The Naïve Regularity Theory of Laws
11 September, 2006

1. A complaint about the question, 'What is a law of nature?'

'It is a law of nature that P'; 'that P is a law of nature'; 'that P is not a law of nature, but a mere coincidence...'; 'it is not a law of nature that P—it is not even true!'; 'What Joe just asserted is a law of nature'...

If we're to understand these statements as talking about *entities* at all, these entities are *propositions*: referents of 'that' clauses; bearers of truth and falsehood; objects of "propositional attitudes"; entities belonging to a category some but not all of whose members are laws of nature.

In most of the cases that interest us, these propositions do not *themselves* seem involve the property of being a law of nature: they are of the form 'All Fs are Gs'. They are 'regularities'.

Armstrong very often talks in a way that makes it sound as if he disagrees with this. Often when he talks of 'laws' he seems to have in mind, not the propositions that *are* laws, but true propositions of the form 'it is a law that P', (or maybe the *facts* that ground the truth of these propositions).

2. Regularity theories of lawhood in general.

(Schema) To be a law of nature is to be (i) true and (ii) lawlike.

Further assumption: whether a proposition is lawlike is a *metaphysically necessary* matter.

- Given this, the proposition that it's a law that P, when it's true, is metaphysically necessarily equivalent to the proposition that P. On some theories of propositions, that would entail that these propositions are identical.

Given the further assumption about lawlikeness, the analysis schema had better not be offered as an analysis of a notion of lawhood that is closed under logical consequence! For given the further supposition that lawhood is closed under logical consequence, we could argue as follows that every metaphysically possible proposition is lawlike.

1. Let P and Q be two mutually inconsistent propositions either of which could [metaphysically] possibly be a law.
2. Let R be any metaphysically possible proposition inconsistent with P.
3. By closure, it's necessary that if P is a law, PvR is a law.
4. So by (1), it's possible that PvR is a law.
5. So by (Schema), it's possible that PvR is lawlike.
6. So by the further assumption, PvR is lawlike.
7. By closure and (q) it's necessary that if Q is a law, not-P is a law; so as before, by (Schema) and the further assumption, not-P must be lawlike.
8. So by (Schema), (2), (6) and (7), necessarily, if R is true, then it is a law that PvR and it is a law that not-P.
9. So by closure, necessarily, if R is true, then it is a law that R.
10. So by (2), possibly it is a law that R.
11. So by (Schema) and the further assumption as before, R is lawlike.

This proof only applies to propositions which are inconsistent with some proposition P which (i) could be a law, and (ii) is inconsistent with some other proposition Q which could be a law. But assuming that we can find P, Q as in 1, every proposition R whatsoever is equivalent to the disjunction (not-P and R) or (not-Q and R), so this is no real limitation.

3. Armstrong's "Naïve Regularity theory"

Lawlikeness =
(i) being [metaphysically] contingent +
(ii) being universally quantified +
(iii) being 'non-local'

What is it to be non-local? A sentence expressing a non-local proposition had better not contain any names for particular times or places. Or for particulars of any other sort! And it also had better not contain any predicates or other bits of vocabulary whose definitions would involve names for particulars. So non-local propositions are really *purely qualitative* propositions: propositions that have to do entirely with the question what the world as a whole is like, as opposed to *haecceitistic* propositions which have to do (at least in part) with the question *which particular things play which roles in the structure*.

Since (i) and (ii) drop out when we look at the corresponding modal operator (closing under logical consequence), the naïve regularity theory entails that all purely qualitative truths are nomically necessary. The *only* nomically contingent truths are (partially) haecceitistic ones!

- It's somewhat controversial whether there even could *be* any truths that aren't metaphysical consequences of the qualitative truths!
- Robert Adams has an influential argument that there could be such truths in 'Primitive Thisness and Primitive Identity'.

4. Counterexamples that refute more than just the naïve regularity theory?

(i) Spheres of gold and spheres of uranium.

It is, or at least could be, a law that all spheres of uranium have diameter less than 1 mile while it is true, but not a law, that all spheres of gold have diameter less than 1 mile. If so, the former proposition but not the latter must be 'lawlike'. But what conceivable principled analysis of lawlikeness could distinguish these apparently very similar propositions?
- But is it so obvious that it could be a law in the target sense (not closed under logical consequence) that all spheres of uranium are less than a mile in diameter, as opposed to being a logical consequence of the 'fundamental' laws?

(ii) Smith's garden.

Tooley gives this case as a counterexample to the claim that being purely qualitative is a *necessary* condition for being a law.

- But is it so obvious that the proposition that *this particular* garden contains only apples is a law, as opposed, say, to some proposition to the effect that *some* garden (having such-and-such qualitative features) contains only apples?

5. Laws and the justification of induction.

Inference to the best explanation: 'we are to take the degree to which an explanation would satisfy us, were we to know that it is true, as a guide to whether it is true' (White).

Attractive thesis: enumerative induction is a special case of inference to the best explanation.

Armstrong's argument: that all Fs are Gs cannot explain [at all, and a fortiorir in a satisfying way] why all observed Fs are Gs. For the proposition that all Fs are Gs is equivalent to the conjunction 'all observed Fs are Gs and all unobserved Fs are Gs'. But the first conjunct cannot explain why all observed Fs are Gs, since no truth can explain itself. And the second conjunct obviously cannot explain why all observed Fs are Gs. Hence the whole conjunction can't explain why all observed Fs are Gs.

IBE can justify us in believing that all Fs are Gs on the basis of the evidence that all observed Fs are Gs only if it justifies us in believing some *other* proposition P such that (i) P explains satisfyingly why all observed Fs are Gs, and (ii) we have some independent reason for thinking that if P, then all Fs are Gs. Armstrong's candidate: the fact that it is a *law* that all Fs are Gs.

- Does Armstrong think that enumerative induction can *only* be justified in this way, via justification for believing something to be a law? This seems absurd: there are all sorts of examples of justified enumerative inductions where there is no reason to think the relevant generalization is a law (e.g. 'all the coins in so-and-so's pocket are copper').
- A somewhat more plausible view would claim that while there must always be *some* P as above, the proposition that it's a law that all Fs are Gs is only one candidate.
- But this is also problematic. The inference 'all of the 99 observed coins from so-and-so's pocket are copper, therefore all 100 of them are copper' seems pretty good even when performed by someone who does not simultaneously come to believe any *specific* P which would be a satisfying explanation why all coins in so-and-so's pocket are copper.
- It seems highly intuitive in many cases to say that the fact that all Fs are Gs explains why all observed Fs are Gs, even if there is some further explanation (we may not know what it is) of the fact that all Fs are Gs. At best, Armstrong's argument creates a paradox. Perhaps we should defuse it by denying either the premise that the fact that all unobserved Fs are Gs can't explain why all observed Fs are Gs, or the premise that logically equivalent truths explain the same things, or the premise that a conjunction explains a fact only if at least one of its conjuncts explains that fact.
  - In fact, this latter premise doesn't even seem plausible. 'The hole is a triangle with 1-inch sides and the block is a triangle with .9-inch sides' seems to explain fairly satisfactorily why the block fitted into the hold. But neither conjunct seems on its own to constitute any explanation at all.

White's account: To the extent that a fact 'cries out for explanation', a satisfying explanation of that fact must be stable: it must entail that the fact in question *couldn't easily have failed to obtain*. The claim that all Fs are Gs can constitute a stable explanation of why all observed Fs are Gs (provided it doesn't itself "cry out for explanation" quite as urgently as the fact that all observed Fs are Gs).

White's diagnosis of Armstrong's error: it's true that the fact that all Fs are Gs does nothing to explain why any *particular thing* is G, or even why it is G-if-F. But the explanandum that all observed Fs are Gs is not equivalent to any conjunction of such claims abotu particular things.

Can Armstrong's argument be saved?

> I think that there is an important point lurking here: explanatory appeal to a generalization can often be more satisfying if we have some idea of how the generalization itself might be explained. And consequently the strength of an inductive inference depends on our prospects for explaining the explanatory generalization. Indeed, in many cases where we are sure that there can be no explanation of the generalization, our observations give us little or no evidence for the generalization.... The claim of Armstrong... is that its being a *law* that all Fs are G can explain why all Fs are G. This fits nicely with my account, since one thing that distinguishes genuine laws from accidental generalizations is their *stability*. (White, p.11)

- Is *lack of stability* really what's to blame for the unsatisfyingness of the explanations White considers? Suppose the oracle tells me that the explanation for my floating across New York is that there is a special extra law of nature according to which anyone who had such-and-such properties [which in fact only I have ever had] when they were born will float in such-and-such ways. If this is true, it entails that my floating couldn't easily have failed to occur. But does it offer any satisfaction?
    - My feeling is that it doesn't; the question why *that* rather than something else should be a law of nature seems urgent in the same way as the question why the particles at the initial time should be arranged in *that* way rather than some other way.
    - 'P because it's a law that P' seems to offer little if anything in the way of satisfaction when P is the sort of thing which we would expect to have a deeper explanation in terms of more basic generalisations. Is it any different when P is the sort of generalisation that a Regularity theorist would take as explanatory rock bottom?
- Consider too: an explanation of the fact that my dart landed in the white region of the dartboard which appeals to the fact that the black region is very small, though distributed across the board in a lacy pattern such that every white point is very close to some black point doesn't seem particularly less satisfying than an explanation according to which my dart landed well away from the edges of the white region, even though if the former explanation were true it seems that my dart could much more easily have failed to land on white.