Philosophy 355: Contemporary Philosophy
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Tuesdays and Thursdays, 9am - 10:15am

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Class 23 - Carroll

I. Naive regularity

Carroll's article starts slowly, with more background on the Humean position in §I and §II.
He goes into a bit of detail on MRL, in §III and §IV.
There is also a digression into Skyrms' non-MRL Humean position, in §V, which we will discuss only a bit.
The important parts of the article are the counter-examples to Humean supervenience which are found in the last section, §VI.

Carroll starts with a discussion of naive regularity, which is the simplest Humean account of laws.

> It is a law that all Fs are Gs iff (i) all Fs are Gs and (ii) the generalization that all Fs are Gs is lawlike; that is, (a) it is not necessary that all Fs are Gs, and (b) the generalization is unrestricted (it involves only non-local, empirical predicates apart from logical connectives and quantifiers.) (190)

Carroll mentions three problems with naive regularity.

1. It allows vacuously true generalizations to be laws.
2. It allows as laws general statements that include odd and troublesome predicates.
3. It makes it difficult to distinguish laws from accidental generalizations.

Each of Carroll's complaints about naive regularity comes with an example.
For the first complaint, consider 'all unicorns weigh five pounds'.
It is vacuous, since there are no unicorns, but conditionals with false antecedents are true.
And it fulfills the second set of conditions.
It is not necessary that all unicorns weigh five pounds, and it is not too specific, or restricted.
So, on naive regularity, it is a law.
But, we don't think that it should be a law.
And, 'all unicorns weigh six pounds', 'all unicorns weigh seven pounds', etc. should also be laws, by the same arguments.

For the second complaint, consider 'all unicorns or ravens are black'.
Or, consider 'all emeralds are grue'.
These sentences also satisfy the conditions on naive regularity.
But, we don't take them to be laws.

The last complaint exemplified by 'all gold spheres are less than a mile (or ten feet) in diameter'.
Carroll considers 'ten feet' rather than a mile, presumably because it is physically possible to construct a gold sphere greater than ten feet in diameter, if one had the wherewithal and inclination.
The statement, 'all people in this room study philosophy' is also an accidental generalization.
We've seen a lot of this complaint.

In fact, we have seen all three of these problems before, but it might be worth taking a moment to make

sure we understand their import.
Used as counter-examples to naive regularity, they show that the Humean must refine his/her account.
Thus, they motivate the introduction of the more detailed MRL/systems account.

II. MRL and simplicity

MRL adds to naive regularity a condition that for a sentence to be a law, it has to be a theorem of our simplest, strongest theory, our best theory that fits the evidence.
Carroll explains that MRL's essential notion of simplicity can be cashed out in terms of natural properties.

For Lewis, properties are sets of objects, both actual objects and their counterparts in all possible worlds.
Lewis takes possible worlds to be concrete objects, but sets are still abstract.
The property of being red is just the set of all objects that are red, in any possible world.
Thus, Carroll interprets 'natural properties' as referring to abstract objects.
We might also take properties to be universals without taking them as sets, as Armstrong understands them.
But, universals are just another kind of abstract object.
So, it seems that a commitment to simple theories entails a commitment to abstracta.
Carroll is right that there is something epistemically tendentious about appealing to natural properties as a way of determining the laws.
But, putting the worry about abstract objects aside, we still need to know how to distinguish the natural properties from the hoked-up gerrymanders (as Lewis calls non-natural properties).
That is, we need to know what makes a property natural.

Carroll points out problems with each of three of Lewis's suggestions to explain what makes a property natural:

1. In terms of resemblances
2. In terms of universals
3. As a primitive property

The first suggestion is that properties are natural if they underlie resemblances among different objects.
But, everything resembles everything else, in some way.
Carroll worries that Lewis thinks that possible objects resemble actual objects more than actual objects resemble each other.
If 'has a positive charge' is supposed to be a natural property, then all things which have a positive charge, including positively charged Martian chandeliers, have to resemble each other.
And, how can a possible object resemble an actual object?
(Compare with Berkeley: nothing like an idea but another idea!)

The second suggestion involves explaining natural properties in terms of universals, as Armstrong does.
Carroll complains that this suggestion makes Lewis's account of laws circular.
Armstrong's account of universals depends on causal (nomic) facts.
For Armstrong, a universal is something that underlies regularities in nature.
If MRL relied on universals to explain natural properties, it would no longer be a reductive account.
Also, Armstrong's account relies on a primitive resemblance relation which we just saw was problematic.

The third suggestion is that Lewis could take naturalness as a primitive property of properties.
Carroll's main worry about taking naturalness as a primitive seems to involve parsimony.
Lewis's way of taking it as a primitive invokes classes of possibilia.
A natural property, like any property, is just a set, or class: the set of things that have that property.
Carroll, presumably, wants to take properties as something other than classes.
The standard counter-example about taking properties to be classes is the problem of coextensive sets.
For example, consider 'cordate' (having a heart) and renate (having a kidney).
To be cordate is a different property from being renate.
But, exactly the same creatures are cordates and renates.
Carroll's last worry, though, seems more about Lewis's general notion of properties, and not about naturalness per se.

The worry about how to explain the naturalness of properties is, as Carroll says, just one problem with explaining simplicity.
Simplicity seems like a psychological, or at least epistemic, criterion.

> It commits Lewis to a kind of actual-world chauvinism for there is no reason to suppose that it is our world's standards of simplicity and strength which are the standards conceptually tied to laws. Worse, the proposal commits him to a cultural and present-time chauvinism in that it is *our* standards - the standards of our culture now - which makes systems ideal. Why not the standards of any other culture at any other time? (202)

The problem of invoking an epistemic condition for laws arises in connection with the non-MRL refinement of naive regularity that Carroll discusses, Skryms' appeal to invariance.
Let's look at that for just a moment.

III. The epistemic condition

MRL distinguishes between laws and accidental generalizations, and other pretenders to laws, by appealing to deductive systems.
Another option would be to appeal to the way in which we use laws.
Scientists know quite well how to distinguish laws from non-laws, even given sentences that are syntactically similar to laws, as in the ball of gold/ball of uranium case.
In appealing to the ways we use laws, one does not want to make the mistake of making ontological conclusions on epistemic grounds.
Maudlin warned us against that leap with the example of Socrates' blood type.
Carroll agrees that we have to respect the objectivity of laws.

In contrast, Goodman urged that we can distinguish between laws and non-laws on the basis of the projectibility of predicates.
Goodman was responding to the new riddle of induction.
'Green' supports laws, since all emeralds are green, and that claim is lawlike.
'Grue' does not support laws, since it is not the case, and not a law, that all emeralds are grue.
Goodman calls 'green' projectible and 'grue' non-projectible.
Projectibility is an epistemic condition.
So, it is not universally acknowledged that we the notion of a law is completely resilient to epistemic analysis.

Skyrms' account also provides an epistemic condition for laws.
Skyrms is also a Humean, and looking to refine naive regularity.
But, he doesn't appeal to systems, as Lewis does.
For Skyrms, the laws will be invariant under a wide variety of experiments and attempted refutations.

One might compare Skyrms' approach with Popper's solution to the problem of demarcation.
The problem of demarcation is to find a way to distinguish good science from bad science, like astrology, palm reading, and ESP.
Popper says that the criterion for good science is refutability.
One might think that the best theories are the ones that withstand the most attack, and so are the least refutable.
Popper, in contrast, argues that the best theories are the ones that are most refutable, because they have shown themselves resilient to counter-example.
Theories which are irrefutable are, Popper says, empty.
If there is no evidence that can refute a theory, there is no reason to believe it.

Carroll interprets Skyrms as relying on personal probability functions.
The most resilient of the objective probabilities are the ones that are the laws.
We'll put Skyrms aside.

IV. Tooley

We have come to the Carroll counter-examples to MRL.
In the lecture notes for the past two classes, I have discussed a counter-example, from Michael Tooley.
But, we have not gotten to it in class.
Carroll discusses a version of the counter-example in §IV of his paper, pp 203-4.
In the Tooley example, we have a world in which X-particles are never subject to Y-fields.
There may be other particles and other fields, but there are bare facts preventing the Xs from entering the Ys.
He considers two laws:

> L_1: All X-particles entering Y-fields have spin up.
> L_2: All X-particles entering Y-fields have spin down.

The facts about the world prevent us from having any evidence in favor of either law.
But, we think that one of these laws must be true.
Particles, when entering fields, acquire certain properties, just as Socrates had a blood type.

According to Lewis, we should choose the simplest system.
So, we add both L_1 and L_2 to our other claims about the Tooley world, and see which law supports the simplest system.
Unfortunately (well, ex hypothesi!) systems with L_1 and systems with L_2 are equally simple.
Carroll says that the system with L_1 should be ideal.
But so then should the system L_2.
These systems contradict each other.

One response that MRL could make is to claim that the example is implausible.

Carroll dismisses this response (and I am sympathetic to Carroll).
Maudlin's examples of Minkowski space-time, compatible with general relativity, but also potentially compatible with a conflicting physical theory (67-8) seem apt here.
It is likely that all of our physical theories are compatible with equally (or comparably) virtuous (in whatever way makes a system ideal) extensions.

The other response to the Tooley counter-example that Carroll considers is the claim that the Tooley world, though possible, is not a world in which HS holds.
Lewis claims that HS is a contingent, empirical fact.
Our world happens to be Humean.
Other worlds may not be Humean.
The Tooley world could be taken as a world in which HS fails.
So, it would not be a counter-example to HS in this world.
Carroll claims that this response gives up the traditional Humean project, p 205.

1. Reductive accounts must state necessary and sufficient conditions.
2. It leads to a disjunctive account of lawhood.
3. It lacks an explanation of why Tooley's world lacks HS.

I'm not sure what to think about Carroll's responses.
We can discuss them in class, if we want.
We will look at Beebee's response, from the Humean camp, on Thursday.

V. Carroll's counter-examples

We will look at two more counter-examples due to Carroll.
In the first, Carroll considers two possible worlds, U_1 and U_2.
In U_1, L_1 is the only fundamental law, and there are no cognizers.
U_2 is just like U_1 except that it contains L_2 instead of L_1.
There is no difference in the non-nomic elements of the two worlds.
All the particles are the same.
Since there are no cognizers, there is no epistemic difference between the two worlds, either.
But, U_1 and U_2 differ in the laws.
Therefore, laws do not reduce to non-nomic facts.

In response, the Humean might claim that the problem arises from the vacuity of the laws in question.
Since the laws are vacuous, perhaps the Humean need not worry about these counter-examples.
There would be no countervailing evidence in either world against either law.
Consider, then, two worlds in which there are eight X-particles subject to Y-fields.
In each case, the X-particles have spin up.
Now, consider two laws:

L_3: All X-particles subject to Y-fields have a nine-tenths probability of having spin up.
L_4: All X-particles subject to Y-fields have an eight-tenths probability of having spin up.

In U_3, L_3 holds; in U_4, L_4 holds.
If there were a ninth X-particle in a Y-field, in either world, then we could decide between L_3 and L_4.

But, there is no such particle, ex hypothesi.
The laws in this case are not vacuous, since there are X-particles in Y-fields in both worlds.
But, there are different laws, with no non-nomic differences to which they could possibly reduce.

For the second counter-example, Carroll asks us to consider U_5 and U_6, which agree on all non-nomic facts until a time at which W-particles suddenly appear.
In U_5, they appear with spin up.
In U_6, they appear with spin down.
Now, consider:

> L_5: All W-particles have spin up.
> L_6: All W-particles have spin down.

So far, the Humean is fine.
The differences in the laws is grounded in differences in the non-nomic facts.

Now, consider two further worlds.
U_{5*} is just like U_5 and U_{6*} is just like U_6, except that all of the particles in the newly considered worlds disappeared at the time that the W-particles appeared in the former worlds.
Laws are physically necessary.
So, since L_5 and L_6 were laws in U_5 and U_6, they continue to be laws in the new worlds.
But, U_{5*} and U_{6*} agree on all non-nomic facts at all times.
And, since the laws are necessary, they continue to have different laws.

Carroll says that he likes the last example most, since it relates laws and counterfactuals.
Throughout the article, Carroll emphasizes the modal character of laws, which he calls nomic modality.
The Humean will generally downplay modal properties, since it is difficult to see how facts about the actual world can determine facts about possible worlds.
"The primary concern of the Humean tradition has been to avoid reference to abstract entities [like possible worlds or universals] *as a way of explaining nomic modality*" (188).

The upshot of his argument, in contrast to the Lewis's Supervenience Thesis, is what Carroll calls the Irreducibility Thesis:

> IR: All reductive accounts of laws fail