# PART  II

Applications

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# 9

## Miracles and marvels

Both Prescriptivist and Necessitarian theories maintain, in contradistinction to the Regularity Theory, that physical laws are irreducible to singular propositions, that physical laws owe their truth to some source other than the singular facts of the world. This shared view of Prescriptivism and Necessitarianism I have called the Autonomy Theory of Physical Laws.

It is difficult to be a thoroughgoing Regularist, not because the theory's implications are remote and difficult to ferret out, but because persons mistakenly believe they are subscribing to a Regularist theory when in fact they hold beliefs incompatible with that theory. This intellectual schizophrenia arises out of the fact that the Autonomy Theory is so firmly entrenched in our ordinary world view that one hardly recognizes it for the *theory* that it is. Long ago, this competing theory passed into the realm of seemingly indisputable fact, with the result that some of its distinctive implications are thought to be simple data that would be consistent with any respectable theory of physical laws, the Regularity Theory included.

Hume's writings are a case in point. Hume was an imperfect Regularist (if indeed, he was a Regularist at all [see Beauchamp and Rosenberg 1981, especially Chapter 1]). In the *Enquiry* and the *Treatise,* we find the genesis of the Regularity Theory. But even in these works there are conflicting tendencies. In Section 10 of the *Enquiry,* "On Miracles," Hume (1955, p. 122) writes:

> A miracle is a violation of the laws of nature

and again, shortly thereafter (1955, p. 123):

> A miracle may be accurately defined, a *transgression of a law of nature by a particular volition of the Deity, or by the interposition of some invisible agent.*

There can be little doubt that these definitions capture the ordinary conception of miracle. And against this background, Hume proceeds to treat the answer to the question of whether there are, or have been, any miracles as a *contingent* one, meriting both an empirical investigation of the alleged facts and a conceptual examination of the proper doxastic attitudes to take in weighing contrary testimony.

What Hume seems to have overlooked, however, is that the account he gives of miracles derives from the Autonomy Theory and is logically inconsistent with the account he has earlier given of physical laws. *If* physical laws are 'constant conjunctions' (Hume's own words in "On Miracles"), then it is *logically* impossible that a physical law should be 'violated.' Nothing can be both 'constant' and 'violated', that is, without exception and with exception. If Hume is going to allow that it is possible that a physical law should be violated, then he cannot, with consistency, define physical laws to be constant conjunctions.[1]

I can imagine someone trying to salvage Hume's account of physical laws by likening this case to the ancient conundrum about God's omnipotence. God's omnipotence, we recall, was supposed to be impossible because were God to be omnipotent He could create a rock so heavy that He could not move it, and in doing that He would not be omnipotent. The rescuing of the idea of God's omnipotence came about, simply, through arguing that an omnipotent god can, being all-powerful, give up his omnipotence if he wants to, and he will remain omnipotent only so long as he does not create such a rock. So if God is omnipotent, He does not create such a rock; but He could – at the expense of His omnipotence – if He wants to.

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[1]    Of course, one can equivocate on "laws," taking "laws" sometimes to refer to scientific laws and other times to physical laws. Swinburn, in *The Concept of Miracle* (1970) tries to rebut McKinnon's contention that "the idea of a suspension of a natural law is self-contradictory" (1967, p. 309). Swinburn, in attempting to refute McKinnon's claim, makes much of the points that "any proposed law of nature will be corrigible" (p. 25); that "among simple formulae supported by the data, the simplest is the best supported and regarded, provisionally, as correct" (p. 24); and that "if the formula survives further tests, that increases the evidence in its favor as a law" (p. 24).

All these criteria – corrigibility, simplicity, selective confirmation, prediction of unexpected data, etc. – are clearly directed to the question of how we go about choosing what we are to adopt as *scientific* laws. Swinburn seems insensitive to the distinction between *physical* laws and what we might adopt at some point in history as useful proxies. As a result of his blurring this distinction, his rebuttal of McKinnon misses the mark. McKinnon's is an ontological-cum-logical point; Swinburn's, an epistemological-cum-historical one. The two arguments are utterly distinct; in particular, the latter surely does not rebut the former.

Analogously, couldn't one say that some proposition, *P*, is a physical law just so long as it is not violated? More particularly, can't we preserve a Regularity account just so long as God does not perform any miracles?

The answer: No. And the reason why the two cases are disanalogous has to do with the modalities of the propositions that figure in them. The argument that would attempt to salvage the Regularity-compatible-with-miracles account looks like this:

1. It is possible for God to perform a miracle
2. If God performs a miracle, then physical laws are not timelessly true propositions.
3. Physical laws are timelessly true (general, conditional, contingent, etc.) propositions.
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∴ 4. God does not perform a miracle.

Unquestionably, the argument is *valid.* But is it sound? More particularly, is the premise-set self-consistent? Premise 2, I have just argued, is necessarily true. What about premise 3, the principal tenet of the Regularity Theory? What is its modal status? The Regularist, in advancing 3, is urging an *analysis* of the concept of "physical law." And philosophical analyses – even those that present themselves as reconstructions or explications – may be supposed to be necessarily true. But if 2 and 3 are necessarily true, then so is 4. (The relevant inference rule is: $\Box \, (P \supset \sim Q)$, $\Box Q \vdash \Box \sim P$ ). But if 4 is necessarily true, not just contingently so, then 4 is inconsistent with 1. But any premise-set that implies a proposition inconsistent with any of its members is itself self-inconsistent. Therefore, premises 1, 2, and 3 cannot jointly be true. Since 2 and 3 are true, then 1, namely, that it is possible for God to perform a miracle, is false.

Thus the mere possibility, the bare logical possibility, of God's performing a miracle is inconsistent with the Regularity Theory. One cannot preserve a Regularity account and allow that God could (although He does not) perform a miracle.[2]

By insisting that not even God can violate or suspend a timeless regularity, we are not diminishing God's power in any way. Traditional Christian theology has always insisted that

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[2]   Incidentally, the Necessitarian Theory fares no better in allowing for miracles. Genuine miracles seem to be compatible with only two theories, viz., the 'time-limited' theory (considered four paragraphs hence) and the Prescriptivist Theory.

God's omnipotence must be thought to be constrained by the Law of Noncontradiction; that is, not even God can bring about a self-contradiction. To deny that God can perform a miracle is only to deny that God can bring about a self-contradiction.

Thoroughgoing Regularists, only on the pain of inconsistency, can pray for miracles. What they ought to be praying for, to use Hume's own vocabulary, are marvels. Of course, phenomenologically, marvels are indistinguishable from what usually are called "miracles."

From a Regularist's point of view, how are divine marvels, God's intervenings in the course of the world, to be explained? Easily: It is just a contingent truth about this world that whenever God says (in Aramaic) "Let so-and-so happen," so-and-so happens.[3]  Throughout all history, this pattern of success has been without exception. (In other possible worlds, God is not nearly so successful. And even in this world, recall, Jupiter and Wotan were not half as favored by Nature as is Jehovah.) In short, divinely caused marvels need hardly be construed as preternatural, requiring a different status under physical laws than events that are not divinely caused. Marvels may be of two varieties: secular and divine. Both can be accorded the same treatment by the Regularity Theory.

How, exactly, are divine and secular marvels, events that *seem* to contradict physical laws, to be subsumed under physical laws? If physical laws cannot be violated or suspended, might they be 'time-limited'? Couldn't we allow that certain regularities might hold for certain stretches of time, only to 'give way' (be replaced by) other regularities subsequently?

Two considerations tell against this proposed alteration. First of all, positing time-limited laws is not in keeping with the traditions of the Regularity Theory. Hume certainly did not mean "for some period of time" when he spoke of "constant." By "constant," he meant something like "invariable" (or at least later writers, for example, Mill, have so taken him). But apart from doing violence to the theory as it is ordinarily conceived, the major trouble with this way of reconciling the Regularity Theory with the possibility of the occurrence of marvels is that both the possibility as well as the actuality of marvels may be accommodated *within* the Regularity Theory; there is no need to modify the theory.

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3   I am here speaking somewhat colloquially, and, although what I am saying has the appearance of violating the principle not to quantify into quotation marks, what I am asserting can easily be formulated unproblematically. It is simply that whatever God says should happen, does.

To see this, we need an example of an event that, were it to occur, would look like a 'violation' of physical laws. Let's put divine marvels behind us and return to secular matters. Goodman's case of the fickle emeralds is as good as any and perhaps better than most. Suppose, contrary to all rational expectations, emeralds really *are* grue (see Chapter 2). Suppose, too, that the fateful moment of their changing from green to blue is the stroke of the New Year, 12:00:01 A.M. A.D. 2047. Surely the scenario is logically possible. If it were to occur, what adjustments would be required in our conception of physical law and of physical possibility? In Chapter 2, I argued that nothing of the sort "All emeralds are green before January 1, 2047, and blue thereafter" can be reckoned a physical law, for this proposition refers to a specific time, and physical laws are purely general propositions. But if this proposition is not to be reckoned a physical law, what choices are then open to us? Shall we want to say that the physical laws of the world *changed* on January 1, 2047?

This latter choice is not the only one available. The event of emeralds changing from green to blue on January 1, 2047, more than likely *can* be subsumed under a purely general, universal, timelessly true proposition. Although it is a contingent matter, it is altogether reasonable to suppose that one or more events occurring just prior to the momentous ushering in of New Year, 2047, enjoy a unique description in purely descriptive terms. Suppose Times Square in 2047 has a description, **D**, such that no other thing in the past, present, or future of the universe satisfies that description. Suppose further that at the first moment of 2047 there are exactly 625,342 persons gathered in Times Square. And finally suppose that there never has been before, nor ever is again later, exactly this number of persons in the square. If these conditions were all to be satisfied, we would then have the following purely general, universal, timelessly true proposition under which emeralds changing from green to blue would fall:

Whenever 625,342 persons congregate in a place **D**, emeralds change from green to blue.

By according this proposition the status of a physical law, the Regularist can accommodate the extraordinary event without having to posit either violations of physical laws or time-limited physical laws. It turns out that "Emeralds are green," given the counterfactual story we are telling, never was a physical law and was thus neither violated nor time-limited. The truth of the

matter, that is the physical law, is (timelessly): Prior to 625,342 persons gathering in a place **D**, emeralds are green and are blue thereafter.

To be sure, this latter 'law' has about it an air of the fantastic. Can one seriously propose that such a bizarre truth could be a physical law? Doesn't this, if nothing else, finally demonstrate the untenability of the Regularity Theory?

There are no easy triumphs on either side in this debate, and the Regularist is ready with a defense:

> If "Whenever 625,342 persons congregate in a place **D**, emeralds change from green to blue" has about it the air of the fantastic, remember just what prompted offering up this proposition for recognition: emeralds everywhere changing from green to blue. *That* is where the air of preposterousness originates. Just think how dumbfounded we would be if Goodman's hypothesis were not merely a philosopher's curiosity but a true prediction. How *would* we account for such an unprecedented singularity? Would we posit new, unknown forces propagating instantaneously throughout the universe? (Remember, emeralds *everywhere* are supposed to change *at the same time*.) Could we fall back on a common historical cause? This seems unlikely because not all emeralds are equally old, nor did they originate in the same place. Surely, for an event as truly extraordinary as emeralds everywhere simultaneously changing from green to blue, all informed bets are off as to what laws subsume that event. In the legal profession, there is an adage to the effect that hard cases make bad law. There is a parallel in the present case: Outlandish hypotheses positing incredible behavior require that there be extraordinary physical laws.

The point is not that the proposed physical law is true. I am sure it is false. Like Goodman, I remain confident that emeralds are *not* going to change from green to blue. The point is that even worlds in which our most exotic counterfactual imaginings are true need not be worlds in which physical laws are suspended or time-dependent. The Regularity account of physical laws allows that behavior imagined to be remarkably different from that typically (regularly) found in our ordinary experience, can still fall under timelessly true physical laws (although of course under different laws than those that actually hold). Indeed, it is very difficult to describe circumstances that would induce us to believe that laws may be violated, or that laws are time-dependent.

But the debate about this present case has hardly run its course. For a new element was hinted at a moment ago, and the Regularist's opponent is quick to seize on it.

Contemporaneous with the unique event of there being exactly 625,342 persons in a place **D**, there surely are indefinitely many more events all themselves having unique descriptions. According to the Regularity account, there will be, for all practical purposes, an unlimited number of physical laws under which this marvel (viz., emeralds changing from green to blue) may be subsumed. The Regularity Theory is encumbered by an embarrassment of riches. It succeeds too well. A philosophical theory that allows that an indefinitely large number (an infinite number perhaps) of different physical laws can each and all subsume the same event fails to accord with the ordinary view that events are explained by citing small numbers of relevant physical laws. With such a superabundance of laws indiscriminately all explaining the same event, no sense can be made of the actual practice of science, which is emphatically not at all like this.

The Regularist replies by denying certain presuppositions of this criticism. In particular, he wishes to drive a wedge between the two concepts of an event's *falling under* a physical law and that event's being *explained* by citing that law.

Of course, the Regularity Theory posits a great many more physical laws than do opposing theories. It was this very point that lay at the heart of Kneale's and Molnar's criticisms. And I agree, too, that ordinary scientific practice does not invoke just any universal proposition in offering explanations of events. The difference between us is that you think that the class of physical laws is a small, finite, proper subset of the class of what Regularists call "laws" and that what distinguishes that subset is that each of its members enjoys the property of nomological necessity. You view science as trying to discover which those privileged members are. The Regularity Theory, too, allows for a privileged set among what we call "physical laws": Only some of them will be found suitable for invoking as scientific laws. (Recall it was argued in Chapters 1 and 2 that scientific laws are not a proper subset of physical laws. Other propositions, including many false propositions and some that are not purely general, are also used as scientific laws.) The vast majority of physical laws, for any number of reasons – including such facts as that most of them are unknown and that many are too unwieldy and too intractable for our computations and comprehension – will not be regarded as scientific laws and will not be invoked in our attempts to explain the world.

A not insignificant problem with using the physical law concerning the consequences of there being 625,342 persons in a place **D** as a scientific law, is that this physical law would not be *seen* or *known* to be true. Even if it were true, there would be very little inductive evidence

for its truth. Moreover, in the absence of good inductive evidence of its truth, there would be similarly little evidence that the claim is pervasive (see Chapter 6), that is, that it has few, if any, ceteris paribus conditions. Even worse, it is a member of a class of propositions (concerning assemblages of persons and colors of gemstones) that, available evidence strongly suggests, are false. The color of the stone in my college ring, for example, seems, to date anyway, to be perfectly indifferent to the numbers of persons about. We may reasonably expect, then, that the troubling claim – even if it were true – would not be adopted as a scientific law and would not be used in an attempt to explain the exceedingly strange behavior of emeralds' changing their color. But this is hardly to prove that the claim is not a physical law. Our science only imperfectly captures Truth; much that is true escapes its net (and much that is true is discarded as worthless, unsubstantiated, etc.)

To see just how different are the properties of physical laws and scientific laws, in particular their respective utility in explanations and the like, imagine traveling back in time to the twelfth century and trying to offer explanations, citing (true) physical laws, as to the causes of rainbows, the causes of hemophilia, or the clouding of photographic plates, etc. The physical laws cited ex hypothesi are true, but they would not be acknowledged by the audience as scientific laws. Not only would the concepts at play in these laws be foreign (unknown); there would be no evidence available that would warrant their being believed or adopted.

What makes a proposition suitable for use in scientific explanations, predictions, and the like is an exceptionally complex brew having to do with such things as manipulability, observability, simplicity, 'integration' into wider theories, evidence of pervasiveness, and doubtless much more besides. A satisfactory analysis of these features is probably as difficult to achieve as an analysis of what makes for a good piece of art. But whatever these features are, they are properties of scientific laws and only accidentally, that is, not essentially, characteristics of physical laws.

Physical laws are timelessly true, universal or statistical, conditional, contingent propositions whose descriptive terms are all purely descriptive. None of these properties, singly or conjointly, guarantees explanatory power. Physical laws need have no epistemic properties whatever. They need not be believed, known, suspected, or even enjoy a single scrap of empirical evidence in

support of their truth. Still less need they ever figure, or indeed even be able to figure, in our explanations, predictions, theories, hypotheses, etc. Scientific laws, at least many of them, in contrast, do have explanatory power. But scientific laws are sometimes not purely general and are, more often than not, false.

Two important consequences follow from these differences. One is that there is probably an exceedingly large number of physical laws. (The Necessitarian regards this superabundance as profligate and has tried, as we have seen in the preceding four chapters, to reduce it appreciably. But this profligacy will figure, to the benefit of the Regularity Theory, in Chapter 10.) The second consequence is that almost anything that happens, however marvelous, may be subsumed under a physical law. If we break the mistaken conceptual tie between being a physical law and being explanatory and assign the latter to a separate class of propositions, then it is far easier for us to conceive of the world as being determined, for then what falls under a physical law need not be understood or explicable. Both these consequences bear importantly on the historic problem we next turn to.