spheres greater than a mile in diameter.
> G: There are no gold spheres less than a mile in diameter.

U is a law; G is an accidental generalization.
U follows from other, more general laws of nature.
It will be a theorem of any best theory.
G, on the other hand, does not follow from the laws.

It follows only from the specific claims about the world in which we live.
Still, we can add G to our best theory, and there will be no counterfactual results.
There are, in fact, no such gold spheres.

We can also add non-causally efficacious ghosts to our theory.
Neither of these proposed theories (with G or with ghosts) are any stronger than the theory without them.
But, they do not imply any false statements.
G is true, it is just not a law.
And the ghosts are non-causally efficacious, so can not be used to derive any extra effects.

We block such additions using the simplicity clause.
The extended theories are less simple, less parsimonious, than the originals.

One worry about simplicity is that it seems like an epistemic notion.
Theories are simpler relative to my ability to understand them.
For example, we think theories are simplest when they reduce to just a few general laws.
For an omniscient being, a theory which just consisted of a list of all particles at all times and their positions might be simplest, and it would not appeal to any laws at all.
On the systems view, simplicity becomes a guide to truth.
That means that we have to have a metaphysical notion of simplicity.
We can not merely assert that a theory is simpler on the basis of our ability to understand that theory.

Lewis uses a metaphysical notion of simplicity, I think.
"If nature is kind, the best system will be *robustly* best - so far ahead of its rivals that it will come out first under *any standards of simplicity* and strength and balance.... It's a reasonable hope" (HSD 479, first emphasis his, second mine).

IV. Just the facts, ma'am

On MRL, laws have no metaphysical status beyond the local matters of fact to which they apply.
They are nothing more than regularities among the facts.
Humean supervenience is embodied in the MRL view, because the MRL view is reductionist: all statements of law reduce, in some sense, to the basic, local facts about the world.

What the local facts are is a matter of some dispute.
Mass and position seem to be local facts, as long as we choose a frame of reference.
Motion is a relation between two local facts over time.
These are all "perfectly natural intrinsic properties of points, or of point-sized occupants of points" (HSD 474).

If we were going to be strictly Humean about the facts, then we would have to admit only observable facts.
Locke and Hume demanded sense perception.
The positivists restricted all facts to sense data.
But, an observational criterion would be reactionary.
The instruments we use to detect sub-visible phenomena are, in fact, more reliable than our senses.
And, detection is beside the point, in any case.

We construct theories to fit the observations.
But, we do not rely on direct reductions of each statement of the theory to observation.
A demand for such empirical reduction would eliminate, of course, mathematics.
It would also eliminate laws and all ampliative (e.g. inductive) inferences.

Mass and velocity are properties.
In addition to the properties, there might also be a thing that has these properties.
Haecceitists say that there are; anti-haecceitists say that there are not.
You can tell if you are a haecceitist by answering the following question:
Is there another possible world, just like ours, in which you do not exist, though a doppleganger of yourself does exist, such that the doppleganger has all the same properties that you do, but is not in fact you?

If you are interested in this question, consider the following neat little proof of God's existence.
In first-order logic, we distinguish syntactically between constants and predicates.
Consider the following derivation that God, represented by the constant 'g', exists.

	1. ~(∃x)x=g	Assumption, for indirect proof
	2. (x)x=x	Principle of identity
	3. (x)~x=g	1, Change of quantifier rule
	4. g=g	2, UI
	5. ~g=g	3, UI
	6. g=g • ~g=g	4, 5, Conj
7. (∃x) x=g		1-6, Indirect proof

The anti-haecceitist denies that constants refer, and thus is likely to banish them from her logic.

V. Objections to MRL

The HS/MRL view is epistemically clean.
It meshes nicely with the Humean intuition that all that exists is particular, little bits of facts of the matter.
The questions about the view all concern whether its limited metaphysics suffices to support our beliefs about the world.
For example, an advantage of MRL is that there is no appeal to modality (possible worlds) in the explanation of laws.
Appeals to possible worlds are notoriously tendentious.
On the other hand, some of us do have some strong modal intuitions.
Logical possibility doesn't seem to capture all our distinctions among possible worlds.
There is some sense in which it is possible for me to have some different properties, but not others.
Again, I could be taller, but I could not be a teacup.
One person's modus ponens is another person's modus tollens.

All the objections to MRL/HS we will consider proffer some aspect of our world, or of a possible worlds, that HS seems unable to explain.

In the Kripke/Armstrong spinning disk/sphere example, we are asked to consider two possible worlds

that contain only a completely homogeneous and continuous disk, or sphere.
There is no difference discernible among the parts of the sphere, even at the most fundamental level.
In one of these worlds, the sphere is spinning.
In one of these worlds, the sphere is stationary.
We can see that there are differences between the two worlds.
But there are no differences in the facts within in the world.
There are no distinct parts to discern, since the sphere is homogeneous.
So, there are no differences between any two specific points or regions in the two worlds at any point.
The local qualities are all the same in both worlds.

In order to distinguish the two spheres, we must pick out two arbitrary regions, one on each sphere, and an arbitrary reference frame for each world, and identify the two regions.
At one moment, these regions will be (by stipulation) in the same place.
At another moment, keeping the reference frame constant, the two regions will be in different places.
This procedure will allow us to differentiate the worlds.
But, notice, it requires that we be able to identify one region in one worlds over time.
It requires us to be able to differentiate parts of the sphere over time.
This sort of persistence through time is unavailable to the defender of HS.
For, there are no local qualities, temporally local qualities, that will support this difference.
Even to formulate, say, the velocity of one region, is to talk about the change in position over time.
Only a temporally persistent object can change location over time.
We need some way to identify the object that is changing over time.
And, ex hypothesi, there are no differences among any of the parts or regions in either of the worlds!

A person with a little bit of physics and calculus might suppose that one could try to differentiate between the parts of the rotating sphere and the parts of the stationary sphere using instantaneous velocity.
Or, we could use the Lorentz transformations to note that one world is contracting a bit.
That would be smart, but it would not help us to differentiate between worlds with sphere rotating in opposite directions.
Leibniz might help, here, since he would claim that two such worlds, with no discernible difference, could not possibly exist.
To use the Leibniz strategy, though, one would have to defend the principle of sufficient reason, which no one really believes.

Lewis's response to the spinning sphere: "No worries for HS, so I thought: I believe that ours is a temporal-parts-world, therefore neither of the worlds in the story is a world like ours" (HSD 475).
Compare: "I concede that HS is at best a contingent truth. Two worlds might indeed differ only in un Humean ways, if one or both of them is a world where HS fails" (et seq.) (Intro, x).

Also, consider the following case, from Michael Tooley.
In Tooley's world, there are 10 particles.
So, there are 55 possible interactions.
Imagine that we have studied 54 of them, and we know the laws which govern these 54.
But, suppose conditions are such that the last pair, X and Y, never interact.
Still, if X and Y did interact, there would be some result.
There is nothing in the world to determine the nature of this interaction.
Still, it does seem like there would be some result.

Intuitively, there are laws governing their interaction.
But nothing non-nomic will suit the bill.
Lewis's considerations of unobtainium[349] lead to similar conclusions.
The laws don't merely reduce to facts about the world.

VI. Chance, symmetry and frequency

Lastly, the objection that Lewis calls the big bad bug involves chance.
We will look more closely at the specifics of the objection on Thursday, with Maudlin's discussion of the quantum wavefunction.
Here, we should consider the discussion of symmetry and frequency, in HSD §2.

Consider the most obvious candidate for actual chance in nature, the chance of decay of a radioactive isotope.
Lewis considers tritium, with its half-life of about 12.3 years.
Given one particle of tritium, there is a fifty percent chance that it will decay in 12.3 years.
There is no obvious deductive theorem to govern this decay.
It might decay, it might not.
On what local quantity might this probabilistic property depend?

Lewis considers two possibilities: symmetry and frequency.
Symmetry (the drunk) seems promising, until we notice that frequencies defeat symmetries.
That is, we do not know whether the world is actually balanced in the way that symmetry demands.
"The symmetry of T-junctions would no longer require 50-50 division of credence if we also knew that, despite this symmetry, the drunkards turn right nine times out of ten" (HSD 476).
But, again, there seem to be laws governing phenomena about which we have no frequency data, as in the unobtainium case.

I like the problem of irrational chances, at HSD 477.