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Evidence and explanation in Kant's doctrine of laws

Marius Stan

Abstract. I emphasize two merits of Watkins' account in *Kant on Laws*: the strong evidential support it has, and the central place it gives to Kant's laws of mechanics. Then, I raise two questions for further research. 1. What kind of evidential reasoning confirms a Kantian law? 2. Do natures explain Kantian laws? If so, how?

Keywords: confirmation of laws; explanation of laws; natures.

Anyone interested in Kant should be thankful for Eric Watkins' study; it is monumental, deep, and far sighted.¹ It took the author well over two decades of reflection to probe the issue completely, which goes to show just how difficult its associated problems are. Here I seek to praise it twice, and then to end with two questions. In an older sense, a critical engagement was expected to uncover merit too, not just reasons to quibble. I pay homage to that tradition.

I.

Suppose that exegeses of philosophical doctrines count as knowledge claims. Then we may ask, legitimately, what counts as *evidence* for them?

¹ Numbers in parentheses denote page numbers in E. WATKINS, *Kant on Laws*, Oxford University Press, 2019.

Any exegesis is a third-order discourse, and so empirical facts cannot directly confirm it.² Still, there must be warrant for it of some sort. I submit that Watkins' account does have the warrant to support it, and it is evidentially superior to its rivals, in three respects: his evidence is of better quality; it comes from a broader range of sources; and his local construals are consilient. I elaborate on these virtues next.

Watkins' evidence is superior in scope, diachronic *and* systematic. Historically, it feeds on a century of European accounts of law, from the later Leibniz to about 1800. Synchronically, it draws on Kantian doctrines ranging from the Analogies of Experience to the metaphysics of political legislation. In both quantity and reach, that exceeds by an order of magnitude the textual basis of rival interpretations.

Qualitatively as well, his basis is better. A good number of recent exegeses rely heavily on his undergraduate lectures on metaphysics. The main problem is that, so far, we lack any scholarly consensus on the real evidential force of those lectures. Consider some reasons for concern. We do not know how reliable they are qua record of his genuine views on the topic. We have no agreed-upon criteria for deciding which view takes precedence when his classroom pronouncements are at odds with his published words. And, we have no good analysis of which views in those lectures were stable, which ones changed, and why.³ To compound our predicament, those views are often just stated: instances of *ipse dixit*, unaccompanied by careful argument. In light of these shortcomings, student notes from Kant's lectures should count as weak evidence for his considered views on important matters. Thus, an interpretation that avoids crucial reliance on them is, *ceteris paribus*, preferable to ones that do require them indispensably. *Kant on Laws* is in that fortunate position. Ergo, it is evidentially superior to its rivals.

² Laws of nature are first-order statements (about facts); philosophies of science are second-order sentences (about laws); and interpretations are third-order discourse (about second-order sentences).

³ To be sure, a first step in the right direction is C. FUGATE, *Kant's Lectures on Metaphysics: A Critical Guide*, Cambridge University Press, 2019. But, we are a long way from a stable consensus on those lectures.

Even more valuably, Watkins' case is *consilient*. That is, each local account (of specific kinds of laws in Kant, e.g. transcendental, metaphysical, or practical) supports his genus account of lawhood, and integrates explanatorily with the other local accounts. That makes them consilient—a feature with evidential import. Consilience is a source of confirmation in knowledge domains where deductive proof and inductive generalization do not easily reach.

Just how valuable Watkins' result is emerges if we step back from it to enlarge the perspective. Kant was not the only early modern who sought to embed laws in his theoretical and practical philosophy alike. Hobbes, Leibniz, and Locke did too, as did Malebranche. But, they run the risk of unifying on the cheap—by equivocating on 'law.' Specifically, the danger is of letting 'law of nature' denote any universal pattern of dead-matter behavior, in their theoretical philosophy; and having it denote a certain type of injunction on rational agents, in their practical doctrine. Such unifications are easy but hollow, because the two senses above have nothing in common, and so there is no *one* concept of law to theorize about; there is just one linguistic vehicle (*law*, *Gesetz*, *loi*, or *lex naturae*) deceptively used to convey two distinct ideas. Really, any thinker with a natural philosophy will run into this problem if they also endorse a theory of social contracts, natural law, or divine command. Watkins shows artfully that Kant avoided that regrettable mistake; his concept of law *is* univocal, with two proper species, one for theoretical reason, and another for practical. In Watkins' memorable phrase, a Kantian law is a "a necessary rule that is the result of legislation" by the proper spontaneous authority (14). Such laws can bind rational agents; or they can determine objects—all without equivocation.

2.

We must commend Watkins on another count. His book gives the lion's share to the laws of mechanics within Kant's broader picture.

That is as it should be. Let's start from a crucial fact too often ignored. The real revolutionary aspect of early modern science was the creation of *mechanics* qua science of motion based on *laws*. The law of inertia,

primarily, and a few laws governing deviations from inertial states. Every philosopher of note then spent significant time and energy reflecting on the laws of mechanics; consider a list, far from complete: Descartes, Hobbes, Leibniz, Malebranche, Locke, Wolff, du Châtelet, Maupertuis, d'Alembert, Boscovich, and Euler. Kant did too—he spent nearly half a century trying to make philosophical sense of the laws of mechanics. Disappointingly, however, few exegeses take this key fact seriously. *Kant on Laws* is the great exception, as is Michael Friedman's recent work on the topic. In particular, Watkins was the first to pay close attention to the content, justification, and evolving context of Kant's mechanical laws. That early sensitivity to this elusive problem paid off handsomely for Watkins. It enabled him to cast light on some passages that had resisted elucidation for *centuries*. And, it bore fruit well beyond those passages—his exegesis opened a new vista onto broad stretches of post-Leibnizian metaphysics, epistemology, and philosophy of science.⁴

For us followers, his scholarship on the problem is not just an *exemplum*, it also sets a new standard. Specifically, future exegeses aiming to make sense of lawhood in Kant should clear two benchmarks. First, they must make the laws of mechanics into the centerpiece of any new interpretation of Kant on laws in general. Second, they must make those laws into the *Proberstein* of the construal. Namely, exegetes should test the adequacy of their account of laws generaliter by showing it makes good sense of his laws of *mechanics*: because Kant himself thought they were the crucial test case for any philosophy of laws.⁵

From this vantage point, a whole family of interpretations falls short. They start with the Appendix to the Transcendental Dialectic; reach for some variant of the Mill-Ramsey-Lewis view of laws qua privileged sentences in some best-system of sorts; then return to the Appendix, to show that a best-system account of lawhood can handle those few pages in the Critique, plus a few paragraphs that some undergraduates wrote down

⁴ Disclosure: I too have benefitted from his insights, in my work on Kant's natural philosophy, especially on his theory of motion and interactions.

⁵ In the last two decades, the overarching constraint on interpreting Kant's natural philosophy has been Contextualism: his doctrines must be read and weighed against the backdrop of the science of his age: its foundational agenda, explanatory resources, and representational frameworks.

in Kant's classroom. In the process, these readings bypass the laws of mechanics entirely. But, that goes against history, Kant's philosophical biography, and the spirit of his reflections on law. As I said, Watkins does not make that mistake; he starts at the right end, and ends with the right conclusion.

3.

I end with two critical notes. Really, they are invitations to elucidate, not objections—the book is unobjectionable. I think we should welcome further light on two aspects of laws in *MAN*: the *evidence* for them; and the exact role of *natures* in his account of those laws. Our picture of these aspects is not yet clear and sharp enough for us to say how well Kant did.

In regard to laws of nature, the early moderns were in a sui generis predicament. No kind of science before Descartes had made room for the concept that nature is subject to *laws*; and they had rejected Aristotelian-Scholastic epistemology. So, to them the tradition was of no help in regard to our knowledge of laws. In consequence, from the 1640s onward we see a broad array of views emerge on the epistemology of laws of nature. One view had it that, for fundamental laws, the evidence is metaphysical facts about substance (extension) and about God's creative action (immutability). On another view, laws are highly probable statements abducted from some optimality constraint on God's activity. Yet another had it that laws are confirmed by *reductio*. A fourth one took them to be a posteriori knowledge "deduced from phenomena," generalized by induction, and further confirmed by successful predictions. This broad array of early modern positions should give us reason to ask, what was *Kant's* view on the epistemology of laws? After all, he is justly famous for his epistemology-first approach to questions in theoretical philosophy. So far, this question remains sorely under-explored. Most of the relevant literature really amounts to

philosophical *analyses* of lawhood in Kant.⁶ Watkins' book too—and a splendid contribution it makes to that project—but it does more. To his credit, he had the courage and insight to ask: how does Kant think we *know* a judgment to be a law of nature? In this key respect he again broke new ground, and I will focus on just this aspect, below. In particular, on Kant's evidence for the laws of *MAN*.

Evidence. Those laws must count as a priori truths.⁷ Question: what is Kant's warrant for them? His epistemology allows just three species of inference to such knowledge: analytic judgment, construction in pure intuition, and transcendental argument. The first two kinds fail the test (for various reasons), so only transcendental argument is left standing.⁸ Incidentally, that yields a short argument for Watkins' own view in the book. As he argues in Chapter 4, *MAN*'s structure is that of a transcendental argument. I just gave another reason to think that he is right.

Still, a good interpretation must balance judiciously two kinds of interests, hermeneutic and philosophical. So, we might ask how Watkins' fares on both. Take exegetic considerations first. If Kant's reasoning in *MAN* is indeed a set of transcendental arguments, he was oddly reluctant to use the proper terminology. Confoundingly, he called his warrant for the laws *Beweise*, and announced that he would imitate the “mathematical method.” But, his philosophy says that mathematics does not use transcendental arguments to establish *its* claims. So, unless by ‘mathematical method’ Kant just meant a species of typographic layout on the page, it seems that transcendental argument is *not* the only pattern of reasoning in

⁶ In modern terms, they analyze what makes a sentence nomic, or lawlike; and they examine the metaphysics of those law-makers. A modern epitome is M. LANGE, *Laws and lawmakers*, Oxford University Press, 2009.

⁷ Note: I am not analyzing here the various senses of Kantian a priority. I am just giving a descriptive account of the forms of inference that lead from evidence to a priori claims, in his doctrine. Kant's use of ‘a priori’ is notoriously equivocal—he applies it both to semantic representations and to knowledge claims. My interest here is in the latter.

⁸ In a forthcoming study, *Kant's Natural Philosophy*, I explain in detail why no inference in *MAN* counts as construction in pure intuition, notwithstanding Kant's occasional and mystifying talk of construction there. Second, Watkins might not count analytic judgments as a type of knowledge at all; cf. M. WILLASCHEK and E. WATKINS, *Kant on cognition and knowledge*, “Synthese,” 197, 2020, pp. 3195–3213.

MAN after all. Should we dismiss as mere marketing his talk of giving proofs by imitating mathematics?

Natures. Now take philosophical concerns. Many recent takes on lawhood in Kant rely on natures—the natures of things. Watkins does too, in regard to many laws, though not all: “some laws of nature will be based on the specific natures that objects in our world have... The natures that underlie empirical laws include the natures of the relevant empirical objects” (34, 36). This vocabulary certainly echoes key themes of late Scholastic and early modern metaphysics, and so it is contextually respectable. However, I would like to ask for clarification on it; here’s why.

In regard to laws, appeal to natures is deeply confounding, and we should get clear on what it really does for Kant, because natures can play three roles. Exegetes say that natures *ground* laws, but talk of grounding is equivocal, and when we disambiguate it, we discover that some grounding is beside the point. Suppose that *G* is a law, and *N* is the nature of the things governed by that law. Then ‘grounding’ is shorthand for three ideas. (1) ontological: the fact asserted by *G* depends for its existence on *N*. Things would not instantiate *G*-like behavior unless *N* was their nature. (2) explanatory: *N* explains why law *G* obtains. Among the explanantia for *G* are facts about nature *N*. (3) evidential: *N* is a premise in the inference that law *G* is true. The evidence for *G*’s truth includes facts about the nature *N*.⁹ At this point, two notes are in order.

I wish to emphasize (very strongly) that these are fundamentally distinct ideas and concerns. Explanation yields understanding, whereas evidence confirms the truth of a sentence. Evidence always confirms through *argument*—some inferential structure that channels truth from the justify-

⁹ A helpful catalog and explication of the various notions of ground that Kant taught to his students is N. STANG, *A guide to ground in Kant’s Lectures on Metaphysics*, in FUGATE, *Critical Guide*, pp. 74-101. Apparently, Kant also admitted a fourth species of ground, viz. efficient causation. That species is out of place in regard to natures’ relevance to laws. Incidentally, I diverge from Stang somewhat. He credits Kant with a notion, “epistemic grounds,” that is sound but too broad for my aims here—it covers all reasons to believe a sentence. I prefer a narrower notion, namely, “evidential grounds.” I am interested here in elucidating the structure and specific content of the evidential reasoning that takes us from such grounds to laws of nature (as their consequences).

ing facts to the sentence to be confirmed—but not all explanations are arguments; some are *descriptions*.¹⁰ Finally, ontological dependence is orthogonal to epistemic input: it has no bearing on justification.

And, I think we need caution and stoicism around the issue of how natures explain laws. For one, Kant did not have a theory of scientific explanation. Before Hempel nobody had one, of course, so we cannot blame Kant on this count. Still, the fact remains that we cannot elucidate the explanation of laws from natures in *Kant's* own terms. For another, modern analytic tools won't help either. Of the five major theories of scientific explanation we have, only two make room for the explanation of laws.¹¹ However, both theories claim that laws are explained by *other laws*. Not by natures. Current philosophy of science thus cannot shed light on the issue.

Some seem to think Kant's explanation of laws is *philosophical*, not scientific. Then we need even more caution, I suggest—on methodological grounds. First, neither Kant nor us moderns have a *theory* of philosophical explanation.¹² Specifically, we have as yet no settled answers to the question, what is their structure, if any? Are they deductive arguments? If so,

¹⁰ In deductive reasoning, the truth channel is (total) entailment, and the channeling is lossless—the conclusion is just as true as the evidence that entails it, no less. Inductive reasoning channels it imperfectly, via *partial* entailment: truth is transmitted only to the extent given by the conclusion's degree of confirmation. As to scientific explanations, some are deductive arguments (with some law of nature as a premise *sine qua non*). But, many others—e.g., causal explanations—are *not* arguments. They are descriptions of causal processes; or listings of links in a causal chain that ends with the explanandum. For further details, see W. SALMON, *Four Decades of Scientific Explanation*, University of Pittsburgh Press, 2006.

¹¹ In the deductive-nomological account, we explain a law by making it the conclusion of a deductive inference with one or more (higher-level) laws as indispensable premises. In the Friedman-Kitcher unificatory account, we explain it by subsuming it as a local version under a broader, more general law that integrates several narrower theories of limited scope; cf. SALMON, *Scientific Explanation*. The other three theories of scientific explanation (the pragmatic, the statistical-relevance, and the causal-mechanical account) do not have explicit views about the explanation of laws. They aim primarily to vindicate the practice of explaining events. Explaining laws is a bonus feature that only some theories have.

¹² This is in sore contrast to the situation in philosophy of science, whose five theories of explanation have by now received sharp, exact formulations.

what are the constraints on acceptable premises? Are they abductive inferences? If so, what optimality criteria makes them inferences to the *best* explanation? Are they just descriptions? The latter seems to be the implication of some recent work on laws in Kant.¹³ Second, it is unclear what these explanations target—which aspect of a law they mean to account for. The studies I’ve seen so far do not seem to agree on the explanandum. Is it the law’s obtaining, or being the case? Its truth? Its necessity? Its lawhood, or nomic status? I’m not sure that I see any agreement on this point. Third, we have no clear account of when consensus (on a philosophical explanation) has been reached: no widely agreed criteria for who bears the burden of explanation, when that burden has been discharged or shifted, and which explanations are final.¹⁴ These matters are important *per se*, and become really crucial if one thinks that philosophical explanations are abductive—that they count as inferences to the best explanation. In effect, then, we seem to lack both the historical and philosophical resources to elucidate the role of natures *exactly*. My worry is that all we exegetes can afford to say is, “natures explain laws,” and leave it at that. This has repercussions for the broader picture; see below.

Determining grounds. I think that *Kant and Laws* made room for a fourth view on natures’ relation to laws: namely, thing-natures are determining grounds of the relevant laws. More exactly, suppose L is a law

¹³ Some construe Kant’s explanations as instances of the sentence type “___ in virtue of ___,” where the former blank takes a law (qua explanandum), and the latter some fact about a relevant thing-nature (qua explanans). Cf. J. MESSINA, *Kant’s necessitation account of laws and the nature of natures*, in *Kant and the Laws of Nature*, eds. M. Massimi & A. Breitenbach, Cambridge University Press, 2017, pp. 131-49; J. KREINES endorses that picture as well, in *Kant on the laws of nature: restrictive inflationism and its philosophical advantages*, “The Monist” 100, 2017, pp. 326-341. So, a philosophical explanation amounts to asserting a relation of ontological dependence between two relata. Presumably, *understanding*—which any explanation must yield—follows the arrow of dependence. I don’t know why they thought that. Without a theory of philosophical explanation, I cannot see why ontological dependence alone is allegedly explanatory; or is better than alternative explanations.

¹⁴ Consider the situation in analytic metaphysics, where deflationists and inflationists about truth-making do not agree on explanatory success and its burden. In response to deflationism, Lewis countered, “What sort of explanation is that?—No explanation at all, I agree.” Cf. D. LEWIS, *Truth-making and difference-making*, “Noûs” 35, 200, pp. 602–615: 611. To be sure, deflationists disagree with his verdict. Similar failures of explanatory consensus occur in theories of grounding and metametaphysics.

asserting of some genus G of objects that *b*, *c*, and *d* are nomic behaviors; or that *p*, *q*, and *r* are nomic properties. Then prima facie it makes sense to ask, why are *those* properties and behaviors—as opposed to any others—nomic? Why is L about *them* rather than any others? Watkins' study implies that Kant would answer: the nature of G includes *b*, *c*, *d*, and also *p*, *q*, *r*. That explains why G's basic laws are about those properties and behaviors, not just any others. (Alternatively, its nature includes the powers *k*, *l*, *m*, and the nomic behaviors that L asserts are effects of those causal powers.) In that sense, the nature of G is a determining ground of L: it *explains* why the law asserts those determinate behaviors, not just any behavior.

Fair enough. Note that Kant's answer is not the only one on offer; there are others. So, we may ask whether his answer is the *best* explanation of G. However, I want to ask whether it is an *adequate* explanation. At this juncture, the two aspects above (confirmation and explanation) converge dangerously, and risk undermining each other; some hermeneutic skill is needed to keep them from sinking Kant's project. Consider this explanation from determining grounds:

N, explanans: The nature of genus G includes actions of type *p* and *q*.

L, explanandum: It is a law that G-type objects exert *p* and *q*.

Question: what is the evidence for the explanans? (It *has to* be true, or else the explanation is worthless.) How do we know that N is true? More generally, what confirms claims about the nature of an object class?

One might respond: the evidence for N is the very explanation above—its power to explain why L is nomic. Tempting as this sounds, it must be wrong. Explanations are not evidence, because explaining does not transmit truth; and because the explanation turns vacuous and uninformative if the explanans is not known *independently*, by a different route. Descartes' age already knew that; recall their favorite caricature:

explanans: Opium's nature includes a power to cause sleep, *virtus dormitiva*.

explanandum: An intake of opium always induces sleep.

Early modern philosophy began, inter alia, as a collective backlash against such 'explanations' from Aristotelian natures as determining grounds. We know well how vehement the 17th century was about their vacuity. But it wasn't just them. Modern theorists too have warned against conflating explanation and warrant. "We should distinguish," they caution, between "a

strong (good) explanation” and a “strong (good) reason for believing” that the explanandum is true.¹⁵ It seems that Kant would have agreed: he and “nearly every writer” in his time distinguished between “explanatory grounds” and “epistemic grounds.”¹⁶

In sum, explanation and evidence must be kept apart, if his account of laws is to be defensible. So, my final point is: the Kantian explanation of a law and the evidence for its determining ground *must* come from different sources, on pain of explanatory vacuity. I invite Watkins and everyone else to tell us what those sources are.

Conclusion. If object-natures merely carry dependence or explain, then I think Watkins would assent to an interim conclusion:

(A) Natures are evidentially inert. They do not confirm the truth of laws.

That leaves open the question of what counts as evidence for laws. Which may be good news for Watkins: it would give him the freedom to construe transcendental argument—his preferred view of evidential reasoning in *MAN*—in flexible ways that all other options preclude (see below). However, if facts about thing-natures *are* evidence, we face a different picture; the approach Watkins favors then comes to a crossroads:

(B1) Facts about thing-natures confirm basic laws—hence transcendental argument is not the only type of evidential inference, after all.

(B2) Or, by ‘transcendental argument in *MAN*,’ Watkins means a hybrid inference that contains premises about thing-natures indispensably.

In particular, those hybrid inferences would all be instances of one generic pattern of reasoning, as follows:

P1. Facts about the nature of some object-kind.

P2. Facts about the cognitive architecture of the epistemic agent coming to know the law at issue. Alternatively: claims about the objects of experience depending on, or being constituted by, the knower’s mental activity.

P3. Other facts, perhaps. (Which?)

Conclusion: Some basic law in *MAN*.

¹⁵ For elaboration, see P. RAILTON, *A deductive-nomological model of probabilistic explanation*, in *Philosophy of Science*, eds. M. Curd & J. Cover, Norton, 1998, pp. 746-65: 764.

¹⁶ STANG, *Guide to ground*, p. 87.

The second option, B2, would be a happy compromise between the main thrust of Watkins' original account (of *MAN's* argument structure) and the more recent, natures-first trends in scholarship. At the same time, it would lock him into a fixed view about the exact structure of Kant's transcendental arguments outside the Critique. Specifically, it would press him to agree that a transcendental argument is just a deductive inference; what makes it transcendental is not a special structure—it is not some *quartum quid* alongside deduction, induction, and abduction—but the content of some key premises, viz. the P2 type of claim above.]

Granted, in talking about evidential reasoning I have been deliberately vague. That sort of language really gets at two things: the sources of evidence, viz. the *content* of the premises that confirm a knowledge claim; and the logical structure, or *pattern* of inference, that channels truth from evidence to the conclusion it confirms thereby. And so, I conclude by removing all ambiguity from my invitation. I hope Watkins and anyone planning to write on laws in Kant will try and give us clear answers to these questions:

Q1. What is the makeup of the arguments that confirm the laws of MAN? What do the key premises assert, and what makes *them* true? And, what is their logical genus—are they deductive, inductive or abductive?

Q2. What is the role of facts about object-natures in regard to Kant's laws of nature? Are they *explanantia* that help us understand why the laws obtain? Are they evidence that the laws are true? Or are they just carriers of ontological dependence?

To be sure, none of these questions is remotely easy. And, there may not be enough words in Kant's works to answer them with the exactness and rigor I demanded above. Still, if the questions are at all answerable, I trust that Watkins is among the very few who can shed any light on them. *Kant on Laws* is ample proof of that.